

JULY 2019

How do Further Education (FE) teachers see their role changing in the future to exploit digital teaching and learning opportunities in an increasingly digital education environment?

Jayne Holt MSc, PGDip

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A thesis in partial fulfilment of the requirements of the University of
Wolverhampton for the Education Doctorate
UNIVERSITY OF WOLVERHAMPTON

Abstract

This research explores and reveals the complexity of Further Education (FE) teachers' viewpoints in relation to digital teaching and learning technologies. The enquiry begins by reviewing the Government policies that surround digital learning technologies in Further Education (FE) and recognises the challenges that policy, reform, social, economic and educational changes present to the FE Sector. Policy suggests that changes in education may be necessary for developing skills that are required to live and work effectively in a globally connected world and for what the UK Government terms a modern Britain. This means teaching, learning and assessment in FE might need to change, which may lead to considerable changes to the role of the teacher. This research argues that government policy is underestimating the complexities of developing a culture of integrated digital teaching and learning technologies, and has a view too simplistic for the upskilling of teaching staff and transformation of the FE Sector with digital learning technologies.

Q-methodology and qualitative semi-structured interviews have been used to illuminate the views of teachers and how they position themselves for using digital learning technologies in their teaching. By selecting a group of experienced teachers who are considered, by the College, to be advanced teachers and a second group of teacher-education (TED) students, the research demonstrates the nuances of the teaching habitus, whether evolving through long-term teaching experience or through the initial teacher-education (ITE) programme.

This research explores the concept of the digital teaching habitus through Bourdieu's theoretical lens of field, habitus and capital from which the participants are revealed to have a continuum of positions and level of digital capital at play within their digital

teaching habitus. By interpreting these different emerging positions, several digital teaching habitus are identified with associated levels of digital capital for the participants.

The teachers' voice provides current knowledge on what teachers feel is important to the teacher-student relationship in a digital education environment and the prominence that FE teachers assign to managing students' aspirations and to preparing students for their occupations and future workplaces.

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Acknowledgements

Thank you to the 16 participants who agreed to be involved in this research, and my colleagues who have supported my journey. Thank you to the wider digital learning technology community, particularly Bob Harrison who has given his time and offered encouragement.

I gratefully acknowledge the guidance and encouragement of my Supervisory Team: Professor John Traxler (Director of Studies), Dr Andy Cramp and Dr Zeta Brown; for their knowledge, motivation and continuous support of my professional doctoral study.

Thank you also to my family and friends who have inspired and motivated me throughout.

Chapter 1:

1. Introduction

This research is an educational enquiry that examines the viewpoint and position of further education (FE), experienced advanced teachers and teacher education (TED) students regarding the role of the teacher in a digital education environment. As a professionally based doctoral study, the purpose of this research is to bring about new knowledge and understanding to inform the organisation's leadership decisions and digital strategy. The research aim is to discover the views of FE teachers on how they position themselves regarding how their teaching is changing because of digital technologies. It explores how FE teachers view their teaching and learning approaches using digital technologies, the nuances technology brings to the teacher-student relationship, and teachers' confidence in using digital technology within their role. The focus is not so much on the technologies, but the changes that are affecting teaching, learning and pedagogic approaches.

The advances in digital technologies in every aspect of our lives would indicate that technology has a significant role to play in the future of education. A key question for the FE sector is what are the most appropriate technologies and how we choose, define and use them (Facer 2009, 2011; Jisc 2018a), alongside digital pedagogy (Beetham & Sharpe 2013; Garrison 2015; Laurillard 2012; Salmon 2013; Savin-Baden 2015; Jisc 2016, 2018b; ETF 2018b). This issue has grown in importance for the FE Sector following the publication of the Further Education Learning Technology Action Group (FELTAG) Report (FELTAG 2014), combined with the innovation in digital teaching and learning technologies per se. There is evidence to support the argument that developing a culture of integrated digital teaching and learning technologies in FE

and the transformation of teaching and learning using technology, is far more complex than government has acknowledged; this research explores and critiques this position.

The context of this research is influenced by my personal background and professional role as a senior leader in the research setting, responsible for digital learning technologies.

1.1 The research setting

The research setting is a single General Further Education (GFE) college within the West Midlands, England, with over 3,600 14-19 year-old classroom-based students, 5,000 adults and 2,000 work-based apprentices. There are 546 full time equivalent (FTE) staff at the College, of whom over 300 FTE are teaching staff. The College is an Ofsted outstanding organisation that has won several awards for its use of digital teaching and learning technologies. It was the first college in the region to provide a Virtual Academy for purely distance learning short courses to local businesses.

There are known digital divides within the locality and, although this is complex with numerous factors to understand, 68% of 14–19 year olds attending the College are drawn from band 1, 2 or 3 areas of deprivation. The College is located in an area of high economic and social deprivation; a low skills, low income economy ranked 20th out of 326 Local Authorities on the Index of Multiple Deprivation (DfCLG 2015, p.15).

1.2 The research participants

When designing this research I chose two groups of participants, one group of eight advanced teachers and one group of eight teacher education (TED) students. I chose these different groups in order to compare whether advanced teachers and teachers

new to the profession have similar or contrasting positions regarding digital teaching and learning technologies.

The advanced teachers all have over five years' experience and are considered by the organisation to be grade 1 teaching and learning practitioners. These advanced teachers have the additional role of coaching and mentoring their peers. I chose this group because the College identifies them as being expert teachers and they are therefore given remission to undertake and develop best teaching, learning and assessment practice across the organisation. They have expertise in teaching and learning, and in-depth and intrinsic understanding of the teaching population within the College, and can influence change.

The second group of participants were eight volunteers from a class of sixteen teacher education (TED) students; this group was selected because they are new to the teaching profession, and I thought they might provide more nuanced perspectives to the research questions. Unlike the advanced teachers, this group does not have the years of experience and expertise in teaching, learning and assessment. I wanted to explore whether those who are new to the FE teaching profession possess different viewpoints or attitudes to the teachers' role, teacher-student relationship in practice and their digital confidence when using technology. Further details regarding the participants are explained in section 3.6.3.

In recent times there has been increasing research in the domain of digital learning technologies and how technology might be used in the future for FE education (Jisc 2016, 2018a, 2018b; ETF 2018b). My enquiry asks FE teachers how they feel about digital technologies and aims to understand the teachers' position and viewpoint. FE is an under-researched sector and hitherto I believe far too little attention has been

given to the viewpoint of FE teachers and how they feel about the rapid developments in digital technologies. This highlights a need to understand the nuances of the various perspectives, viewpoints and confidence levels that exist among FE teachers when using digital technologies.

Teachers are the enablers for transformation to take effect; without their commitment we have no transformation, evolution or revolution into the way we use digital learning technologies (Hargreaves and Fullan 2012). What is not yet clear is the impact of digital teaching and learning technologies on the future role of the teacher in FE. I believe, as a result of this research, I am better informed as a senior leader to support teachers by providing more appropriate professional training and development opportunities to suit their needs (ETF 2018a). The findings from this research can be applied to similar colleges and the wider FE sector to understand how best to support and develop their teaching staff.

1.3 Key influences on this research

A key influence on this research has been the work and theoretical framework of Bourdieu (1998) on field, habitus and capital. Bourdieu (1998) is particularly relevant to this research because his work has helped to reveal the different positions held and the levels of confidence FE teachers feel when using digital technologies. The habitus lens has enabled a depth of understanding of why FE teachers hold these different positions. Bourdieu (1998, p.81) argues that our previous experiences are a part of our habitus, with habitus being the culture, values, disposition and the unconscious comfort zone of an individual's teaching practices which structures our perception of the world and how we interact with that world.

The work of Bourdieu (1984; 1998) is also important to my reflexivity and how I position myself within this research. English and Bolton (2016, p.19) explore the work of Bourdieu, emphasising the importance of reflexivity, defining reflexivity as thinking about how we are thinking. They suggest that Bourdieu saw reflexivity as looking at the situation with new eyes, which is different to reflectivity. English and Bolton say, *“our minds are crowded with a great deal of cultural and conceptual clutter, and too often we are completely unaware of it”* (p.19). English and Bolton (2016) acknowledge this and say that the lens we choose to see through may prevent us seeing all the dimensions of the problem because it means that we do not solve problems with an open mind. They go on to emphasise the Bourdieu concept of ‘doxa’ meaning the unconscious submission to conditions that are the dominant point-of-view; this reproduces the dominant culture, thereby also reproducing the structure of power relations (Bourdieu and Passeron 1990).

Throughout this research, I have reflected upon my own position within the research and considered how my habitus affects and influences my situated perspective. Gadamer (1975) reminds us that interpretation is a fusion of horizons where our historical consciousness affects how we interpret. Through my reflexivity, I have examined my own beliefs and assumptions. For example, at the beginning of this research I assumed that teachers new to the profession would be confident when using social media and digital technologies. They would therefore be more accepting of learning technologies than teachers who are perceived to be walking a ‘well-worn path’. This research has challenged my beliefs and opinions, and these have proven to be incorrect at times.

1.4 Key pedagogical influences on this research

From a pedagogical perspective, this research has been strongly influenced by Dewey (1938; 2011) and Vygotsky (1978). Vygotsky (1978), in the same way as Dewey (1938), believed in the importance of focusing on the process of learning and not necessarily on the outcomes. Vygotsky's (1978) zone of proximal development (ZPD) theory suggests that each student operates within a range of abilities. Vygotsky, like Dewey, recognises the importance of the teacher in understanding the previous learning experience, acquired knowledge, and skills of the student as the starting point for designing learning opportunities. It is by establishing the individual student's level of development, skills and knowledge that the student's ZPD can be understood. In the college, currently, this is realised by capturing formal achievement, diagnostics data and, importantly, through the teacher-student relationship. If work is too easy the student will be bored and may disengage; if it is too difficult the student will have difficulty attempting it. The teacher will best engage the student by presenting work that is challenging but not overwhelming. For digital education models, the challenge for the teacher is how they receive timely feedback on whether the online student experience is too easy, boring or too challenging. I propose that Dewey's idea of a continuum of experience, in this case digital, and Vygotsky's ZPD can, and should, be considered for students' digital engagement and online learning; this is explored further in section 2.4

The teacher-student online experience has been explored by drawing on the work of Dewey (1938). Dewey (1938, p.79) suggests that it is the responsibility of the teacher to respond to the students' experience, ensuring that the student has the capacity to learn from the present experience whilst including enough challenge to prevent disengagement. In section 4.6.5, this research highlights the concerns teachers have

when teaching online for how best to engage students and know that they are progressing. It shows that the use of digital learning technologies requires deep consideration if teachers are going to fully exploit the benefits for teaching, learning and assessment. Hallissy *et al.* (2013) stress the need for an understanding of not just the role of the teacher, but also the characteristics that a modern day teacher might develop. Savin-Baden (2015, p.45) suggests that technologies in learning practices, combined with the complexities of students who have grown up in a globally connected and technological world, are *“likely to unsettle staff perspectives about when and where learning occurs (and with whom)”* (Savin-Baden 2015, p.45). She highlights that this is challenging for teachers when creating opportunities to *“encompass the new learning mobilities and geographies we are starting to see in students’ lives.”* I have aimed to contribute new understanding to the question: how do FE teachers see their role changing in the future to exploit digital teaching and learning opportunities in an increasingly digital education environment?

1.5 Approach to the research

I have chosen to adopt a sequential, mixed method research approach, which includes Q-methodology, for both groups of participants, followed by qualitative semi-structured interviews with the advanced teachers and a group discussion with the TED students (Watts and Stenner 2012). The use of Q-methodology emphasises the importance of positionality to discover the complexities of viewpoints held by FE teachers through their self-reference subjectivity (Brown 1980a). The homogenous findings from the Q-study have provided the research with rich topics of discussion for the subsequent semi-structured interviews and group discussion (Willig and Stainton-Rogers 2013). Thus, each Q-sort provided a model of each participant’s first-person subjective viewpoint. Q-methodology is a methodology with its roots in psychological research

which has also added a deeper or different insight to this research (Willig and Stainton-Rogers 2013, p.378).

1.6 The digital technology terminology used

I realise there is a plethora of terms used in digital teaching and learning technologies, which can be confusing. The following terms are used throughout this thesis:

1.6.1 Online learning

The term online learning is used frequently in this thesis and means learning using the Internet. Jisc (2016) says that online learning offers opportunities for distance learning courses or a combination of Internet and face-to-face courses.

1.6.2 Blended learning

The term blended learning will be used throughout this thesis to refer to face-to-face learning with the teacher in the classroom, combined with online learning out of the classroom (Beckingham 2017).

1.6.3 Flipped learning

Flipped learning is a type of blended learning, sometimes called 'inverted classroom' (Lage, Platt and Treglia, 2000). Awidi and Paynter (2019, p.269) explain that flipped learning is a pedagogical model, *"in which a traditional learning environment and its activities are reformed, or at least rearranged. The usual lecture and follow-up learning activities may be reversed, with instructional lecture material delivered online prior to class time, and in-class time used for more active group learning tasks than those undertaken in a traditional lecture."*

Lage, Platt and Treglia (2000), Alvarez (2011) Khan (2011), Bergmann and Sams (2012) and Fulton (2012) suggest that flipping the classroom has transformed their teaching practice, '*we no longer stand in front of our students and talk at them for 30 to 60 minutes at a time...*' (Bergmann & Sams 2012, p. 19).

1.6.4 Online distance learning

The term online distance learning is used frequently in this thesis to mean students engaged in learning where the teacher and students are physically separated. Traditionally this has involved correspondence courses. Today these courses are often offered over the Internet where the learning opportunities are planned by an educational organisation (Anohina-Naumeca 2005).

1.7 Summary

In chapter 1, I have provided an overview and outlined the scope of this educational enquiry, explaining the reason, aim and intention behind the research; the chosen research approach for this enquiry is explained further in chapter 3. The terminology used throughout this thesis has been defined for the sake of clarity. My position within the research and the reflexivity of my own beliefs and assumptions are explored further in chapter 3 (section 3.4.1). The theoretical influences of Bourdieu (1984;1998) (habitus), Dewey (1938; 2011) Vygotsky (1978) and Vygotsky and Kozulin (2012) (pedagogy) have been highlighted as important in the research and they will be explored further in the following chapter.

Chapter 2:

2 Literature review

This chapter explores and reviews literature that covers educational change arising from digital teaching and learning technologies. It looks at how policy is changing the Post-16 Further Education (FE) landscape and how digital technologies are being integrated into that change. The focus is not the technology but the changes that affect teachers and pedagogic approaches.

This chapter goes on to consider how research is influencing digital teaching and learning frameworks and pedagogy. The theoretical influences in this literature review highlight the importance of teachers' predisposition and habitus for using digital technologies in their teaching.

2.1 Policy affecting this research

The Further Education (FE) and Post-16 Skills Sector has been going through transformational change as policy reforms influence how education is funded, what qualifications and standards are available and the implementation of efficiency initiatives such as the Area Review. Furthermore, the policy of austerity since 2010 has had a significant impact on the education landscape, adding financial pressure with very tight fiscal control in order to tackle the UK deficit. The Further and Higher Education Act of 1992 (HM Government 1992) means that colleges come under the direct control of government. As well as being regulated by the Department for Education (DfE), colleges are also subject to funding audits and quality of provision inspections (Ofsted 2015). Since 2010, the funding from government for colleges in England has been challenging. This is set against an ever increasing demand for change (AoC 2018; Jones 2018).

In 2016, the Department for Business, Innovation and Skills released the Post-16 Skills Plan (DfBIS 2016) which endorsed the Report of the Independent Panel for Technical Education (Sainsbury 2016). DfBIS (2016) readdresses the Government's reform ambition by accepting and implementing the recommendations of the Sainsbury (2016) report for technical education transformation. Written into the report is the suggestion to include mandatory digital skills development for all students, on all routes, studying a technical programme or an apprenticeship. Government policy recognises that the globally connected and technological world is changing many job roles and workplaces today as they become digital. This brings a significant challenge for colleges who will need to upskill teaching staff in their industry specialism, as well as in their professional development in digital teaching and learning technologies (Jisc 2018).

2.1.1 Background to Post-16 Further Education reforms

In 2011, critical strategic Post-16 education reform papers – New Challenges, New Chances (DfBIS 2011) and the Wolf Review of Vocational Education (Wolf 2011) – set out the forthcoming educational changes thought necessary by the then UK Conservative and Liberal Democrat Coalition Government 2010 to 2015. These two documents have underpinned successive policy reforms, and subsequently informed Sainsbury (2016), DfBIS (2016) and the overarching 'Building our Industrial Strategy' (HM Gov 2017).

DfBIS (2011) is a policy for adults, aged 19+, which emphasises the Government's ambition for a more flexible and responsive sector to meet the needs of employers, communities and the local economy. DfBIS (2011) aims to promote the greater freedom of an increasingly free market across all sectors

of education: schools, colleges and universities, with the key ideology of policy being autonomy with accountability. This is articulated in paragraph 29 of the Skills Funding Statement 2013 to 2016: *“As a provider you must recognise that you are operating in an open market which must allow for new entrants”* (DfBIS and SFA 2014, p.14). Further development in policy clearly illustrates that new entrants cover a plethora of providers including those offering distance and online provision (Reilly 2013; DfBIS 2014b; FELTAG 2014). These changes in education may be necessary for developing skills that are required to live and work effectively in a globally connected world and for students to be prepared for their workplace; this means teaching, learning and assessment may need to change, which may lead to considerable changes to the role of the teacher (Hallissy *et al.*, 2013).

Both Michael Gove, former Secretary of State for Education, and Matthew Hancock, former Minister of State for Skills and Enterprise, emphasised the role of digital technologies as an essential part of the future of education in the UK, and both have stressed that these will change teaching and the role of the teacher. The following extract is from Matthew Hancock’s 2014 BETT Show speech: *“Technology is changing the world around us and so it will change teaching. There’s a big culture change coming. By seizing the initiative, we can make sure it’s good for teachers and children”* (Hancock 2014).

Fullan (2014) believes this message is contradictory as the government policies introduced could be interpreted as striving for a more traditional industrial model of education. Robinson (2010b, 2013) and Fullan (2013) argue that the *‘industrial model’* of education, from primary through to post-16, is not

appropriate for the today's student. The industrial model of education meaning the education system set up for the industrial age 150 years ago, based on preparing students for work in factories or farming (Marquis 2011). The question of how we can change the education system and reassess pedagogic principles to meet the challenging needs of a forever changing technological world has been the focus of research over the past decade (Robinson 2010b; Beetham and Sharpe 2013; Fullan 2013; Hallissy et al., 2013). In a Times Education Supplement (TES) article Fullan (2014) criticises the Government's approach to education, suggesting that didactic teaching methods are failing to keep students and teachers engaged, highlighting that students are disengaged through boredom, as are many teachers who are leaving the profession. Fullan (2014) goes on to suggest better and innovative use of digital learning technologies as a part of the solution, such as gamification, 3D virtual reality and flipped learning.

In its qualification reform policy DfBIS (2014a) the Government emphasises the need for, where possible, reform to curriculum design and teaching and learning, using digital technologies (CAVTL 2013; Coralesce 2014; DfBIS 2014b; FELTAG 2014). Once again, policy appears confused, with the vocational qualification reforms signifying a focus on an academic, didactic teaching approach, rather than evolution into something innovative, collaborative and digitally engaging. I am not suggesting that reformed qualifications and engaging, digitally innovative lessons are mutually exclusive, but the prescriptive nature of the reforms could inhibit the teaching creativity, imagination and innovation necessary for student engagement (Robinson 2010a; Fullan 2014).

Selwyn (2014) goes further, questioning the Government's purpose in suggesting that its primary interest in digital technology lies in the potential to increase privatisation and the establishment of education markets; thereby further reducing public sector involvement. Selwyn (2014) identifies similarities with America, referring to the '*great American education-industrial complex*' (Picciano and Spring 2013 in Selwyn 2014, p.11). Arguably the risk here is that these same ideologies dehumanise and de-professionalise people in an education context, thereby diminishing the role of the teacher and the interpersonal relationship between student and teacher (Selwyn 2014).

As education continues to go through unparalleled changes to its funding, curricula, qualifications, professionalism, teaching and learning models, amid the search for an efficient future built upon business needs, it is easy to see how digital technology could be perceived as a standardised and low-cost efficient solution. It is for FE colleges to ensure that financial constraints and the effects of economic austerity do not mean that technology is used for mass, low quality, automated education that can be delivered cheaply on a large scale (Beetham 2015, pp. 264–279). Beetham (2015) argues that a false road would be to turn to technology as an economic solution that requires less qualified people, eroding education by dumbing down teaching, which will in turn dumb down learning. The speed and extent of change needed for Government's educational reforms, alongside pressure to do more for less, will inevitably push providers to use digital technology for economic efficiency rather than as a sensible, pedagogically grounded learning opportunity for students (Beetham and Sharpe 2013; Selwyn 2014). Fullan (2013, p.61) articulates these concerns with a suggestion that technology could be disruptive without a solid

pedagogical plan to go with it. The use of teaching and learning technologies should be designed to support the teacher and enhance the learning experience rather than replace the teacher, say Hargreaves and Fullan (2012). Fullan (2013, p.71) argues that bringing together an effective solution that includes pedagogy, technology and change knowledge will mean that technology will contribute more than its share in the end.

The challenge will be how to achieve efficiency whilst offering a high quality learning experience using technology, without high levels of student simply sampling courses or dropping out such as are seen with Massive Open Online Courses (MOOCs). Lewin (2013) says that millions of students around the world have enrolled on MOOC courses; most who enroll never start a single assignment and very few complete the course. This has prompted organisations to reflect on the importance of complementing online learning with mentors, teachers or facilitators, and creating synchronous and asynchronous collaborative learning opportunities advocated by the likes of Harasim (2000), Laurillard (2012), Beetham and Sharpe (2013), Salmon (2013), Savin-Baden (2015), Garrison (2015), Jisc (2018a) and ETF (2018b).

Salmon (2013, p.21) reminds us that it is a mistake to assume that students will dedicate time to poor quality online learning, or that they will be motivated by information, PowerPoints and videos alone. Similarly, the consumer-provider as opposed to student-teacher relationship is no more likely to bring an enhanced educational experience for those students (Selwyn 2014, p.60). Policy forces reform and the transformation of education, not only in curriculum innovation for skills but also in innovation for how students best acquire

understanding, knowledge and skills. It is therefore left to FE colleges to question our pedagogic design and approach, teaching, learning and assessment practices, the future role of the teacher, the student-teacher relationship and of course the role of digital learning technologies. Fullan (2013, p.68) argues that both teachers' and students' roles must integrate digital technology and pedagogy as this is the future of education.

2.2 Impact of the Further Education Learning Technology Action Group (FELTAG) Recommendation Report

The critical incident that became the catalyst and reason for this research was the release of the FELTAG Report (2014), at which time I felt a professional need to acquire a deeper understanding to what digital teaching and learning technologies would mean for the role of the teacher in a digital education future. Tripp (1993) suggests that progressively focusing to refine issues within a critical incident will help understanding and inform professional practice (Tripp 1993). After four years, FELTAG (2014) continues to be the focus for discussion of teaching and learning technologies in FE (Knight 2018).

Prior to 2011, the British Education Communications Technology Agency (Becta) was the national agency responsible for driving teaching and learning technologies in schools and colleges. From 2008 to 2010, Becta was responsible for producing and implementing the national strategy for digital learning technologies (DfES 2005), which was supported by ring-fenced funding. Research undertaken in Becta impact studies in 2011 showed that fewer than 30% of FE Colleges were using learning technologies effectively for teaching, learning and assessment, with little impact on improving learning (Becta 2011); this was despite millions of pounds of investment by

organisations such as Becta and the Learning and Skills Improvement Services (Harrison 2014). Becta was one of the first agencies in the UK that the Conservative and Liberal Democrat Coalition Government of 2010 to 2015 ceased to fund. This meant that between 2010 and 2013 there was a void in the strategic direction and funding of digital teaching and learning technologies in FE.

FELTAG was set up in January 2013 by the then Minister of State for Skills and Enterprise, Matthew Hancock, as an FE sector group to review and make recommendations for the use of digital technology in teaching, learning and assessment. FELTAG members recognised that technology is in constant change and therefore the FELTAG Report (FELTAG 2014) should be a living document open to revision and refinement over time. The report articulates how digital technologies can bring many benefits to education:

“Learning technology has the potential to support more peer-to-peer learning, emulating how adults learn once they are in work, and it can reach adults who are habitually unlikely to walk into a college or other building to learn, but for whom the digital domain provides enticing hooks.” (FELTAG, 2014, p.7)

Although most people will agree with the above expression highlighting the flexibility and benefits of digital learning technologies, the FELTAG Report had a strong focus on the funding framework. Funding recommendation number four mandated the inclusion of online learning in every learning programme, saying we must,

“Mandate the inclusion in every publicly-funded learning programme from 2015/16 of a 10% wholly-online component, with incentives to increase this to 50% by 2017/2018. This should apply to all programmes unless a good case is made for why this is not appropriate to a particular programme.” (FELTAG, 2014, p.23)

With the release of the FELTAG Report, many in FE colleges believed that the drive for economic benefits neglected pedagogic reasons for reform. At the time, FELTAG created confusion about what funding recommendation number four really meant, leaving many colleges questioning how we interpret online learning and what qualifies as online learning, synchronous, asynchronous, with or without a teacher, autonomous or facilitated. These unanswered questions and uncertainty surrounding digital teaching and learning technologies prompted my professional fieldwork within this domain.

Four years later, the FE Sector has not met the 50% target set out in recommendation number four, mainly because the target was unachievable without appropriate funding, digital teaching standards and continuing professional development (CPD). FELTAG (2014) underestimated the degree of cultural change an organisation needed to integrate quality digital teaching and learning technologies. The initiatives that were required to support FE colleges to meet the FELTAG recommendations are only just coming through in 2018 (Jisc 2018a; ETF 2018b).

2.2.1 Background research to FELTAG

The 39 FELTAG recommendations were influenced by the commissioned work of Ariel Research Services and Horizon Scan for the UK Government (Reilly 2013). Reilly explores the potential of different technologies for teaching and learning and evaluates them against the National Endowment for Science, Technology and the Arts (Nesta) learner-centred principles (Luckin *et al.*, 2012). Luckin *et al.* start by saying “*What is clear is that no technology has an impact on learning in its own right; rather, its impact depends upon the way in which it is used*” (2012, p.9). Eight learning themes are suggested and considered, with

Luckin *et al.* (2012) arguing that there are many examples of technology building on existing teaching approaches, but not being designed for innovative teaching and learning. Likewise, students are using a plethora of digital learning materials but the students' role is often passive. Luckin *et al.* (2012, p.16) emphasise the importance of the teacher or expert in guiding the student, suggesting, *"The role of the teacher in supporting the learner to convert information into knowledge should not be underestimated."*

Luckin *et al.* (2012, p.20) illustrate Vygotskian sociocultural theory by recognising that knowledge arises from social interaction and suggest technology can influence the way in which students learn with others through collaboration, saying *"Indeed, the role of teachers may be shifting away from managing a teacher–learner dynamic towards coordinating peer learning."* However, learning with others requires the teacher to manage a variety of technological tools and have the capacity to facilitate learning, when teaching through innovative digital technologies remains underused by teachers. (Luckin *et al.* 2012, p.20). Luckin *et al.* go on to discuss learning by making and demonstrate how students can construct, share, discuss, reflect and learn using digital technologies, bringing the idea of constructionism alive. Savin-Baden (2015, p.39) describes constructionism as happening when *"hidden or private phenomena, such as emotions, gain their meaning through social settings and practice, and therefore socially constructed."* She goes on to say that reality is constructed as individuals make and experience meaning together.

Luckin *et al.* (2012) suggest that research on 'blended learning', that is combining face-to-face with online learning, may be beneficial, giving an

example of flipped learning. However, the teachers' roles in preparing learners to use the available information effectively should not be underestimated, nor should the importance of the opportunity for student-teacher dialogue alongside the learning materials. FELTAG (2014) does acknowledge the capability and capacity of FE colleges and the requirement to prepare and develop teachers but neglects to realise an achievable timescale, underestimating the teacher as an expert and the teachers' role in preparing and supporting students online.

Luckin *et al.* (2012, p.53) present an Ecology of Resources Framework: environment, people, tools, and skills and knowledge, emphasising that *"Teachers have a crucial role in ensuring that promising innovations do not fail in practice."* This highlights that greater attention needs to be given to teacher training and the importance of creating innovative classrooms and institutions, not just episodes of learning in isolation (Luckin *et al.*, 2012, p.64). The research and teacher-led work based within the Nesta report (Luckin *et al.*, 2012), although relevant and underpinning FELTAG, is directed at the School Sector. Reilly (2013) on the other hand focuses on the vocational education and training (VET) sector. VET differs principally from compulsory education (schools) and post-compulsory higher education because it is specifically practice-based and is at its most effective when it has a direct line to work says the Commission on Adult Vocational Teaching and Learning (CAVTL 2013). FE colleges are generally more aligned with VET than the school sector. However, I believe what Luckin *et al.* (2012) have articulated is equally relevant to FE teachers.

2.3 Research and digital teaching and learning technologies in FE

Reilly (2013) explores prioritising technologies, teaching and learning technologies, information, advice and guidance, digital infrastructure and disruptive innovation, and the implications for policy. Reilly (2013, p.13) suggests that in recent years globalisation and technological change have been the major drivers in labour markets as digital innovations affect many of today's jobs and workplaces. Reilly acknowledges the unpredictability of technology adoption for the education sector, especially when considering the behaviours, systems and cultures that affect adoption. He goes on to highlight that colleges face difficult decisions in deploying the right digital learning technology solutions if scale economics, or emergent student behaviour, or, as Reilly describes them, 'superstar economies' reduce the scope for choice (Reilly 2013, p.15).

Our digital learning technology future is yet to be defined through a continuum of digital and social evolution, meaning that innovations in digital technologies and the way in which society interacts with technology will affect the technologies used for learning. Facer (2009; 2011) presents a conceptual framework that says the digital future is uncertain and very much dependent upon the political drivers and socio-technological behaviours of students, therefore multiple futures are possible. Facer (2011) argues that committing to one digital learning technology trajectory, for example iPads for every student, could be a mistake and this uncertainty brings challenges to both organisations and teachers alike. Facer (2011) talks about education futures not simply being future technologies, pointing to the ways in which social, economic and cultural drivers interact with digital technology. For example, ubiquitous mobile technology is integral to the personal, cultural and social lifestyles of individuals; interacting with such technologies is woven into all times and places of students' lives,

“Not one of these technologies was intended for educational use and they continually challenge educationalists to develop educationally sound applications” (Traxler 2010, p.4).

Savin-Baden (2015, p.15) explains that digital tethering may bring meaningful and effective learning opportunities for students, but it is as yet unclear how these new practices might improve learning and whether this makes learning more or less effective, or simply different from current practices (Savin-Baden 2015, p.45). Digital tethering is defined as *“the constant interaction and engagement with digital technology, the sense of being ‘always on’, ‘always engaged’”* (Savin-Baden 2015, p.1).

Facer suggests that understanding possible education futures requires far more complex consideration of wider social, educational, work and personal lives (Facer 2009, p.19). It is certain that digital learning technologies have a significant role to play in the future of education; the question is how we define the future of these technologies (Facer, 2009) and the capabilities of the teacher in a digital education environment (Jisc 2018a; ETF 2018b). Fullan (2013, p.69) warns that failing to act by proactively developing teachers’ digital capabilities would leave teachers and students at the mercy of the dominant technologies. In 2018, four years after the FELTAG recommendations, both Jisc (2018a) and ETF (2018b) released guidance for FE teachers. Jisc offered a digital capability assessment tool for teachers (Jisc 2018a), and the ETF released the Digital Teaching Professional Framework (DTPF), a competency framework for using digital teaching and learning technologies for FE teachers (ETF 2018b, p.2). The DTPF is mapped to the European Framework for Digital Competence of Educators: DigCompEdu (Redecker and Punie 2017), ETF

professional standards (ETF 2014) and the Jisc Digital Capabilities Framework (Jisc 2018a). ETF (2018b) and Jisc (2018a) are discussed further in the findings of this research in chapter 4.

Reilly (2013, p.9) discusses disruptive innovations and suggests that the greatest disruption to FE may be structural reform that differentiates a college from other providers, saying, "*The key to adapting to disruptive innovation, then, may be to have the right people*". Reilly acknowledges that FE college campuses have the advantage of providing multi-sensory learning and spaces for teaching and learning and although technology has an important future role it is "*unlikely to replace the richness of reality*" (Reilly 2013, p.9). It is, however, essential for FE colleges to adapt and reform for competitiveness and external scale economies.

Some research challenges our education system on the grounds that it is rooted in an industrial model that was designed successfully, for the past (Hallissy *et al.*, 2013; Robinson 2011, 2013; Fullan 2013) but is not suitable for today's education and skills demands. Hallissy *et al.* (2013) argue that we must appreciate the complexity of understanding acquired by students who have grown up in a globally connected and technological world, balanced with the characteristics that may need to be developed for today's teachers. The characteristics described by Hallissy *et al.* (2013) are the attributes of teaching rather than something new and specifically required for teaching with technology. Hallissy *et al.* (2013, p.37) describe these characteristics, as defined by McGinn (2007 in Hallissy *et al.* 2013), as being knowledgeable in how students learn, being reflective, adopting collaborative and flexible approaches, developing productive relationships with students and practicing differentiated instruction. The

challenge is how teachers apply these characteristics and know they are effective in a digital environment, rather than seeing them as new characteristics.

There is much evidence to support the argument that developing a culture of integrated digital learning technologies and the transformation of our teaching and learning approaches is far more complex than FELTAG (2014) has given credit. FELTAG's 39 recommendations feel too punitive and authoritarian in their language, 'doing to' colleges rather than 'working with' them. FELTAG's funding recommendation number four (2014, p.23) can be interpreted as contradicting the preceding and underpinning research. This is based on its false assumption that introducing wholly online components totalling 10% of the FE offer by 2015/16 and 50% by 2017/18, will allow FE colleges enough time to manage cultural transformation for both teachers and students, all of this to be achieved against a background of austerity. Nevertheless, it is clear that the FELTAG recommendations have effectively nudged the FE sector and leaders to take technology more seriously and develop strategies based on the six FELTAG themes of learners, employers, capability and capacity of providers, investment, regulation and funding (Jisc 2018a, ETF 2018b).

2.3.1 Policy aimed at preparing teachers for a digital education future.

In 2014 the Government acknowledged the need to raise standards in digital literacy, digital education training and professional development for teachers and leaders in FE by releasing the Further Education Workforce Strategy (DfBIS 2014b) and commissioning the Education and Training Foundation (ETF) strategic consultation (ETF 2014). A number of initiatives, such as the ETF Learning Futures action research projects and the Blended Learning MOOC, has closely followed these; the Coralesce Edtech-assess Self-

Assessment Tool and the Further Education Trust for Leadership (FETL) funded research projects. Hitherto these initiatives have not offered a clear digital teaching standards framework for colleges or individuals. In 2018, both the ETF and Jisc produced a number of digital teaching and learning frameworks; Jisc (2018a) being a staff capabilities framework while ETF (2018b) is a digital teaching standards framework. Both are too recently released to demonstrate an impact so far.

Teachers are the enablers for transformation to take effect; without their commitment we have no transformation, evolution or revolution into future effective digital learning. It is therefore critical to acknowledge the importance of teacher training and development in digital pedagogic design. If teachers are to fully appreciate and exploit the benefits of learning technologies (CAVTL 2013; FELTAG 2014), we, as leaders, need to be aware that the pace of change is particularly challenging, with teachers feeling under pressure to keep up with technology (McDonald and Cullen 2009). This awareness should be balanced against the enthusiasm for opportunity or, as Hargreaves and Fullan (2012) describe, a dawn of digital education that is well supported through continuing professional development. Hargreaves and Fullan (2012, p.144) highlight the importance of a professional and collaborative teaching community where staff enquire into and reflect on their practice, share experiences and learn how to improve. They warn that teaching and learning communities should not be data or test score communities but spaces for innovation, sharing and the chance to develop professional capital.

2.3.2 The role of the teacher and initial teacher education (ITE)

Luckin *et al.* (2012, p.64) highlight that greater attention needs to be given to teacher training if we are going to take advantage of the opportunity to improve the digital teaching and learning technology experience. Hallissy *et al.* (2013, p.37) suggest teachers as learners are at the heart of teaching and learning in the 21st century; these are professionals who are constantly learning new skills and knowledge which they apply in their teaching. Hallissy *et al.* (2013, p.37) go on to describe a paradigm shift from the well-worn industrial model of education to an enquiry model, whereby the role of the teacher is that of a co-learner and facilitator working alongside the student. The students move from being passive recipients of knowledge to being active in constructing knowledge with their peers (Vygotsky 1978). This concept is advocated by the likes of Cramp and Lamond (2015) with digitally mediated learning DML, and Savin-Baden (2015, p.68) who imply a pedagogy of interaction using learning approaches based on social constructivism, learning collaboratively with others. Cramp and Lamond (2015) stress the importance of a pedagogic approach to digital learning influenced by Vygotskian sociocultural theory and suggest the principles of DML. DML incorporates fundamental Vygotskian principles of human interaction within a shared environment which invites students to participate in the co-construction of knowledge (Haenen, Schrijnemakers and Stufkens 2003). I will discuss Vygotsky (1978) and Dewey (1938; 2011) in more detail later in this literature review. The role of the teacher changes to that of a facilitator or mediator (Cramp and Lamond 2015) in the proposed enquiry model to co-constructing knowledge and understanding alongside students. Traxler (2012, p.1) suggests that improving organisational

digital literacy will transform the role of the teacher to include learning with students and even learning from students. Hallissy *et al.* (2013) recognise that teachers need support when introducing changes into their teaching and criticise the investment made in the teaching profession in the UK, compared to countries such as Finland and Singapore.

Following FELTAG (2014) the ETF commissioned research, undertaken by Taylerson (2014), into strategies to improve the quality of ITE in an evolving culture of digital technology. The conclusions and recommendations of the ETF research suggest that there are challenges for digital skills development, particularly given the diversity of student teachers' digital skills on entry to ITE. The research also identifies a lack of robust diagnostic systems for digital literacy, resulting in a lack of differentiated support for ITE students. The FE and HE Sectors are only just addressing this with the release of the Jisc capability self-assessment tool (Jisc 2018a). Taylerson (2014, p.47), highlights that the ITE curriculum is not fit for purpose with respect to teaching and learning technologies. Whilst FELTAG (2014) makes recommendations to support teachers' digital literacy, Taylerson (2014) shows that new teachers are not being encouraged to learn digital learning technologies and associated teaching and learning skills at a critical and opportune time when they are starting out on their teaching careers. This in turn, because of the ITE experiences and culture, may develop a collective habitus where shared perspectives spread across the entire group of ITE students (Bourdieu and Passeron 1990). When put in the context of the UK Digital Strategy (2017) the approach to ITE may be poorly preparing new teachers for today and certainly for an increasingly digital future.

2.3.3 The UK's national position on digital

The Department for Culture, Media and Sport (DfCMS) released the UK Digital Strategy in March 2017, identifying that due to the rapid pace of change in digital technologies, it is essential for people to continually develop their digital skills throughout their lifetime (DfCMS 2017). This strategy followed the Digital Economy Unit (DEU), in partnership with the DfBIS, commissioned study into digital skills for the UK economy (ECORYS 2016). The ECORYS report has a broad scope including digital skills demand, barriers, labour market, skill shortages or mismatches, education and training routes. The conclusions and recommendations reinforce the point that the UK workforce needs to strengthen its digital skill-base. This is so the economy can adapt to new market opportunities. The recommendations from the ECORYS report are particularly relevant to FE colleges with their barriers and market failures, with bullet point seven saying,

“The digital skills of staff across the education and training system is [sic] uneven, and often it is not mandatory for staff to ‘upskill’ digitally. A learner’s digital education will depend on the digital competencies and skills of those teaching them, as well as awareness and adaptability of education institutions to changes in technology.” (ECORYS 2016, p.77)

One recommendation is to ensure the uptake of digital skills through embedding them into qualification frameworks and vocational and higher education curricula, thereby supporting the UK's digital skills development (ECORYS 2016, p.78). The ECORYS Report was followed in July 2016 by the Post-16 Skills Plan (DfBIS 2016), and then by the introduction of the technical level (T-Level) qualification reforms from 2020 (DfE 2018) and current changes to the

apprenticeship standards. All of which require teachers or assessors to be confident in their digital skills.

T-Level qualifications are a new two-year, Level 3 technical study programme that will be one of three major options for a student entering Level 3; these options will be an apprenticeship, A-Level or the T-Level route. The T-Level route will include a mixture of practical skills and knowledge specific to the student's chosen occupation, 45 days work placement in their chosen industry, core English, maths and digital skills and transferable workplace skills (DfE 2018). The College is one of the 52 providers selected to deliver T-Level qualifications from 2020 (ESFA 2018). As we prepare for the technical qualifications in various forms, whether apprenticeship standards or T-Levels, the DfE has commissioned the ETF to carry out a training needs analysis with providers (ETF 2018c). ETF (2018c) shows that 68% of colleges have sought to enhance, with only 27% of individuals, staff development opportunities for digital teaching and learning technologies (ETF 2018c, p.37). The ETF report goes on to suggest that only 4% of individuals undertaking digital training thought the training was 'of most value' (ETF 2018c, p.69). This is despite the report saying that digital skills, along with maths and English, and leadership and management, are the key areas for development for all FE colleges.

2.3.4 A global perspective

Redecker and Punie (2017), Antoninis and Montoya (2018) and UNESCO (2011) suggest that the role of the teacher is changing on a global scale due to the introduction of digital learning technologies. In 2011 the United Nations Educational, Scientific and Cultural Organization (UNESCO) updated its 2008

ICT Competency Framework for Teachers (UNESCO 2011). Its ambition is to help countries to develop the potential for the transforming impact of digital technologies on national education systems. The framework for teachers starts with an understanding that countries around the world face urgent challenges due to rapid developments in digital technologies. This requires investment and a clear vision for the role of the teacher in harnessing digital learning technologies in and beyond the classroom. UNESCO (2011, p.3) emphasises that it is not enough to simply develop the teachers' digital technology competencies. It highlights the importance for teachers of developing the skills to help students become collaborative and creative learners, who are able to solve problems and acquire the skills to be effective members of the workforce.

UNESCO (2011) suggests a framework that is arranged with three different approaches to teaching: Technology Literacy, Knowledge Deepening and Knowledge Creation. The three approaches differentiate the competencies and the role of the teacher:

- Technology Literacy includes didactic teaching methods and resource based learning.
- Knowledge Deepening means teaching becomes student-centred where the teachers' role is to structure tasks and guide students' understanding.
- Knowledge Creation is when the role of the teacher is to overtly model knowledge creation processes and structure situations in which students create and apply skills. *"Teachers build a community in which students are continuously engaged in developing their own and each other's learning skills"* (UNESCO 2011, p.13).

In 2013, the Partnership for 21st Century Skills (P21, 2013) clearly articulated that to live and thrive as global citizens in a digital world, whether as student or teacher, the communication, collaboration and learning skills required are different to those taught in the 20th Century. Likewise, critical thinking, problem solving and creativity are skills that should be encouraged for use in today's teaching. Crucial to our consideration as FE colleges, is how we prepare students with the digital competencies for their chosen careers, making them agile enough to develop transferable skills in an ever-changing environment and to live in a digital world safely (Redecker and Punie 2017; Antoninis and Montoya 2018; ETF 2018b, Jisc 2018a).

2.4 Understanding the role of the teacher and the student experience in a digital education environment.

To conceptualise the future role of the teacher and how the teachers' role, and the teacher-student relationship may change when using digital technologies requires an understanding of relevant pedagogy, specifically that desirable for online teaching and learning. Fullan (2013, p.75) emphasises the need to focus on "*creating learning experiences that are irresistibly engaging.*"

As highlighted in the work by Luckin *et al.*, 2012 cited in section 2.2.1, the teacher is responsible for planning and designing the learning environment to optimise learning, whether in a traditional classroom or an online learning space. As far back as Dewey (1938) and more recently Salmon (2013), Laurillard (2013), Garrison (2015), and Beetham and Sharpe (2013), it has been acknowledged that the students' learning experience depends to some degree on teacher designed learning opportunities. Therefore, the role of the teacher in planning and preparation throughout and following

the learning opportunity is essential. Dewey (1938, p.71) suggests that it is teachers' responsibility to make sure that students are guided sufficiently to take advantage of the learning opportunity and not simply left alone, hence it is important that the teacher does not withdraw entirely. I am not suggesting that students do not learn independently or informally most of the time. They do, but the teachers' role is crucial for many students in FE and therefore a teacher led model such as flipped learning works well (Lage, Platt and Treglia 2000; Alvarez 2011; Khan 2011; Bergmann and Sams 2012; Fulton 2012) . There are indications that students do not learn as well if they are left alone (Fullan 2013, p.68).

This has been evident with the introduction of online MOOCs, where often there is no teacher present, resulting in many criticising this model of online learning. Garrison (2015, pp.38–39) suggests that making the student as self-directed as possible has resulted in an extremely high dropout rate on MOOC courses. This has been associated with the lack of connection and teacher presence, thus the argument that course materials can replace the teacher is not supported by evidence. Sharples *et. al.*, 2013 in Savin-Baden (2015, p.42) argue,

“Pedagogies that could benefit such learners are missing from much of the first wave of massive courses. These pedagogies include materials designed to provide an integrated learning experience, feedback that is customised to learners' needs, and direct mentoring of learners in difficulties.”

This research explores the teachers' position and their view on how the teacher-student relationship might be affected because of digital learning technologies. Hattie and Yates (2014) highlight the body of research that suggests developing a positive teacher-student relationship has significant and lasting benefits for a student; this

makes me curious as to whether digital online blended or distance learning will improve or impair the relationship and experience.

Hattie and Yates (2014) recognise the opportunities for learning through using digital technologies but argue the importance of a positive teacher-student relationship experience, saying a good experience will result in a positive relationship and a supportive and positive relationship will promote a good experience. Hattie and Yates (2014, p.30) go on to emphasise the quality and trust established within the teacher-student relationship, highlighting how critical teacher support is when students are struggling with complex ideas. Cramp and Lamond (2015, p.16) highlight the significance of trust building alongside effective scaffolding and support from tutors, emphasising the concept of digitally mediated learning and kindness to encourage a positive relationship for learning. Mediated learning is underpinned by Vygotskian sociocultural theory, which proposes that knowledge is not just constructed but is co-constructed through collaborative learning (Cramp and Lamond 2015). Vygotsky's theory views individuals as emotional, rational, historical and cultural beings who learn through the interaction with others (Wink and Putney 2002, p.31). Vygotsky and Kozulin (2012, p.28) suggest that learning is accomplished through language flowing between individuals as they socially construct and re-construct meaning. Cramp and Lamond (2015, p.4) suggest this process invites students to participate in a shared problem space where they negotiate and co-construct knowledge. Vygotsky and Kozulin (2012) remind us that learning is fundamentally a social process and therefore it is important for teachers to consider the social interaction and collaborative learning opportunities for the students' online learning experience.

Hattie and Yates (2014, p.199) argue that digital evolution trumps revolution as the principles for how people learn have not changed. Laurillard (2012) who highlights that despite the radical changes in technology, what it takes to learn is unchanging, arguing that embracing digital technologies is part of the solution, supports this. In 1938, Dewey talked about the transformation of culture required to shift teaching practices from the well-worn path of the old traditional education to a more progressive form of education. The principles Dewey identified have similarities and relevance today with our adoption of digital technologies for education. Dewey (1938, p.30) explains *“to discover what is really simple and act upon the discovery or newly found point-of-view is an exceedingly difficult task”* when previous custom and practice are established and ingrained. It is easier to walk an established path than to change. Simply rejecting the philosophy and practices of traditional education brings about new types of difficult educational problems, new problems that have to be worked through based on a new philosophy of experience (Dewey 1938, p.25); in modern times that is the digital learning experience. A sizeable body of research advocates a redesigning of education to meet the challenges of the digital age, a globally connected world and the digitally tethered student in an increasingly digital economy (Beetham and Sharpe 2013; Garrison 2015; Harasim 2000; Laurillard 2012; Salmon 2013; Hallissy *et al.*, 2013; Savin-Baden 2015).

Dewey (1938) says that changes in teaching and learning practices can be slow and arduous, and the danger is that they may develop negatively rather than positively and constructively. Dewey goes on to insist that education will result in what he calls mis-education, if the principles of a carefully developed philosophy of experience are not applied. Dewey (1938) also suggests that a coherent experience offering positive direction to the selection of appropriate educational methods is necessary, as a

present experience is connected to the future with every experience living on in future experiences (Dewey 1938, p.27).

I interpret and apply Dewey's comments in two ways. First, as mentioned above, is the change and transformation of the teachers' role, their learning, thinking, reflection and adoption through their experiences of online technologies. This requires professional development for teachers along with their exposure and participation in high quality online learning. Second is the students' quality of online learning experiences. I believe this to be a significant consideration, for example when designing for online collaborative learning, "*[t]he belief that all genuine education comes about through experience does not mean that all experiences are genuinely or equally educative*" (Dewey 1938, p.22).

Dewey (1938, p.38) emphasises the importance of the experience continuum, whereby the original experience leads purposefully and as a prerequisite to the following experience, which must be meaningful and allow the student to progress naturally onto the next stage of their learning. This requires teachers to get to know their students, be aware of their capabilities, needs and past experiences and have foresight about the consequences and purposes – the end-view or student outcome. Hattie and Yates (2014, p.30) say the quality and trust established within the teacher-student relationship is critical to the student when they are struggling and need support to achieve. Designing learning intentions for the future (Savin-Baden 2015), supported by the materials that are in the current learning experience, which have come to exist on the basis of past experiences, provides the starting point for all further learning (Dewey 1938, pp.67–77).

Within the design of a learning experience Dewey (1938, p.72) explains the importance of the teacher's planning the contribution, reflection and collaboration of the group as a whole. Dewey's ideas for a philosophy of experience foster a learning situation that is historical, social, structured and dynamic, in line with Vygotskian theory and much of today's thinking in relation to collaborative, reflective, problem-based interactive online learning. This is supported by many frameworks and articulated in recent times by the likes of Beetham and Sharpe (2013), Garrison (2015), Jisc (2018a; 2018b), ETF (2018b), Laurillard (2012), Salmon (2013), Hallissy *et al.* (2013), Cramp and Lamond (2015) and Savin-Baden (2015).

Dewey (1938, p.33) is clear that teachers should have an understanding of what he terms continuity of experience, in this case the digital learning experience, having the knowledge and judgement to discriminate between digital experiences that are worthwhile and those that are not, so as not to disengage the student or limit their later capacity for growth through future experiences. An example of Dewey's concept of a mis-education experience might be that, just because students use digital technologies, this does not mean that they are learning. Packard (2013, p.117) refers to this as the "*learning efficiency ratio*" of online learning design. Packard (2013) suggests that a student spending two hours playing an online interactive game to learn something that could be acquired in ten minutes through another learning method is not an efficient use of technology and is therefore mis-education (Dewey 1938). This is echoed by other research such as Laurillard (2012), which stresses that simply because students use technology, it does not mean they are learning. Garrison (2015, p.31) warns that we should not be chasing technological fads or be seduced by the latest must-have social media that may not be educationally worthwhile. The

challenge here is understanding learning technologies that are enhancing the digital learning experience for students and not hindering it.

Packard (2013) echoes the sentiment of Dewey's theory of a continuum of experience when he describes his horizontal and vertical articulation of the design and delivery of the curricula content. For example, the students' prior learning and level must be understood and the learning opportunity responsive and flexible to meet each individual student's skill and knowledge needs. This articulation and mapping is imperative to progress students onto the next stage of their learning and understanding, otherwise gaps in knowledge will occur, creating gaps in achievement (Packard 2013, p.143). What Packard is describing here is Vygotsky's zone of proximal development (ZPD) whereby students solve problems beyond their actual developmental level but importantly within their level of potential development under the guidance of the teacher or in collaboration with peers. Vygotsky and Kozulin (2012, p.198) argue that ZPD is a range of tasks that are too difficult for an individual to achieve without the right assistance from the teacher or peers at the right time. Vygotsky and Kozulin (2012, p.199) suggest creating learning opportunities that the teacher and students can together engage in constructing knowledge. An example would be to give students a problem-based learning activity that challenges students individually but together they are able to solve the problem. Teachers should consider the upper threshold of students' ability and lead the student to what they cannot yet do (Vygotsky and Kozulin 2012, p.200), "*[I]n education it is far more important to teach how to think than to communicate various bits of knowledge*" (Vygotsky 1978, p.175). Packard (2013) has applied Vygotskian ZPD theory into the creation of online alternative education for the K12 curriculum.

Wink and Putney (2002, p.16) interpret Vygotsky's theory as a transformative approach where students acquire new knowledge while engaging with other students in a continuous constructing and re-constructing of collective knowledge, which is meaningful in their lives. Wink and Putney (2002, p.13) argue Vygotsky fits into what is perceived as new models of critical pedagogy and transformative education. In this view the role of teacher changes where teachers are learners and learners are teachers. Savin-Baden (2015, pp.24–28) reminds us that focusing on designing the learning experience pre-defined by teachers, rather than on what and how students learn, might be missing an opportunity in the digital age. Savin-Baden (2015) suggests that digitally tethered lives provide opportunities through a pedagogy of imagination, allowing students to explore their own perspectives, and through working and learning with their peers the perspectives of others.

Savin-Baden (2015, p.15) identifies people as being digitally tethered, meaning that we are all living in a digitally connected world which is a complex societal issue. She emphasises that most people are digitally connected and constantly in touch, "*always on, always engaged,*" through the devices they carry and wear.

Vygotsky (1978) and Dewey (1938) recognise the importance of the teacher understanding the previous learning experience, acquired knowledge, and skills of the student as the starting point for designing learning opportunities. It is by understanding the student's level of development that the student's ZPD can be established. The teacher will best engage the student by presenting work that is challenging but not overwhelming. For distance learning models, the challenge for the teacher is how they receive timely feedback on whether the online student experience is too easy, boring or too challenging.

More recently Garrison (2015) has applied Dewey's concept of enquiry, with its fusion of individual reflection, collaboration and community discourse, and the Vygotskian social constructivist approach to a concept of learning in a Community of Inquiry (CoI). Garrison (2015, p.54) recognises that teachers have the potential to take advantage of the digitally connected world to provide meaningful educational experiences through well designed collaborative, critical and creative interaction. Garrison (2015, p.25) argues that simply using digital technologies with students is not enough, emphasising that pedagogic principles must be applied to engage students' thinking on a deeper level. He suggests that CoI is a process for learning that supports thinking and learning collaboratively, with digital technologies providing the opportunity for the teacher to create the condition for discourse and creative integration of ideas, thereby enriching the students' collaborative learning experience. Garrison (2015) warns that without thoughtful and appropriate use of pedagogic principles, technology can create an environment for mindless interaction if used superficially, citing the growth of social media in encouraging people *"to live within a set of assumptions and beliefs without challenge"* (Garrison 2015, p.27). Garrison (2015, p.69) is clear that the CoI is not a learning theory but uses established learning theories consistent with collaborative and constructivist educational approaches to provide a conceptual structure for a collaborative educational experience.

Laurillard (2012, p.210) suggests a pedagogy based upon a constructivist, conversational framework to support teachers in transforming their teaching through teaching and learning technologies, a framework that goes beyond the asynchronous, resources-based model of e-learning to more social learning through action, practice, adaptation and reflection. Laurillard (2012, p.178) suggests that a teacher will provide guidance for an online activity, for example a simulated environment, but warns that

too much instruction will not challenge the student to reflect and interpret their next actions.

Fullan (2013, p.67) stresses the work of Hattie saying teachers must evaluate and understand the impact of their teaching on students' learning and achievement, with learning, not teaching being the measure. Drawing on the work of Hattie and Yates (2014), the role of the teacher often moves from being that of an expert resource, teacher or facilitator to being a personalised relationship that involves managing aspirations as well as learning needs. Dewey (1938, p.79) highlights the complexities of students' experience, suggesting that a teacher's responsibility is to respond to the problems arising out of the students' present experience, ensuring that it is within the students' capacity, whilst arousing an active quest for information and new ideas; thus the new ideas become the ground for the students' further experiences.

2.4.1 Learning technology frameworks and learning paradigms

There are many teaching and learning technology pedagogical frameworks suggesting how to give structure or essential components that engage, motivate and enable students to learn online; this is the domain of much research. Salmons (2013) five stage model of teaching and learning online, Garrison (2015) Col, Cramp and Lamond (2015) DML, and Laurillard (2012) conversational framework are all examples of research. They all echo a common belief that an online experience is more engaging and interactive if the individual student has the opportunity to collaborate, interact with others through shared enquiry, and socially construct knowledge (Vygotsky 1978; Vygotsky and Kozulin 2012). This also requires critical reflection as an iterative learning process (Laurillard 2012; Salmon 2013; Garrison 2015; Cramp and

Lamond 2015; Savin-Baden 2015). More recently, the European Framework for Digital Competence of Educators (Redecker and Punie 2017), the Jisc (2018a) digital capability assessment tool for teachers, and the ETF (2018b) Digital Teaching Professional Framework (DTPF) have been released to support colleges and individual teachers. All the frameworks are based on a set of digital teaching and learning competencies that include: information and data literacy, communication and collaboration, content creation, safety and problem solving. The ETF (2018b) claims to have brought together the three underpinning frameworks into the DTPF.

Laurillard (2012), along with Agostinho *et al.* and Oliver *et al.* (both in Beetham and Sharpe, 2013), recognises the necessity of giving teachers the right tools to plan their pedagogic patterns for learning, helping them to develop and use digital technologies more effectively. Laurillard (2012) offers system tools to design teachers' lessons; Laurillard describes this as the teachers' power tool, seeing teaching as a design science. This approach in some way attempts to support and help teachers implement digital learning technologies into their teaching but appears too mechanistic. Teachers will need to have developed an understanding of what is possible when using digital technologies for teaching and learning before they can be in a position to design digitally enhanced lessons. This teacher development may now be supported by the DTPF (ETF 2018b). I propose that the challenge is to inspire teachers to shift their understanding, not only for digital teaching and learning technologies and how students learn online, but also towards a deeper knowledge of the teachers' role and how their practice and interaction affects the students' whole experience, including their digital experience.

Savin-Baden (2015) suggests that digital tethering is changing the nature of social interaction; it is a complex social issue that needs greater understanding, because it offers different approaches to learning. Savin-Baden (2015, p.17) suggests that technologies can be both useful and disruptive and that to date the emphasis has been on what is being used rather than what is being learned. Savin-Baden (2015) advocates that learning occurs within situations defined by the learner and often in collaboration with their peers, with the teacher being someone for the students to lean on and someone from whom students can learn curiosity. She identifies that although this is the role of a teacher in the digital age, many teachers are not using digital technologies in their teaching and learning practice. Recognising the importance of the teaching and learning context Savin-Baden (2015, p.47) says the *“learning context transcends institutions and it is seen as mobile and liquid and perhaps should be replaced with the term ‘learning habitus’.”* This concept of a learning habitus for students and likewise a teaching habitus for teachers can be useful in investigating the impact of the individual’s experiences and background of education (English and Bolton 2016). As such, I recognise the value of exploring the skills, values, beliefs, habits and knowledge that are located within the culture and agency of both teachers and students in fully understanding the future adoptions of digital learning technologies and the teacher-student experience.

2.5 Culture, capital and habitus for digital teaching and learning

Reading Hargreaves and Fullan (2012) and Savin-Baden (2015) has prompted me to think about teachers’ experience of digital technologies and the changes that may occur in teachers’ habitus. Bourdieu (1984, p.168) defines the habitus as a structuring subjective element of practice, and the field as an objective structure within which

these subjective dispositions are actualised and reproduced. Habitus and field structures are homologous, they represent objective and subjective realisation of the same underlying logic of the social world (Grenfell 2014, p56).

English and Bolton (2016) describe Bourdieu's view of habitus as being an unconscious cultural disposition, comprising economic, social, cultural and symbolic capital. This adds another dimension to my discussion, and although this research is not looking at teachers' identity, teachers' predisposition is important to their position and viewpoint. Grenfell (2014, p.56) suggests that habitus works as an explanatory tool between the field and habitus as both are relational structures. It is the relationship between these structures that provides the key for understanding practice.

Bourdieu (1998) argues that habitus is not a destiny, rather a gradual, unconscious shift or change but he emphasises that it rarely results in fundamental shifts in a person's disposition. Bourdieu (1984, p166) says "*The habitus is internalised and converted into a disposition that generates meaningful practices and meaning-giving perceptions.*" Collective habitus can also be at play, "*where similarities in history and mutual experience form similar habitus for the same groups with shared interests and values*" (English and Bolton 2016, p.31). Furthermore, "*from shared common experiences and beliefs the group will tend to behave collectively or respond to situations similarly*" (English and Bolton 2016, p.32). This gave me a reason to question the ITE programme and the shared experiences of digital teaching and learning technologies in the ITE field or social space. Bourdieu (1998) defines fields as networks or spaces, professional or otherwise, that impose values, beliefs, and rules through the interaction of habitus and field. Bourdieu (1984, p.225) suggests that because of the unconscious relationship between the structure of the field and

structuring habitus there is a predisposed undifferentiated culture that acts as an instrument of domination. Drawing on Bourdieu's work, it is easy to appreciate how the ITE experience can be used to exemplify how ITE students might acquire a set of values, beliefs and dispositions of digital teaching and learning technologies that become shared and constructed perceptions. These constructed perceptions may develop positively or negatively depending upon experience, and those perceptions will most likely transfer into the teachers' teaching and learning practices in the future.

Likewise, students' early experiences within family, school and social groups will construct their habitus, which will remain with them and influence how they value and think about digital technologies both in their lives and for learning. Bourdieu (1984) emphasises these are underlying generative principles that are the durable dispositions which are historically linked to an individual's history. Grenfell (2014, p.58) suggests that individuals gravitate towards social fields that best match their habitus disposition and they avoid social context where there will be possible field-habitus clash.

There are views regarding those students born from the mid-1990s to mid-2000s, in the digital age, and referred to as generation Z. This generation has grown up with the Internet and is generally comfortable with technology and social media. However, contentiously, the likes of Prensky (2001; 2012), Rosen (2010) and Tapscott (1998) refer to generation Z students as 'digital native,' 'lgeneration' or the 'net-generation' respectively. All of these phrases make significant assumptions that all people born from the mid-1990s to mid-2000s are skilful at using digital technologies but for some this could not be further from the truth. White and Le Cornu (2011) argue that Prensky's (2001) dichotomy of digital native and digital immigrant, connecting digital

competencies and age, is misguided. White and Le Cornu (2011) suggest that an individual may be a resident in social media in private life but take a visitor's approach in a professional role. Likewise, an individual may be a resident in one online application, but a visitor in a different online application. White and Le Cornu challenge Prensky by suggesting that the visitor-resident metaphor is more appropriate, as this is understood as a continuum rather than putting people into one of two boxes as implied by Prensky (2001).

I have included the digital native statement in the research, even though I believe it to be contentious and misrepresentative of young students. I accept that we are all living in an increasingly digital age but I do not accept that digital skills are the preserve of the young. I have the view that we are all digitally tethered, regardless of age, but it is how well we skilfully interact with technology that determines our digital use. This is changing the nature of social interaction and is or will inevitably affect learning and students' expectations for their learning experiences. Savin-Baden (2015, p.15) says, *"Digital media in the 21st Century is a component of society which underpins everything from education to entertainment."*

Savin-Baden (2015) supports the importance of digital skills as a key skill, which should be included in every discipline and profession. She also acknowledges that most teachers are not currently fully skilled to optimise the benefits of digital learning technologies with their students. Perhaps at this point, because we are exploring habitus, how skilfully we use digital technology would be better described as the individual's digital capital. Bourdieu's (1998) work includes the idea of capital, with capital being whatever is valued by a field or group within a field, for example education is a form of cultural capital but also influences economic capital. The level of digital

skills an individual teacher acquires in their discipline and profession comprises that individual's digital capital within their habitus.

Social and professional capital as an individual's non-material accomplishment is a well-established concept, for example Hargreaves and Fullan (2012) explore professional capital, which they propose is made up of human, social and decisional capital. Bourdieu's (1998) idea of social fields with incorporated structures of the habitus includes the concept of economic, social, cultural and symbolic capital. Bourdieu highlights a situation whereby technical competence, for example digital, is necessary for participation within a social field. Without acquiring or understanding the rules, competencies and values that make up the capital that is valued by the field or social group, in my case the digital capital within the FE teaching and learning field, the individual can potentially be excluded from that field. A person's practice results from relations between their habitus and their position within the field; the field they are active within is equally important to the habitus (Bourdieu 1984). A person's disposition happens in a non-mechanical way and is an unconscious transfer of situation and experiences. Likewise, a collective habitus can develop with dispositions spread across a group of individuals (English and Bolton 2016, p.44).

Bourdieu and Passeron (1990, p.179) focus on the political and sociological aspects of education systems and how they reproduce social injustices, highlighting that the historical specification of an education system produces a disposition or habitus. This becomes significant when it is inseparably linked with maintaining the power of those in whose favour the disposition or habitus operates.

Bourdieu's work is a way of reflecting on the role of the teacher in a digital education environment, the teacher-student relationship and the learning opportunities

presented through digital teaching and learning technologies. It is also a way of reflecting on the researcher/researched relationship and how our experiences affect the insider/outsider position. This is addressed in more detail in the research methodology chapter of this thesis.

2.6 Summary

This chapter has explored and reviewed literature associated with digital teaching and learning technologies and considered the impact of policy on the FE Sector, identifying challenges at institutional, leadership and teacher levels. It has explored the different positions posed by research and literature in this domain and identified a body of research that suggests that the digital and globally connected world, requires us to reconsider our approach to education. Many advocate reassessing pedagogy to incorporate increased teacher-student and peer-to-peer co-learning and co-construction of knowledge through collaboration, problem solving, creative and critical thinking. This presents colleges with the challenge of defining the approaches to digital teaching and learning for the future that best ensure an efficient and high quality learning experience. The theoretical influences in this literature review have highlighted the importance of teachers' predisposition and habitus for using digital technologies in their teaching.

From this literature my educational research enquiry aims to discover how FE teachers see their role changing in the future to exploit digital teaching and learning opportunities in an increasingly digital education environment.

Chapter 3:

3 Research methodology and design

This chapter explores my research methodology and design, and how my positioning as a researcher has been influenced by philosophical worldviews and personal experiences. Alternative research approaches are considered and the reasons for my choice of research methodology and design are explained. This chapter goes on to give a thick description of how I have conducted this research and of my ethical considerations.

This research aims to contribute new understanding to the question; *how do FE teachers see their role changing in the future to exploit digital teaching and learning opportunities in an increasingly digital education environment?* Within this central overarching question are several research questions:

1. *How do FE teachers position themselves on how their professional practice will change in the future, because of digital teaching and learning technologies?*
2. *What is the FE teachers' position on how digital technologies affect the teacher and student relationship?*
3. *How confident do FE teachers feel about using digital teaching and learning technologies in their teaching?*

The research questions have been designed to discover the positions and digital confidence of FE teachers facing a digital education future, which through this research, I have qualitatively interpreted. The questions identify FE teachers as a culture-sharing group and digital teaching and learning technologies as the concept; this approach to the formation of research questions is demonstrated by Creswell (2014, p.142). This research is a Q-methodology study with a central overarching

question and three associated sub-questions. The research questions are open; they contain the words 'what' and 'how,' which conveys an open and emerging design for discovery of the participants' perceptions and viewpoints (Creswell 2014, p.140). The research questions include open-ended verbs such as 'feel' and 'position', which are suitable for a qualitative design (Creswell 2014, p.142). I have chosen Q-methodology, which is a methodology that includes a Q-sort activity, where the Q-sort activity is a process of participants arranging cards on a grid. The following sections explain my conceptual framework and philosophical position.

3.1 Research approach

I wanted the ability to interact with a research method that allowed me to have a deeper insight into the individual subjective view of teachers' positions, when considering digital teaching and learning and what it meant for the teachers' role, digital confidence and impact on practice. I have chosen Q-methodology, which is considered to be a qualiquantological approach (Stenner and Stainton-Rogers, 2004) for this research. Stenner and Stainton-Rogers (2004) coined the term 'qualiquantology' as the philosophical underpinnings of Q-methodology are both qualitative and quantitative (Ramlo and Newman, 2011). Q-methodology allows a mix of both qualitative and quantitative design that can be flexibly adapted to consider the position of the researcher. To add richness to my interpretation I have used a mixed method approach by undertaking qualitative post-Q semi-structured interviews with the advanced teachers and a group discussion with the TED students. Finally, I have chosen to examine my own beliefs and assumptions through self-reflection and critical reflexivity (Lynch 2000 In Bryman 2016, p. 388).

3.2 Positioning myself as a researcher

Through the research questions I am seeking understanding of the position and viewpoints of FE teachers with regards to their experiences and constructed reality of using digital teaching and learning technologies and to how they feel their practice will change because of digital technologies in the future. As a researcher, I am interested in understanding the lived experiences of the participants and making sense of their historical, social and cultural perspectives. This has led me to hold constructivism combined with interpretivism as guiding philosophies for this research (Creswell 2014, p.8). This means I am reliant upon interaction with the participants and their world views. I recognise that my own experiences, culture and habitus have shaped my interpretation and constructed reality within this research (Gadamer 1975; Bourdieu 1998). Lincoln and Guba (1985, p.84) remind us that *“in this ontological position a number of constructions might be made”* and hence there are multiple realities, depending upon the different perspectives and interpretations.

The interpretivist research paradigm is concerned with the social world. For the interpretivist researcher, reality exists as people perceive and construct it; the researcher is a part of the research world, and although this may be similar, reality may be viewed differently. Bassey (1999, p.43) says, *“Concepts of reality can vary from one person to another. Instead of reality being ‘out there’, it is the observers who are ‘out there’.”*

With an overarching interpretivist philosophy, as my reading progressed I questioned my ontological perspective. Bryman (2016, p.30) suggests that constructivism *“...invites the researcher to consider ways in which social reality is an ongoing accomplishment of social actors rather than something external to them.”* Bryman goes on to suggest that cultures are in a constant state of construction and

reconstruction, or a state of revision. I realise that my own understanding of the social world is in a state of reconstruction and evolves with my experience. My ontological belief is that reality comes about through constructivism.

Savin-Baden and Tombs (2017, p.18) explain constructivism philosophy as, *“reality and knowledge reside in the minds of individuals. Knowledge may be uncovered by unpacking individual experiences.”* I have attempted to do this by interpreting and describing the perceptions, viewpoints and digital confidence of teachers facing a digital education future. My epistemology is firmly within the interpretivist paradigm; this is because I believe that, to advance knowledge, I need to observe, interpret and describe the phenomena through shared and constructed meaning. Consequently, to understand the perceptions and viewpoints of teachers, thereby answering the research questions, an interpretivist approach was the most suitable.

For this research, it is by discovering the perceptions and constructed realities that exist in the minds of my participants through their individual interaction with the Q-sort activity, combined with analysis of the advanced teachers’ interviews and TED students’ group discussion that I am to answer the research questions. Willig and Stainton-Rogers (2013, p.378) suggest that Q-sorts can reveal and define the nuances between interpretive structures. With the structures themselves interpreted as culture and historical artefacts Q-methodology can be seen as compatible with constructivism. Ramlo and Newman (2011, p.178) explain that when participants are arranging the Q-sort statements *“they are constructing a representation of their view.”* There is no right or wrong way to sort the statements and therefore the results reflect the participants’ own views and meanings.

Ramlo and Newman (2011, p.186) argue that Q-methodology is inherently mixed method research, being a unique hybrid of both qualitative and quantitative methods. Positivist and interpretivist paradigms are often seen as quantitative and qualitative research approaches respectively. Creswell (2014) argues that a mixed method approach provides a more complete understanding than either approach alone. Mixed method research combines the use of qualitative and quantitative data and therefore breaks down the assumption of either / or. For the purpose of this research I have chosen to use a mixed method approach to explore the subjective dimensions of the research questions, where different viewpoints can be expressed.

Teddlie and Tashakkori (2009 In Cohen, Manion and Morrison 2011, p.25) suggest different designs for a mixed methods approach, such as parallel mixed design and conversion mixed. For this research I am adopting a sequential mixed design. This is where quali-quantological and qualitative methods run one after the other. This is so that the Q-sort findings can inform the discussion in the subsequent semi-structured interviews with the advanced teachers and the TED students' group discussion.

3.2.1 Considering alternative philosophical worldviews

For this research I have considered my position as a researcher and explored alternative philosophical paradigms. Kuhn (1970, p.180) used paradigm to describe a cluster of beliefs that dictates what is to be studied, how the research should be done and how results should be interpreted, sometimes described as philosophical worldviews (Creswell 2014, p.5).

Many believe that different paradigms must be inconsistent with each other (Bryman 2016, p.637), with the differences between paradigms and the interpretation of the paradigms being long debated; this debate has often been

referred to as the 'paradigm wars' (Bryman 2016, p.657). In social science research these research philosophies are described by Lincoln and Guba (1985) as scientific and naturalistic, where they identify three eras of the paradigm being prepositivist, positivist and postpositivist (Lincoln and Guba 1985, pp.18–33). Bassey (1999, p.42) suggests that researchers work within different research paradigms depending on their beliefs about the nature of reality; he uses the terms positivist and interpretivist paradigm to describe the two dominant beliefs. Bassey's influential work nearly 20 years ago defines paradigms as *"a network of coherent ideas about the nature of the world and the function of research which, adhered to by a group of researchers, conditions the patterns of their thinking and underpins their research actions."* Bassey (1999) describes the positivist paradigm as objective, validating knowledge through scientific methods in the form of measurements, testability, empirical evidence and applying reason. Cohen, Manion and Morrison (2011) explore criticisms of positivism and say that when knowledge is equated only with scientific knowledge this neglects hermeneutic, social, aesthetic, creative and other forms of knowledge, reducing human behaviour to a scientific process. Gadamer (1975) suggests that human sciences cannot be simply reduced to a set of scientific criteria as suggested by scientific methods (positivism). He believed the philosophical approach used for the natural sciences was too narrow and not sufficient for human and social sciences.

Likewise, interpretivist research has been subject to critique, with the questioning of how interpretivist researchers can justify their findings as everyone interprets differently. Grey (2017) suggests that when studying organisations, interpretivist findings are not always useful in supporting

decision making; he says interpretation can be reinterpreted differently. Grey (2017, p.131) also argues that positivists' approaches are too focused on facts, which is a problem because facts do not speak for themselves; they too require interpreting. Therefore, Grey (2017) concludes that none of the approaches in isolation provides comprehensive understanding. However, a mix of paradigms can complement the strengths and weaknesses of each, thereby providing a greater insight and understanding.

More recently, with the growth in popularity of mixed methods research, the paradigm debate has given way to pragmatism (Bryman 2016, p.657), rejecting the 'either / or' approach. Tashakkori and Teddlie (1998, in Armitage 2007) adopt the terms positivist and constructivist, replacing the philosophy of postpositivism with constructivism, associated with the constructed nature of social reality (Tashakkori and Teddlie 1998, in Armitage 2007). Ramlo and Newman (2011) suggest that mixed method philosophy acknowledges that multiple kinds of knowledge can exist and as such, mixed methods represent a more holistic approach in social science research. They argue, "*William Stephenson repeatedly stated that Q-methodology allowed for the objective study of subjectivity*" (Ramlo and Newman 2011, p.174).

Grey (2017, p.14) highlights how any organisational practice is always a result of theory and he emphasises the importance of words, beliefs and values in constructing organisational culture and practice. I believe that to inform organisational vision and strategy for digital teaching and learning technologies it is important to understand the organisation's digital culture and individuals' viewpoints through mixed method educational research.

3.2.2 Considering different approaches and deciding on the research design.

Through the experience of my annual progress reviews (APRs), supervisory meetings, EdD workshops and further reading, I reflected on what I really wanted to achieve from this research, and the most appropriate methodology. At that time, I had attended a Q-methodology workshop at the University and was starting to read about Q-methodology, which was a research approach that I knew nothing about. As I started to learn about Q-methodology as a qualiquantological approach, conducting this research through the lens of operant subjectivity started to resonate with me, and it seemed to offer a natural position for the research. Fundamental to Q-methodology is the concept of 'operant subjectivity,' as Watts (2011, p.44) defines it: *"The identification of people's viewpoints with operant or pure behaviour,"* with subjectivity being the activity understood relative to the environment that constitutes a person's viewpoint. Brown (1996) argues that Q-methodology offers the research an interactive and operant means of engaging participants in their self-reference subjectivity, from which viewpoints and positions are discovered. For this research this covers participants' perspectives and viewpoints of their role in a digital education environment.

As a senior leader, I have previously taken an action research approach for engaging participants in change management, to bring about collaborative practical changes. My research proposition is based upon a strong belief in including practitioners in change through collaboration and consultation, which in turn has informed my leadership decisions. For my current research questions, I recognise the limitation of action research as a process-driven,

practical approach, as articulated by Carr and Kemmis (1986, p.108) “...*since education is a practical enterprise these problems are always practical problems which, unlike theoretical problems cannot be resolved by discovery of new knowledge, but only by adopting some cause of action.*” I believe action research is too process-driven to fully reveal the practitioners’ perceptions and viewpoints, thereby capturing the complexities of the practitioners’ position. Action research requires the researcher to stop, evaluate and then act. Brown and Jones (2001) argue that such an approach “*has the potential to lead not to the unlocking of complexity but to the elucidation of rigid preconceptions.*” I decided, for this research, to move away from what I considered to be my research ‘comfort zone’ because I did not believe action research could provide the dimension or depth of insight I was seeking from the research questions. This research focus is to understand the position of viewpoints held by the participating teachers with regards to digital teaching and learning technologies.

After reflection and a lengthy evaluation of an array of research approaches for the research questions, I chose Q-methodology followed by post-Q semi-structured interviews as I believed a mixed method approach would reveal the perceptions and viewpoints of teachers answering the research questions. This is because, through my research journey, I have used various research designs, methodologies and methods, and although the research methods used revealed interesting findings, I was aware of the existence of political technologies (Dreyfus and Rabinow 1982) as highlighted in section 3.4 page 62. As an interpretivist researcher my previous experience has made me realise that interviews only gather information that the participants are prepared

to give. As far back as Goffman (1959) there has been an understanding that we all perform according to the expectations of our social structures and although this performance may be sincere in the given environment, it may or may not represent the true position of the people involved. Goffman (1959) describes this as front region (frontstage) and back region (backstage) interaction. I have observed and experienced frontstage interaction with participants in the past and therefore reflected on what that meant and how it affects this research now. With Q-methodology there is no right or wrong way to sort the statements and therefore it is the participant's own view and meaning that is constructed (Ramlo and Newman 2011).

Willig and Stainton-Rogers (2013, p.232) explain that Q-methodology is concerned with the subjectivity of the first-person perspective. Willig and Stainton-Rogers (2013, p.221) identify that the aim of a Q-study “...*is not to estimate theme or issue, it is to identify, holistically, the various positions that participants adopt in relation to it.*” The research questions provide the themes, and I believe my chosen research methodology discovers the positions of the participants in relation to those themes. Q-methodology is important to this research because my aim was to facilitate but not directly influence the subjectivity of the participants, allowing the participants to self-reflect on the psychological significance of each individual statement compared to other statements.

3.3 My background

Positioning myself in a constructivist, interpretivist philosophical stance I recognise that my background and historical experiences will shape my interpretation. It is

therefore important to understand my own experiences and influences (Creswell 2014; Gadamer 1975) and habitus (Bourdieu 1998).

3.3.1 My personal experience as a researcher

My personal research experience has spanned over fifteen years and started when I studied computer science at university, completing a Masters by Research (MRes) in Human Computer Interaction (HCI) in 2003. The conventional epistemology for gaining understanding and knowledge was firmly within a deductive, positivist/empiricist paradigm. However, it was not appropriate for positivist assumptions to be applied to the less predictable and more complex human behaviours and social constructs of my e-learning research. Conducting my research through a positivist paradigm felt too methodical and narrow, and I thought I was missing the most important consideration: human actions and social meaning. I acknowledge that positivism may be a research paradigm appropriate for natural sciences and the logical science of computer systems but I recognise that it could not necessarily lead to the understanding of human sciences (Scott and Usher, 1996 p.18) such as my strand of computer science, HCI.

Reflecting on my approach to the MRes research, I believe an interpretivist paradigm would have provided greater insight into human interaction through interpretation within the context of the participants' social world, in this case e-learning. I was an inexperienced researcher, I had not challenged whether the positivist research paradigm deployed was appropriate.

When studying a Post-graduate Diploma (PGDip) in Management in 2007, I carried out participatory action research to produce a framework for staff

training and development. Learning from my previous research experience, I positioned myself in the interpretivist research paradigm to understand the relationship and interaction between social meaning, actions and the practitioners.

My previous research, MRes in Computer Science and then my PGDip in Management has influenced a change in my research position from positivist to interpretivist. Nevertheless, I recognise that I need to understand my position within the interpretivist paradigm, the different views of interpretation and how I interpret. My research experience has highlighted the importance for me of discovering the viewpoints of research participants through a socially constructed and shared understanding. Reflecting on the PGDip research, my understanding of interpretivist research was limited to a participatory action research approach. At that time I had not considered the extent and complexities of interpretivist research or my philosophical positioning.

3.3.2 My research experience in my professional role

In leading technological innovation and change for several years in my professional role as a senior leader, I have been strongly influenced by participatory action research (Grundy 1987; Reason and Bradbury 2008) and I have deployed the critical approach as denoted by Carr and Kemmis (1986) and Grundy (1987). Participatory action research as a cyclical process of planning, acting, observing and reflecting as suggested by Carr and Kemmis (1986, p.165), has underpinned much of my professional leadership. Being structured, methodical and translating theory into practice, resonates with my software engineering background and its practical approach of concept

(theory), feasibility (consider), design (planning), implementation (acting) evaluation (reflection).

3.4 Developing as a researcher through my Education Doctorate (EdD) journey.

Since starting my EdD and reading research philosophy in more depth, I have found myself being drawn towards hermeneutics. Hermeneutics is the art of interpretation and goes back to the times of ancient Greek philosophy, Aristotle (*peri hermeneias*) or on interpretation. As I started to read more about interpretation I became more reflective about my own position and the complexities of interpretation. In more recent times the resurgence of hermeneutical philosophy has been presented in a variety of forms (Heidegger 1962; Ricoeur 1973; Gadamer 1975). Heidegger, through his work 'Being and Time,' brought together the notion of universal hermeneutics and the hermeneutics circle. Heidegger argued that bracketing is impossible, as one cannot stand outside the pre-understandings and historicity of one's experience. He believed that we are in the 'thick of life' and therefore to understand it we have to look at life from within our existence in time, as we are essentially temporal beings.

Gadamer (1975) was influenced by Heidegger and suggested that people have a '*historically effected consciousness*' and are shaped by cultural experiences. Thus, interpreting is a fusion of horizons where the researcher finds that what is being interpreted resonates with their own background of presuppositions, beliefs, values and practice. Gadamer calls this 'tradition', Figure 1. I believe all researchers have their own values, beliefs, and world realities, as suggested by Bassey (1999). Likewise, all texts, events and experiences researched will have come about through their own individual or collective histories (Gadamer 1975). I would argue that it is

important for the researcher to consider historically effected consciousness as a reflective learning process, as articulated by Gadamer, otherwise how do we understand where we are or how we got here.

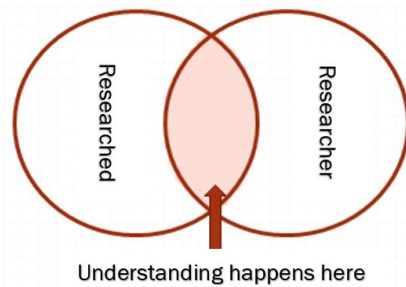


Figure 1: Gadamer's 'tradition.' Understanding happens with the fusion of horizons.

Habermas (1987) who concurs with Gadamer on the importance of hermeneutics in serving the *practical* interest, challenges the limitation of tradition. He questions whether Gadamer is underestimating ideological operations of power in terms of not being reflective or critical enough, as this might lead to historical distortions. Habermas (1987) suggests that we cannot be sure that the understandings we arrive at are distortion free. This is further supported by Grundy (1987) who suggests that interpretation alone could result in participants deceiving themselves, even when coercion or manipulation is not consciously enforced.

Habermas (1987) proposes the idea of 'knowledge-constitutive interests'. Because everyone is socially located and knowledge is socially constructed, any knowledge produced will be influenced by social interests related to a 'technical', 'practical' or 'emancipatory' interest:

"information that expands our power of technical control; interpretations that make possible the orientation of action within common traditions; and analyses that free consciousness from dependence on hypostatized powers."

Habermas (1987, p.313).

Habermas (1987) deals with the question of, if knowledge is grounded in social structures, whose knowledge is best, using four validity claims: intelligible or meaningful, true, justified and sincere. Habermas argues that rational and critical discourse achieves truth. Therefore, truth is an agreement where evidence has been considered and discussed; nothing other than logical and reasoned dialogue is involved in reaching a consensus. Habermas calls this 'ideal speech situation.' Carr and Kemmis (1986, p.142) explain ideal speech as a democratic form of public discussion which allows the un-coerced flow of ideas and arguments, where the participants are free from threat of dominance, manipulation or control. They question whether Habermas' ideal speech really represents free and open discussion. I would add to that a question as to whether discussions are truly free from the influences of like-mindedness, as illustrated by Grundy (1987). To be critical there would need to be a degree of challenge from alternative viewpoints.

Reading the likes of Habermas (1987), Grundy (1987), Carr and Kemmis (1986) has made me consider my position as a researcher and also as a senior leader, and the operation of Foucault's political technologies (Dreyfus and Rabinow 1982). Foucault suggests power is multidirectional, "*Power is not a commodity, a position, a prize, or a plot; it is the operation of the political technologies throughout the social body*" (Dreyfus and Rabinow 1982, p.185).

The adoption and use of digital teaching and learning technologies within the organisation will depend on the organisational culture and teachers' viewpoints as to whether they want to change their teaching. The teachers are the change agents and the teaching community and relationship dynamics hold the power for change. For this research I also recognise my own professional position within the organisation

and how that affects relationship to the wider social body and culture. Habermas (1987) suggests that society is changed and strengthened by our ability to criticise and reason collectively about our society's traditions through open dialogue. He reminds us that society's traditions are not always in the best interest of individuals and therefore individuals need to be able to question, build consensus and bring about change collectively.

3.4.1 My reflexivity as an alonsider researcher

My professional position as a senior leader in the organisation gives a richness of insight and an understanding of culture and subcultures within the setting, albeit from my perspective. This has afforded me the opportunity, in my professional role, to engage practitioners in research. However, I am not directly involved with the participants' teaching community, which led me to reflect on my position as a researcher. It posed several questions about the equilibrium between the professional and research/researcher relationship, not least that of the insider/outsider researcher and how these positions affect the researcher, those researched and the research itself. Through my research experience, Annual Progress Reviews (APRs) and supervisory meetings, I have questioned how my perspective, interaction and positioning has affected the research and my current philosophical position.

Le Gallais (2008) describes how critical reflection in terms of reflexivity is essential to fully appreciate the insider/outsider researcher, reflexivity being the researcher's awareness of these different positions (for example, being an insider to the institution but outsider to the participants) during the research process (Crossley, Arthur and McNess, 2016). In my case, I no longer teach

and therefore stand outside the participants' current teaching community. However, my teaching background gives me an empathy or a closer perspective than someone who had never taught. I did receive respect from the participants for being a teacher but it was clear that I was an outsider to their current teaching community. Kerstetter (2012, p.3) suggests there is a *"space between where the researchers' identity, culture backgrounds, and relationships to research participants influence how they are positioned in their research."* Crossley, Arthur and McNess (2016, p.228) concur with Kerstetter, suggesting a continuum for the insider/outsider researcher whereby there are benefits of being an insider to the institution, such as tacit knowledge, an understanding or perspective of culture, and perhaps easier access to data. The danger for the insider researcher lies in the dual role of investigator and employee (More 1998, p.6 in Le Gallais 2008) and my involvement within the setting, which might impair my clear sightedness (Le Gallais 2008).

Reflexivity is important to my research because of my emotional commitment and my familiarity with the shared identity, values, culture and beliefs within the organisation. I realised that my assumptions are grounded in these shared experiences, values and beliefs, and therefore I need to question much of what I and others take for granted (Schutz, 1976, p.107 in Le Gallais 2008, p.147). My habitus also influences how I am positioned in my research, with influences from experiences, class, educational background, values and beliefs and through my own situated perspective. Bourdieu (1998, p. 81) argues that our previous experiences are a part of our habitus which structures our perception of the world and how we interact with that world.

Being aware of the advantages and disadvantages that my position brings, I have an acceptance of the fluidity of my research stance; the detached theoretical perspective of the outsider, the perspective of being a senior manager, and the engaged perspective of the insider (Le Gallais 2008). Le Gallais (2008, p.153) says that there needs to be *“an acceptance that there is a fluidity about the research stance which should be embraced for the richness of insights it offers,”* in terms of insider or outsider research. Crossley, Arthur and McNess (2016, pp.233–235) describe this as ‘alongsider’ research. Crossley, Arthur and McNess (2016) identify three phases to alongsider research, suggesting that individual or group identities can be multiple and therefore the alongsider perspective is the third space that pivots between insider and outsider, giving flexibility for the researcher’s position and therefore generating new insights. The three phases are neutral perspective, coming alongside and alongsider research. I believe using Q-methodology to inform the themes for the semi-structured interviews allowed me, as the researcher, to come alongside the participants and discuss openly. The Q-sort revealed information that the participants reflectively discussed, sometimes saying *“Gosh! yes I do believe that,”* giving me the impression the results were challenging their assumptions too.

My research journey has provided me with the opportunity to gain insight from coming alongside and co-constructing the research questions, Q-set statements and post Q-sort interviews and discussion. My intention has been to engage the participants to discover their positions, viewpoints and digital confidence, which I believe this research process has achieved. As such, I agree with Crossley, Arthur and McNess's (2016) proposition of the insider,

outsider and alongsider paradigm, and as such take an alongsider position in this study.

3.5 Background to Q-methodology

Q-methodology was originally developed by William Stephenson (1902–1989) in 1935 to provide a systematic study of subjectivity within qualitative aspects of human behaviour (Brown 1996). Stephenson (2014, p.52) explains that “*Q-methodology, does not apply to information in any objective sense – it applies to communication, defined as self-referent, commonplace, ostensible, everyday conversational opinion, with feelings and self-ever-present.*”

William Stephenson started his studies with Charles Spearman in 1926; Spearman pioneered work in psychology using mathematical methods for analysis of the human mind. Spearman had developed factor theory in which factors were used to explain the correlation between different mental tests (Spearman 1904 In Stephenson 1981, p.122). In 1914, Spearman replaced psychological theory with his Theory of Two Factors. Stephenson was concerned with the empirical, positivist deductive methods which dominated psychological research (Stephenson 1981, p.125). He wanted to develop a person-centred research methodology to study the mind and believed in the importance of subjectivity and operant conditions, being central to this new approach. Stephenson believed factor analysis through his Q-methodology analysed the person rather than the mental tests or traits. Stephenson argued, “*the compelling matter of self-reference as central to any study of mind. Putting these matters together, of scientific attitude, operantly and centrality of self, led to Q technique, and to Q methodology*” (Stephenson 1981, p.125).

However, many scientists who still preferred the positivist, deductive research paradigm rejected the idea that Q-technique was any different from Cyril Burt's version of R-technique factor analysis and did not accept Stephenson's ideas. Burt (1940, p.290) suggested *"it still seems true to say that, in general, except for minor differences of weighting, the non-general factors obtained by correlating persons are the same as those obtained by correlating tests or traits."* Cyril Burt was a Professor of Psychology at the University of London and worked alongside Stephenson, while he was writing 'The Factors of the Mind' (Burt, 1940). Burt (1940, p.xi) says of Stephenson,

"Nothing is more stimulating than the presence of an enthusiastic collaborator, eager to explore a new field of work, yet attacking it from an opposite angle instead of along identical lines."

Burt and Stephenson produced a joint paper in 1939 called Alternative views on correlation between persons (Burt and Stephenson 1939 in Stephenson 1981). Burt's version of R-technique was focused on the traits of a person through the method of logic and he believed Q-technique produced the same results and so had nothing additional to offer. Stephenson believed that because R-technique measured traits objectively, the subjectivity of the person was lost; he suggested that Burt was only interested in scientific measures, missing the essence of the person (Stephenson 1981). Stephenson believed Q-methodology was a change in paradigm with a focus on subjective communicability and self-reference through pure behaviour (McKeown and Thomas 2013, p.70). With Q focused on the person's self-reference and not the traits, *"In the Q-methodology approach to human behaviour, objectivity is random and accidental"* (Brown 1980b, p.322). Burt and other scientists taking their perspective from a positivist stance, had not fully appreciated what Stephenson's Q-technique had achieved and in doing so rejected Stephenson's ideas (Brown 1980b).

Schwartz (1978) describes the resistance and ignorance to Q-methodology he experienced when using it for his dissertation, highlighting that scientific researchers criticised Q as being impure and unscientific. Schwartz (1978, p.79) argues that Q-methodology models the subjective processes of an individual, which is actually its strength. This highlights the criticism that William Stephenson's Q-methodology has received over the years. Ramlo and Newman (2011) argue that Stephenson's thinking, introducing mixed method Q-methodology 75 years ago, was well ahead of his time, preceding the modern conception of mixed method research and constructivism.

Since starting this research, I have become a member of the Operant Subjectivity, which is the International Society for the Scientific Study of Subjectivity. Accessing these resources has given me guidance on how I design and conduct this research. It has also given me access to the different approaches to Q-methodology and how I position myself on the Q continuum. For some, such as McKeown and Thomas (2013), Q-methodology provides researchers with a systematic and rigorous quantitative, statistical procedure for the subjective elements of human science. For myself, from an interpretivist, constructivist position, I have felt more akin to the work of Brown (1996) and Watts and Stenner (2012) who undertake qualitative research in psychology, as well as Baltrinic, Jencius and Brown's (2016) research in education as opposed to the work of Stephenson himself. Stephenson's research, because of his scientific background, seems to me more mathematically and statistically based. Baltrinic, Jencius and Brown's (2016) research on understanding the perspectives of excellent teaching is a qualitative educational enquiry has influenced my approach to this research.

3.6 Research methodology, research management and the Q-methodology process.

I have used my ontological position to interpret perspectives that have shaped the knowledge generated in this research. I acknowledge that my interpretation is mine alone and that someone else could interpret the same viewpoints differently. Although, with Q-methodology, I am constrained by the structure of the factor arrays, any interpretation cannot stray too far without that being immediately obvious (Watts and Stenner 2012, p.163). The research is a snapshot of the perspective, viewpoint and position of the participant at that moment in time. Although the research activity can be reproduced, identical outcomes cannot be replicated. I therefore recognise that *“knowledge and evidence [generated] are contextual, situational and interactional”* (Mason 2002, p. 64 in Brown, 2013).

Q-methodology requires the researcher to conduct a number of stages as shown in Figure 2. Figure 2 is an illustration of the approach as influenced by Willig and Stainton-Rogers (2013, p.219), which I have chosen to adopt for this research because of its qualitative focus. These stages are interdependent since the card sorting technique, known as a Q-sort, cannot take place without first generating a set of statements, called a Q-set, and selecting suitable participants referred to, in Q, as the P-set. The Q-set statements used are stimuli to elicit participants' viewpoints. A distribution grid is the apparatus by which the statements placed are recorded. This

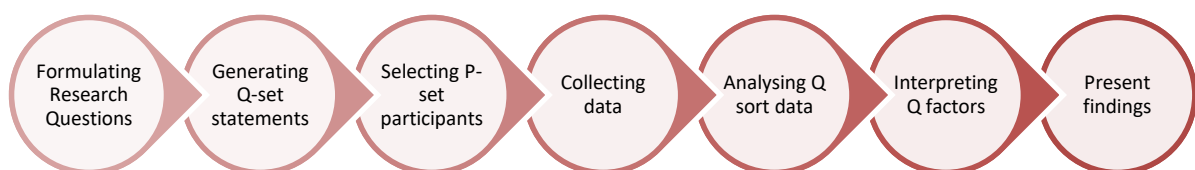


Figure 2: Q-methodology step-by-step process.

section shows how each of these stages have been conducted for this research.

3.6.1 My pilot study generating my Q-set statements

The research questions were formulated from the literature review preceding my EdD research pilot and based on my professional interest in the domain of digital teaching and learning technologies. My EdD research pilot was a qualitative educational enquiry, whereby I conducted interviews and focus group discussions. This was to explore teachers' responses to the FELTAG recommendations; I then interpreted their responses. Simons (2009) discusses the importance of field work in its *"...potential to engage participants in the research process...it recognises the importance of co-constructing perceived reality through the relationships and joint understanding we create in the field"* (Simons 2009, p.23). I consider my EdD research pilot as the fieldwork that led to my current educational research enquiry and the generation of the Q-set statements.

3.6.2 Generating my Q-set statements

My first task was to produce a suitable Q-set concourse of statements. Stephenson (2014, p.45) describes how the Q-set concourse is central to communication with the important principle that every idea has its concourse. Stephenson (2014, p.45) explains *"Communication (in our use of the term) is at the heart of creativeness, not information."*

For the creation of 42 statements I chose to utilise the findings of my EdD research pilot, as agreed with the participants, conducted with over 30 teaching staff across the organisation; this was designed to capture the voice of the teacher. I combined these findings with themes from my review of literature. This approach to the Q-set production gave an ideal opportunity to include

statements grounded in the expression of teachers. To ensure the statements were personal to the participants, I included statements that started with 'I', for example 'I think technology brings many opportunities for both the teacher and student,' as illustrated through the work of Ramlo and Newman (2011) and Brown (2013, p.85). These data have been the building blocks for this research, resulting in the Q-set statements (Appendix 1).

Brown (1980a, p.186) argues that the selection of statements for inclusion in a Q-concourse is highly important and remains more of an art than a science. The researcher needs to ensure that there are enough statements to cover the research topic and that they are appropriate to the requirements of the research questions, that statements are not confusing or offering multiple propositions and finally, that statements reflect a balance of opinions and not bias towards a particular viewpoint (Ramlo and Newman 2011).

I have used a structured process to organise the Q-set concourse, which has identified three themes linked to the three research questions and a balanced selection of statements that represent the research topic. Watts and Stenner (2012, p.59) acknowledge that a structured Q-set offers a means of ensuring a representative Q-set, saying "*...This is indeed a very effective means of ensuring a balanced and representative Q-set.*" I believe my research pilot over the years, has strengthened the robustness of the Q-set statements.

3.6.2.1 Seeking expert help for concourse statements' validity

Initially I was satisfied with a Q-set concourse of 60 statements, but after seeking advice from a Q-methodology expert at the University, I reviewed the initial Q-set concourse containing 60 statements and the

original frequency grid designed for 60 placements. Some statements were too similar and therefore I decided to discard or merge them. Several statements' phrasing included multiple propositions and required changes to make them clear and remove ambiguity or confusion; again I made the necessary changes. The final 42 statements (Appendix 1) were most appropriate for the Q-sort activity, were deemed representative of teachers' comments and were therefore mapped to my three research questions.

3.6.3 Participant selection – Person set (P-set)

Brown (1980a, p.194) suggests that the design of a P-set or set of persons, requires persons to have a viewpoint pertinent to the research questions. He goes on to say, *“As a general rule, the Q sort is administered to persons who, on a priori grounds, are expected to define a factor”* Brown (1980a, p.194).

When designing the P-set for this research I carefully chose two groups of participants, a group of advanced teachers and a group of teacher-education (TED) students (Table 1). The College has ten advanced teachers, eight of whom agreed to participate in this research. The advanced teachers were selected because my aim was to select participants who had a focus on teaching and learning and could thereby best represent the teaching community in responding to the research questions. This group of teachers do not carry out teaching and learning observations or managerial roles. It is important to mention that the advanced teachers in the group are not technology champions within the organisation. The College does have information learning technology (ILT) champions; however, I chose not to include these individuals in the

research, believing this would raise potential bias that could distort the findings, as the ILT champions are enthusiastic users of digital teaching and learning technology.

The second group of participants were eight TED students; this group was selected because they are new to the teaching profession, and I thought they might provide more nuanced perspectives to the research questions. Two of the participants were teachers who were not teaching at the College; these have an 'Ex' in their identification code (Table 2). All eight participants were included in the group discussion. The TED students are all involved in LR provision. Each participant's identity is coded for anonymity and confidentiality (see Table 2).

Number	Type of teacher	Gender	Type of provision
5 x	Advanced Teachers	Female	Learner Responsive (classroom)
1 x	Advanced Teacher	Female	Employer Responsive (work-based)
2 x	Advanced Teachers	Male	Learner Responsive (classroom)
4 x	Teacher Ed Students	Female	Learner Responsive (classroom)
4 x	Teacher Ed Students	Male	Learner Responsive (classroom)

Table 1: Research participants' demographic information

M/F = Male or Female	AT = Advanced Teacher	LR/ER = Provision	1-8 = Sort number
M/F = Male or Female	Ted = Teacher Education	Ex = External student	1-8 = Sort number

Table 2: Codes used for the advanced teachers and teacher education student participants

Example identification code for the advanced teacher:

FATLR1 = female, advanced teacher, learner responsive provision, Q-sort number 1

Example identification code for the teacher education student:

MTEDEx3 = male, teacher education student, external student, Q-sort number 3

Eight TED students participated in the research, completing their individual Q-sorts. One Q-sort had the same statement in two places and one Q-sort had statements placed outside of the distribution grid, which means I could not establish where the participants had intended to place these statements. Although Q researchers do sometimes accept statements placed outside of the grid, I chose not to include these Q-sorts due to inaccuracy and error, thus the TED student Q-study participants were reduced to six.

Initially I chose to carry out two Q-studies, one for each group, with identical Q-set activity. Watts and Stenner (2012, p.54) highlight the advantages of this approach; first, that I would be able to identify the viewpoint of both groups separately, avoiding the merging and potential loss of one group of participants' viewpoint. Second, I could explore each study independently or bring both together for a comparative study. From my initial findings I decided to carry out a joint study, bringing both groups together for an holistic overarching Q factor analysis, therefore using one Q-set with two sets of participants. I believed this worked well, with similar themes emerging from the joint approach to those observed from the two Q-sort approach.

3.6.4 The Q-sort procedure

The research was prepared and undertaken in accordance with the procedure demonstrated by Watts and Stenner (2012), and Willig and Stainton-Rogers (2013, p.219). The Q-sort was carried out from a subjective first-person (participant) viewpoint, whereby the sixteen participants placed a set of text statements on a prearranged 42 place quasi-normal distribution grid (Brown

1980a; 1996), placing the items that are most agreeable to the right and most disagreeable to the left. All items were placed on the distribution grid and therefore the participants were forced to decide the psychological significance of each item placed (Watts and Stenner 2012). Statements of high psychological significance to the participant, receive a higher ranking on the grid compared to statements of low psychological significance. The quasi-normal distributions grid is explained in section 3.6.4.1.

Stephenson (1939, p.346 in Willig and Stainton-Rogers 2013, p.218) emphasise that *“In this way a large and formerly heterogeneous set of items can be rendered ‘homogeneous with respect to...[a particular] individual’.”* Willig and Stainton-Rogers (2013, p.218) go on to explain that, once the participants’ Q-sorts have been rendered homogeneous, they can be compared with others.

There was a clear and concise condition of instruction; in Q-methodology this guides the participants to complete the sort. For example, place all the cards you agree with in one pile, those you disagree with in another and neutral judgements in a third pile. Then, read the statements again and place the cards on the distribution grid (McKeown and Thomas 2013). The phrasing of the question did not include multiple propositions and simply said, *‘How do you feel about your role in a digital education environment?’* Every effort was made not to lose the question precision when the condition of instruction was presented to the participants by using a prepared script (Appendix 2). Watts and Stenner (2012, p.56) suggest that the condition of instruction is written out and kept in front of the participants as they sort, because they should all be answering the

same question. I printed the question on the top of the distribution grid. Participants were not given a time restriction with the activity, with most taking approximately 50 minutes. Once completed, each person's Q-sort was recorded on the distribution grid providing a record of the participants' position.

3.6.4.1 The quasi-normal distribution grid

The quasi-normal distribution grid is the apparatus on which participants place the statements. The design of the distribution grid depends upon the options you wish to give the participants. A topic where participants are uninformed may require a steep distribution offering more neutral options (0). Whereas a more familiar topic would give fewer options for neutral, with a flat distribution allowing for stronger opinions of agree or disagree. Brown (1980a, p.200) articulates the differences between the scale range, steepness and flatness of the Q-sort distribution grid. For this research I have implemented an even distribution grid (Figure 3), with 34 places (81%) forced agree or disagree, and 8 places (19%) neutral. I have chosen this level of distribution because some of the participants will find this to be an unfamiliar discussion. I have chosen 2 and 4 places for columns -4,-3,+3 and +4 respectively to have a good proportion of 'strongly agree' and 'strongly disagree' positions.

How do you feel about your role in a digital education environment?

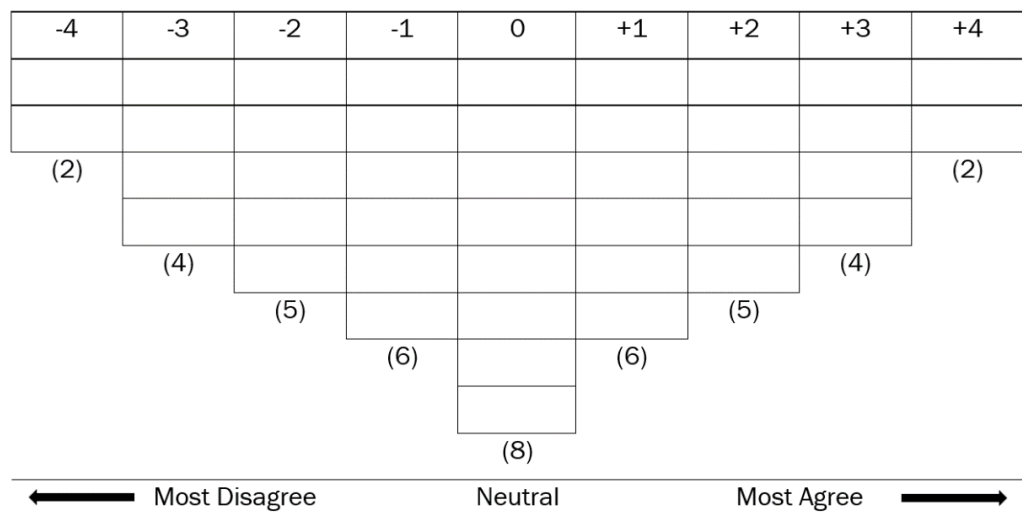


Figure 3: 42 item quasi-normal distribution grid with 42 ranking positions, 34 forced agree or disagree and 8 neutral places.

3.6.4.2 Analysing the Q-sorts using PQ Method

For each group, the Q-sorts were gathered and analysed using PQ Method software to establish patterns, inter-correlations and person-by-person similarities, thereby allowing a holistic comparison of respective Q-sorts. Factor analysis using the centroid analysis (Brown 1980a) was the preferred analysis method, selected within the software, with four extracted centroids (factors). Centroid analysis is the unrotated factor extraction process used by Stephenson’s Q-methodology researchers. PQMethod version 2.35 software gives the option of centroid extraction using the Brown method, which means that I could follow with the varimax rotation to generate the highest loading factors (Schmolck, 2014).

The results identified three factors with an eigenvalue greater than 1. A factor contains individuals with similar positions and viewpoints and an

eigenvalue of 1 is conventionally used as a measure of significance of a factor. However, Brown (1980a, p.40) urges caution when using such measures in isolation, and gives an example of a case when the eigenvalue and variance measure in a Q-study was meaningless because of the significance of the different participants. I considered this during my analysis and interpretation stages, as I wanted to give participants a voice.

3.6.5 Observations and field notes

To give greater depth and breadth to the research I observed the Q-sort activity as the participants individually sorted the statements. I audio recorded and made notes while the participants explored, rearranged and discussed freely (Cohen, Manion and Morrison 2011, p. 580). I hoped the reflection, deliberations and changes in the placement of items, alongside participants' interaction, would provide me as a researcher with a valuable insight and behavioural data. Unfortunately, during the Q-sort activity the participants sorted the statements in silence. I have discussed this as a limitation in section 6.2 of this thesis.

3.6.6 Post Q-sort semi-structured qualitative interviews and group

Discussion.

Following the initial thematic analysis of the participants' Q-sorts, I decided to use additional qualitative research methods within two weeks of the Q-sort activity. The methods used were Q-sort semi-structured interviews with the advanced teachers and a group discussion with the TED students, to provide greater insight and add richness of interpretation. For the semi-structured

interviews, I structured questions based on the individual Q-sort findings, which meant each interview followed overarching themes with individualised questions within those themes. Likewise, the TED student discussion group was structured to reflect the Q-sort findings. The semi-structured interviews helped to clarify any misconceptions or misunderstanding in my initial analysis. Brown (1980a, p.200) suggests that the Q-sort provides an ideal conversation piece for interviews and the interviews in turn provide the researcher with an opportunity to clarify the participants' feelings and test some of the assumptions presented in any given Q-sort. Watts and Stenner (2012, p.82) highlight that post Q-sort interviews can open the possibility of obtaining complementary qualitative data and wider understanding of the issue.

My initial Q-sort results were added to a spreadsheet (Appendix 3) to provide an overview of how the participants had sorted each statement. I chose to colour code, red (-), green (+) and white (neutral) the Q-sort statement placements, from which visual patterns were easily identified and questions emerged for participants' semi-structured interviews (Appendix 4). These semi-structured interviews included areas of strong agreement, disagreement and (or) neutral rating. Five practitioners from the advanced teachers agreed to participate in the interviews: FATLR2, FATLR4, FATLR5, FATLR6 and FATER8. I wanted to validate my Q-data and discover more information on the individual perspectives, as well as adding further understanding of the complexity of the research topic.

Savin-Baden and Tombs (2017, p.160) describe semi-structured interviews as being questions usually asked in the same order and always open-ended. They

allow the researcher to add extra questions in response to the interviewee. Savin-Baden and Tombs (2017) discuss research in the digital age and highlight the advantages and disadvantages of interview approaches in the digital space. They emphasise the importance of considering the effects on the dynamics of the interview, in the interview approach adopted. I initially considered video recording the interviews but, on reflection, I felt this would change the interview dynamics and believed audio recording would engender a more natural interaction. The interviewees agreed to be audio-recorded and for their recordings to be stored for the purpose of this research.

Five 45-minute interviews were undertaken with the advanced teacher participants. I framed the questions to address several emerging themes underpinning the research questions, such as changes in teaching and learning, interpersonal relations between teacher and students, and teacher digital confidence (Appendix 4). Other views also emerged, for example digital divides. The interviews gave the participants the opportunity to discuss and reflect on the Q-sort results and the emerging themes.

Interviews were difficult to arrange with the TED students due to students' availability and time constraints, so I decided to carry out a group discussion with the participants. Although I did not interview the TED students individually, I did take a prominent role during the group discussion by asking specific questions rather than leaving the discussion open.

All eight TED students attended and the session was audio recorded. Different questions from those used with the advanced teachers had emerged from my initial analysis of the Q-sorts and I wanted clarity about what had emerged from

the TED students' Q-sorts through a group discussion with them. Again, discussion themes emerged during the group discussion, such as social media being a distraction to students and the impact of digital divides.

To interpret the interviews and group discussion I listened and re-listened to the audio recordings which enabled me to produce a set of thematic concept maps (Appendix 5). The interpreted data from the qualitative methods have been included in the interpretation and findings chapters of this thesis. Simons (2009, p.136) says, "*Through listening and re-listening you can reconnect with the 'live' experience of the interview. Recalling social, emotional and behavioural cues helps capture more of the meaning than is evident in words alone.*" I found this technique useful as it helped me to produce thematic maps, which I could then compare and contrast with the Q-study findings.

3.7 Ethical considerations

The British Education Research Association (BERA 2011) guidelines offer educational researchers a set of principles, underpinned by an ethic of respect within which all educational research is conducted. These principles and rules give guidance for the research with respect to "*the person, knowledge, democratic values, the quality of education research and academic freedom*" (BERA 2011, p.4). The guidelines identify areas of responsibility: "*responsibility to participants, to the sponsor of research, to the community of educational researchers and to educational professionals, policy makers and the general public.*" (BERA 2011, p.5).

Throughout this research I have read and considered the BERA (2011) guidelines and applied appropriate safeguards to ensure respect for all participants; this has been at the forefront of my approach. When working with colleagues in the organisation I have

endeavoured to maintain high standards in my own professional integrity throughout the research process. For example, through briefings I informed and discussed the proposed research with both groups and explained their right to withdraw at any time. These briefings explained what the research was about, the proposed research activity, detailing Q-methodology and what they, as participants, could expect. Following the discussion eight out of ten from the advanced teacher group agreed to participate in the research, giving their informed consent. Eight from the TED student group also agreed to participate, giving their informed consent. All signed a consent form (Appendix 6).

Research that does not follow the principle specified in the BERA (2011) guidelines to the highest standard can damage the integrity and reputation of educational research. I understand that I have a responsibility to protect the community of educational researchers (BERA 2011, p.9), including the institution with which I have undertaken the research, in my case the University.

Cohen, Manion and Morrison (2011, p.84) suggest that regardless of the nature of their work, social researchers have a responsibility to their participants and must consider the effects of the research on the participants. Researchers should act in such a way as to ensure they preserve the participants' dignity as human beings. This research involves participants in ways that mean relationship, respect and professional trust are central to its success. The advanced teachers engaged in the research are employees of the organisation and as such, sensitivity around participants' exposure of their personal confidence and skills requires high levels of confidentiality as well as anonymity. Confidentiality means that, as a researcher, I must ensure any information regarding the participants is kept private; anonymity

means that I must ensure the participants cannot be identified. Simons (2009, p.97) emphasises the need to be aware of the vulnerability of participants regarding the possibility that they might inadvertently reveal something they did not intend to talk about, *“by developing a relationship of trust participants speak openly about their experiences and may inadvertently reveal something they didn’t intend”* (Simons 2009, p.97).

In this research, there are also potential sensitivities for the teachers who teach on the Initial Teacher Education Programme (ITEP). These are the teachers who have direct contact with the TED students and therefore this research has the potential to reveal aspects of their teaching, learning and assessment practices. Although they are not direct participants in the research, their students are, and may reveal something regarding the ITEP. ITEP teachers have selected and given me access to students and the freedom to carry out the research. Creswell (2009 in Brown 2013, p.95) describes the parties who have the authority to give access to participants as the gatekeepers. For this research, the ITEP teachers are the gatekeepers and so it has been important for me to keep ITEP teachers informed of any emerging themes, which I hoped would reduce any potential negative impact from my findings. The research findings and conclusions do make recommendations regarding ITEP generally. I understand that my position within the organisation may also influence my perspective as a researcher. It is therefore important that these recommendations are respectful, constructive and developmental for the people involved.

3.7.1 The participants and my ethical considerations

Overall, 16 participants agreed to engage in the research, all of whom were given explicit information on the purpose of the research. Informed consent

was obtained from all the participants prior to the research Q-sort activity and both the organisation and participants are anonymised using a coding system. However, I am aware that the identity of the advanced teachers could be established through association with the organisation. I am fully aware of the sensitivity around insider research activity and appreciate the importance of achieving confidentiality, not just anonymity. All participants understood their right to withdraw at any time during the research process. Out of the eight advanced teachers, five agreed to engage in the post Q-sort interviews. All the TED students agreed to participate in the post-Q group discussion.

Savin-Baden and Tombs (2017, p.122) remind us that participants are individuals with different beliefs about the research, and individuals or their data have the “*fundamental right of human dignity, autonomy and protection from harm.*” Although this research has considered the participants’ anonymity and confidentiality and obtained informed consent, there have been challenges or conflicts for the research. An example of this is that the factor analysis results identified one participant’s viewpoint as being different to the others; this surfaced a dilemma for me as to how much I could expose this individual’s view whilst giving a voice to different viewpoints. Because the participants are anonymised, this individual is not identifiable and I have therefore been able to report the different views in my findings.

3.7.2 The organisation and my ethical considerations

The organisation has been fully informed and agreed to the research. Although I have given anonymity within this thesis to the organisation, I am an employee so its identity is implicitly exposed. Throughout this research I have given

respect and honesty to the organisation and been transparent regarding how the research has been conducted and reported.

3.8 Validity and reliability

This research has been conducted through an interpretivist epistemology and unlike positivist research is not empirical science, which traditionally has a clear set of rules for reliability and validity; arguably Q-methodology does give numeric representation and an objective view to subjectivity. Stenner and Stainton-Rogers (2004) demonstrate Q-methodology as *'qualiquantology,'* bringing together the qualitative nature of the participant Q-sort and the quantitative factor analysis and pattern making, along with the qualitative interpretation of those patterns. Stenner and Stainton-Rogers (2004, p.196) suggest that Q-methodology adopts a different relationship to validity and reliability as it makes no claim to be measuring anything; Stenner and Stainton-Rogers suggest *"it makes no sense to ask if you are measuring what you intend to be measuring, if measuring is not your intention."* Brown (1980a, pp.174–175) suggests validity is not central to Q-methodology because there is no outside criterion for a person's own viewpoint. Brown goes on to explain that the only question would be if the participants were deceiving themselves in the operation of the Q-sort.

This research includes other qualitative methods such as post-Q semi-structured interviews with the advanced teachers and a group discussion with the TED students. I have chosen to consider a criteria for evaluating qualitative research as defined by Lincoln and Guba (1985, pp.289–331). Lincoln and Guba (1985) acknowledge that qualitative research is situated in the social context of an organisation, at a given moment in time, and argues that qualitative research should be evaluated for

trustworthiness, for example credibility, transferability, dependability and confirmability (Lincoln and Guba 1985, p.328).

3.8.1 Credibility

The Q-study concourse set of statements is the result of my involvement as a researcher over several years in the organisation. Through my preceding EdD research pilot and review of literature, I am confident that the Q-set statements were inductively generated by interacting with participants and capturing the teachers' voice. I believe this has allowed sufficient time to build trust and relationships, test for misinformation and understand culture. Lincoln and Guba (1985, p.304) identify persistent observation as providing depth to the research credibility. My EdD research pilot, combined with my field work observations over time, resulted in a robust representation of the teaching community. Engaging with a Q-methodology expert at the University gave me reassurance on the suitability and quality of the final Q-set statements. In collaboration with the expert, I reduced the concourse from 60 to 42 statements and made necessary changes to the wording of some statements.

As mentioned above, Q-methodology provides credibility by providing a model of each participant's first-person subjective operant. As a researcher, I am distanced from the interaction between the participant and their subjectivity. However, to give my interpretation a level of richness and contextual validation, I chose to add post Q-sort semi-structured interviews and a TED group discussion activity.

3.8.2 Transferability

Lincoln and Guba (1985, p.316) argue that a rich account of the culture through *“thick description”* is necessary to provide others with a database from which they can make a judgement about its possible transferability. I have made every effort to ensure I provide a thick description of the research methodology, management, process and interpretation from which others are able to make a judgement of its transferability. The Q-concourse of statements (Appendix 1), distribution grid, and Q research process are all transferable to the conduct of similar research in other settings. Lincoln and Guba (1985, p.360) highlight that it is the enquirer’s responsibility to provide sufficient thick description *“to permit a person contemplating application in another receiving setting to make the needed comparisons of similarity.”*

3.8.3 Dependability and confirmability

Throughout this research I have kept a trail of activity and records, for example notes, survey results, recorded focus groups and interviews that informed the Q-set statements, supervisory meeting notes and my APR feedback. I trust that my thesis has highlighted that I have acted in good faith and also confirmed the reasons for selecting appropriate research methodology. Through my reflexivity I have openly explored the insider, outsider and alongsider position and how I, as a researcher and as a professional, impact on the research and those participating in the research.

3.9 Summary

I opened this chapter by sharing my research journey, setting out the philosophical influences and my personal shifts in conceptual paradigms. Through my EdD I have

learnt an enormous amount about my philosophical positioning and research methodologies. It has taught me to evaluate and consider different research approaches and I have experienced the joy of exploration for new learning.

This chapter has provided a clear overview on how I have conducted this educational research for digital teaching and learning technologies, thereby providing the opportunity for the findings to influence real-world practice for the College and other, similar organisations.

Chapter 4:

4 Interpretation, research findings and discussion

4.1 Chapter context

In this chapter, I will present the research findings. The results and interpretation will include data from:

- The 14 participants' combined Q-study factor analysis data.
- Five advanced teachers' post Q-sort interviews.
- Eight teacher education students' (TED students) post Q-sort group discussion.

Through my interpretation I have considered the factor representation for the participants, identifying statements where there are similar points of view and those statements where there are different viewpoints. A factor represents participants who have a similar position and therefore different factors allow me to compare and contrast the different positions held by each factor (Brown 1996). I have looked for patterns within the factors and then compared three factors all with an eigenvalue >1 , factor 1 being 4.0046, four times the value needed to be a significant factor. Where relevant the post Q-sort semi-structured interviews with five of the advanced teachers and the group discussion held with the TED students are included. Emerging themes from the findings are explored and discussed at the end of each section.

I have chosen to organise my findings through an interpretative overview of the participants as a whole and then for each research question. To be able to do this, when designing my Q-set concourse of statements I assigned each of the 42 statements to a research question, as shown in Appendix 1.

4.2 Q-methodology analysis statistical overview

In Q-methodology the factors are defined because of participants' Q-sorts that have similarity of viewpoints. The result is a factor which is representative of those similar viewpoints and can be mapped onto the distribution grid as an *'ideal sort'* (Watts and Stenner 2012). For example, factor 1 is shown in Figure 4. Where there are different points of view there will be more than one factor; hence in this study there are three factors. Figure 4 is a visual impression only: a readable copy is included as Appendix 7.

How do you feel about your role in a digital education environment? (Factor 1)

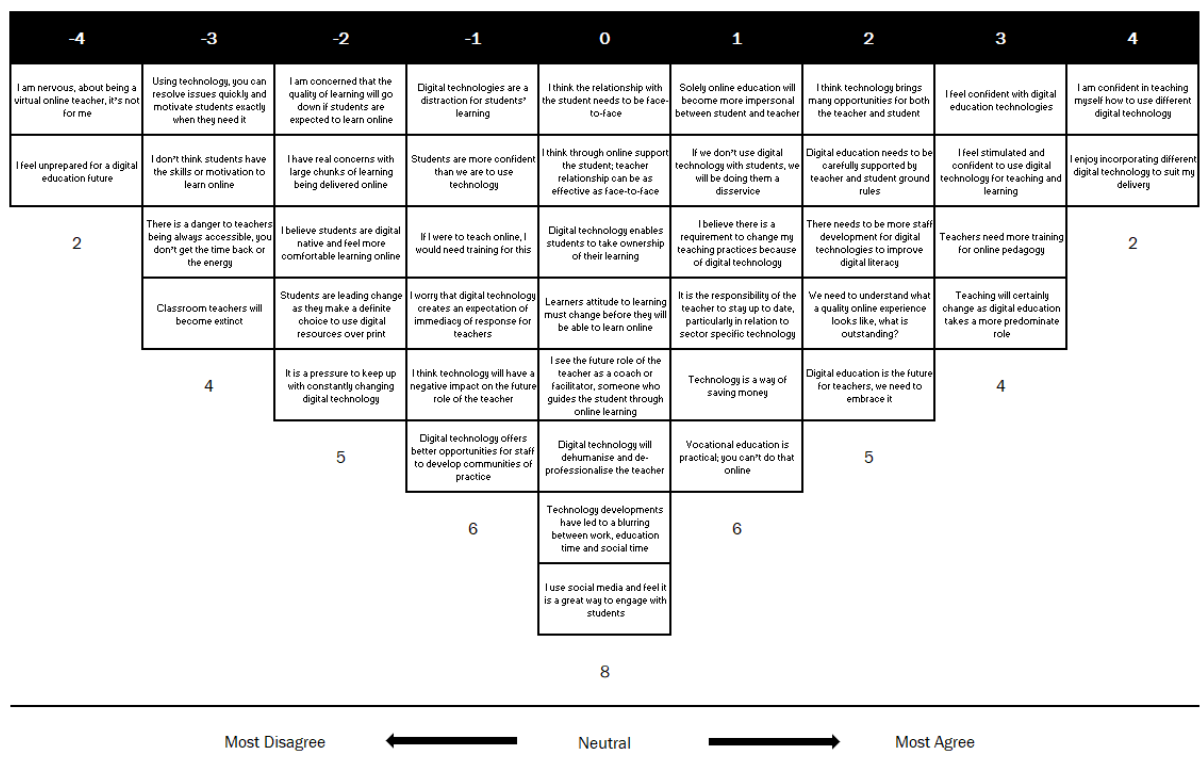


Figure 4: Participants' factor 1 mapped to the distribution grid, showing the ideal Q-sort that best represents the participants' viewpoint. This factor represents five of the original sixteen participants (visual illustration only with the readable copy included as Appendix 7).

4.2.1 Numbers that are important to Q-methodology explained.

When interpreting Q-methodology factor analysis data, it is important to keep in mind the strength of each factor and the participants' loading significance

because this indicates defining sorts and how well participants are represented. Table 3 shows the defining Q-sorts within each factor, marked with an 'X'. To illustrate the importance of this, an example would be participant MATLR3 who in Table 3 has a high loading of 0.8019 for factor 1 but low loading in both factors 2 and 3 (0.0152 and -0.0438) respectively; this means that factor 1 is strongly representative of participant MATLR3's position.

Thirteen of the participants' Q-sorts loaded into three factors that explain 55% of the variance, which means that there is representation in each of the factors and therefore I will consider all three factors. An indicator of significance for Q-methodology is the eigenvalue of unrotated factors. For my Q-study all three factors have an eigenvalue >1.

Factor Matrix with an X Indicating a Defining Sort

		Loadings		
No.	Q SORT	1	2	3
1	FATLR1	0.4191X	-0.3371	-0.1411
2	FATLR2	0.5215	0.3929	0.3518
3	MATLR3	0.8019X	0.0152	-0.0438
4	FATLR4	0.7909X	0.2167	0.1974
5	FATLR5	-0.0944	-0.6231X	0.1938
6	FATLR6	0.4339	0.6313X	0.0260
7	MATLR7	0.1734	0.7437X	0.1494
8	FATER8	0.1770	0.6016X	0.3332
9	FTED2	0.3300	-0.2262	0.7224X
10	MTEDEx3	-0.0117	0.1329	0.7271X
11	MTEDEx4	0.1374	-0.7043X	0.0060
12	MTED5	0.7069X	0.0521	0.2589
13	FTED6	0.6267X	0.1626	0.0137
14	FTED7	0.0194	0.0867	0.7620X
% expl. Var.		21	19	15

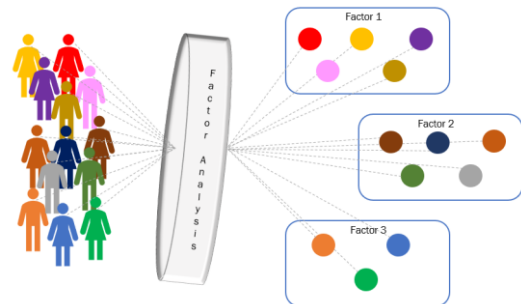


Table 3: Factor matrix, showing the defining Q-sorts for factors 1, 2 and 3. The work of Brown (1996) demonstrates the importance of considering the participants and loading of significance. Factor graphic is an adaptation from the work of O'Leary *et al.* (2013)

Participants FATLR1, MATLR3, FATLR4, MTED5 and FTED6 are best represented in factor 1; participants FATLR5, FATLR6, MATLR7, FATER8 and MTEDEx4 have strong representation in factor 2 and FTED2, MTEDEx3 and

FTED7 in factor 3, Table 4. Participant FATLR2 did not significantly load into any of the three factors and so I will consider the position of this participant's Q-sort as part of my interpretive process separately (Brown 1996).

Code	Type of teacher	Gender	Type of provision	Factor	Interview	Discussion
FATLR1	Advanced	Female	Classroom	1	No	
FATLR2	Advanced	Female	Classroom	-	Yes	
MATLR3	Advanced	Male	Classroom	1	No	
FATLR4	Advanced	Female	Classroom	1	Yes	
FATLR5	Advanced	Female	Classroom	2	Yes	
FATLR6	Advanced	Female	Classroom	2	Yes	
MATLR7	Advanced	Male	Classroom	2	No	
FATER8	Advanced	Female	Work-based	2	Yes	
FTED1	Student	Female	Classroom	-		Yes
FTED2	Student	Female	Classroom	3		Yes
MTEDEx3	Student	Male	Classroom	3		Yes
MTEDEx4	Student	Male	Classroom	2		Yes
MTED5	Student	Male	Classroom	1		Yes
FTED6	Student	Female	Classroom	1		Yes
FTED7	Student	Female	Classroom	3		Yes
MTED8	Student	Male	Classroom	-		Yes

Table 4: Participants' code and demographic information, factor position and interview or discussion participation.

The research data is accessible in Appendix 8 along with factor 1, 2 and 3 ideal sorts which are accessible in Appendix 7. These can be analysed both statistically and qualitatively; I have chosen to qualitatively interpret each factor as an overview and then against each research question.

4.3 Presentation overview

Watts and Stenner (2012, p.162) identify different interpretative writing styles suggesting that Q-interpretation by its nature can be wordy in presenting findings complete with statements. There are 42 statements and a distribution grid in this research with a nine point range from -4 to 4, including '0.' Table 5 is an example of how the data generated from the statistical analysis is presented and includes the statement number, statement text and the distribution grid placement for factors 1, 2 and 3. I intend to keep as close to the statements as possible and use tables to give visual representation of the results.

No.	Statement	F1	F2	F3
27	I see the future role of the teacher as a coach or facilitator, someone who guides the student through online learning.	0	3	-1

Table 5: Demonstration of how each statement and the corresponding factors are presented, example shows statement 27.

To demonstrate how findings are presented for this research I use the example of statement 27 (Table 5), 'I see the future role of the teacher as a coach or facilitator, someone who guides the student through online learning' and this will be shown as (s27). Only factor 2 agrees with this statement, showing statement placements (0,3,-1). Therefore, for simplicity, the presentation is (s27;0,3,-1) within the narrative. Where I discuss a specific factor, for example factor 2 only, this will be shown as (s27;3).

4.4. Overview of the participants' position as a whole group by factor

When considering the viewpoint and position of participants, there are three positions that have emerged and are demonstrated through the three factors. Participant FATLR2 did not show as significant into any of the three factors but I have chosen to consider this participant's individual sort in this section.

The factors are labelled to reflect the strong agree and disagree statements from the participants' Q-sorts:

Factor 1 *"I am confident and feel prepared for the future."*

Factor 2 *"I feel stimulated and believe it is my responsibility to stay up to date."*

Factor 3 *"Students are more confident than we are and so I feel I need training."*

FATLR2 *"I do not want to do students a disservice and so I need support."*

Initial observations from interpreting the factors and the participants' perspectives within each of the factors is that the results highlight different positions for the participants (Figure 5).

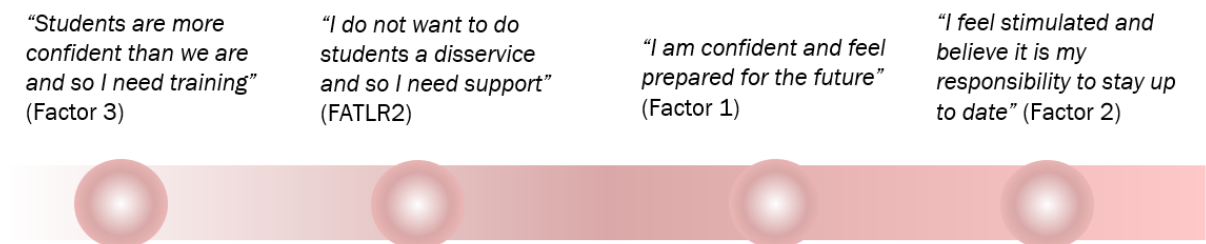


Figure 5: Different positions for the research participants.

4.4.1 Factor 1: "I am confident and feel prepared for the future," is demonstrated by the most agree and disagree statements for these participants and represents a very confident position (Table 6). Teachers feel confident and enjoy using digital technologies (s20;4) (s17;3), they are happy to incorporate technologies into their teaching, feel prepared for a digital future (s26;-4) and are open to new experiences such as being a virtual online teacher (s16;-4). These participants believe that teaching will change as digital technologies take a more prominent role (s39;3) and acknowledge that teachers require more training for online pedagogy (s24;3). This is balanced with an understanding that you cannot always resolve issues quickly and motivate students easily online (s6;-3).

Factor 1 is representative of participants FATLR1, MATLR3, FATLR4, MTED5 and FTED6. To describe Factor 1 participants' position or habitus based on the strong agree and disagree statement, it is appropriate to say, *"I am confident in using and teaching myself digital technologies for teaching and learning, I feel prepared for the future but would benefit from more training for online pedagogy."*

	Statement	Most Agree	Statement	Most Disagree
Factor 1	(20; 4)	I am confident in teaching myself how to use different digital technologies	(16; -4)	I am nervous, about being a virtual online teacher, it's not for me
	(25; 4)	I enjoy incorporating different digital technology to suit my delivery	(26; -4)	I feel unprepared for a digital education future
	(17; 3)	I feel confident with digital education technologies	(6; -3)	Using technology, you can resolve issues quickly and motivate students exactly when they need it
	(22; 3)	I feel stimulated and confident to use digital technology for teaching and learning	(8; -3)	I don't think students have the skills or motivation to learn online
	(24; 3)	Teachers need more training for online pedagogy	(32; -3)	There is a danger to teachers being always accessible, you don't get the time back or the energy
	(39; 3)	Teaching will certainly change as digital education takes a more prominent role	(41; -3)	Classroom teachers will become extinct

Table 6: Factor 1 participants' most agree and most disagree statements

4.4.2 Factor 2: "I feel stimulated and believe it is my responsibility to stay up to date," is demonstrated when considering the most agree and disagree statements for participants represented in factor 2. Teachers strongly agree that they feel stimulated and confident to use digital technologies (s22;4). These teachers have a position that it is the responsibility of the teacher to stay up to date with digital technology (s31;4) and believe technology brings opportunities for both teacher and student (s10;3). There is a strong viewpoint that online learning is suitable for the practical side of vocational education (40;-4). This indicates that these participants are thinking beyond the traditional use of digital learning technologies, to more sophisticated use of simulation technologies and virtual reality or immersive worlds.

	Statement	Most Agree	Statement	Most Disagree
Factor 2	(22; 4)	I feel stimulated and confident to use digital technology for teaching and learning	(40; -4)	Vocational education is practical; you can't do that online
	(31; 4)	It is the responsibility of the teacher to stay up to date, particularly in relation to sector specific technology	(41; -4)	Classroom teachers will become extinct
	(10; 3)	I think technology brings many opportunities for both the teacher and student	(11; -3)	Digital technologies are a distraction for students' learning
	(27; 3)	I see the future role of the teacher as a coach or facilitator, someone who guides the student through online learning	(12; -3)	Digital education needs to be carefully supported by teacher and student ground rules
	(29; 3)	I believe there is a requirement to change my teaching practice because of digital technology	(14; -3)	Solely online education will become more impersonal between student and teacher
	(35; 3)	I use social media and feel it is a great way to engage with students	(33; -3)	I think technology will have a negative impact on the future role of the teacher

Table 7: Factor 2 participants' most agree and most disagree statements

The participants strongly agree that it is the responsibility of the teacher to stay up to date, particularly in relation to sector specific technologies, with statement 31 receiving the highest priority score of all the factors (s31;1,4,2). Although the other two factors agreed with statement 31, other statements were more important for them. I interpret this in two ways. First, these teachers believe it is their responsibility to ensure students are digitally literate and prepared and second, that it may be the case that 'sector specific' is considered highly important because of the vocational nature of the College. For example, teachers know that many students will leave the College to enter the workplace after completing a Level 3 qualification (equivalent to A level) and therefore will want to prepare students to go directly into the workplace. This might be in occupations such as motor vehicle maintenance, construction or health care and will require students to be competent in the relevant digital skills, such as diagnostics software, engineering Autodesk or digital health care. This strong participant perception that it is the responsibility of the teacher to stay up to date with technology, particularly in relation to sector specific technologies, reinforces the importance that teachers place on students' work readiness skills. Interviews with the advanced teachers further supported this with several

comments, *“We have to prepare students for the world of work and life, digital is a learning skill”* says (FATLR2).

Factor 2 is representative of participants FATLR5, FATLR6, MATLR7, FATER8 and MTEDEx4, who are mostly advanced teachers. To describe Factor 2 participants' position or habitus based on the strong agree and disagree statements it is appropriate to say *“I feel stimulated and confident to use technologies for teaching and learning, I believe technology is changing my practice and so it is my responsibility to stay up to date.”*

4.4.3 Factor 3: *“Students are more confident than we are and so I feel I need training,”* demonstrates a less confident position for these teachers when using digital teaching and learning technologies. Factor 3 is representative of participants FTED2, MTEDEx3 and FTED7 who are all TED students. These teachers, being the least experienced teachers, are the only participants that strongly agree that students are more confident than they are using technologies (s18;-1,0,4) and disagree that the online student-teacher relationship can be as effective as face-to-face (s5;0,0,-3). The participants for factor 3 do acknowledge that digital education is the future and therefore we need to embrace it (s42;3), furthermore they enjoy incorporating different digital technologies in their practice as indicated by strongly agreeing with statement 25 (s25;4).

Factor 3 participants' position is a willingness to incorporate digital technologies but due to a lack of experience and training they have a nervousness around what good or outstanding digital teaching and learning looks like (s37;3). These teachers, being new to teaching, require greater support, training, guidance and

defined digital teaching and learning standards and structures. Statements 8 and 13 (s8;-3) (s13;-3) indicate that teachers believe students are motivated and have the right attitude to learn online, but feel strongly that they do not wish to engage in any social media with students (s35;-4). Statement 35 is important for consideration (s35;-4) as this result challenges my own assumptions of TED students and new teachers to the profession. My own opinion and assumption was that those new to the profession would be skilled when using social media and digital technologies and therefore would be more advanced than teachers who are perceived to be *'set in their ways.'* Therefore, for my own reflexivity the results and finding have surprised and challenged my beliefs. To describe Factor 3 participants' position or habitus based on the strong agree and disagree statements, it is appropriate to say, *"I enjoy incorporating digital technologies in my practice but students are more confident than we are and so I need to know what good digital practice is and how I meet high teaching and learning standards."*

	Statement	Most Agree	Statement	Most Disagree
Factor 3	(18; 4)	Students are more confident than we are to use technology	(35; -4)	I use social media and feel it is a great way to engage with students
	(25; 4)	I enjoy incorporating different digital technology to suit my delivery	(41; -4)	Classroom teachers will become extinct
	(12; 3)	Digital education needs to be carefully supported by teacher and student ground rules	(5; -3)	I think through online support the student; teacher relationship can be as effective as face-2-face
	(16; 3)	I am nervous, about being a virtual online teacher, it's not for me	(8; -3)	I don't think students have the skills or motivation to learn online
	(37; 3)	We need to understand what a quality online experience looks like, what is outstanding?	(13; -3)	Learners' attitude to learning must change before they will be able to learn online
	(42; 3)	Digital education is the future for teachers, we need to embrace it	(30; -3)	Digital technology will dehumanise and de-professionalise the teacher

Table 8: Factor 3 participants' most agree and most disagree statements

4.4.4 FATLR2: *"I do not want to do students a disservice and therefore I need support."* Participant FATLR2 did not show as significant into any of the three factors but it is important to consider this participant's individual sort

(Table 9). This teacher strongly agrees that we will be doing students a disservice if we do not use digital learning technology (s15;4). FATLR2 has a strong perception that students are motivated and skilled to learn online (s8;-4) and that digital technologies are not a distraction to the students' learning (s11;-4). FATLR2 has a strong position that digital learning technologies are right for the students, allowing them to take ownership of their learning (s7;3). This position is then contrasting with FATLR2's position as a teacher with a strong belief that she would need training to teach online (s19;3) and teachers generally need more training for online pedagogy (s24;4). Similar to factor 3, participant FATLR2 needs to understand what a high quality online learning experience looks like (s37;3). FATLR2 is very passionate about digital teaching and learning technologies being essential for the students' experience, but she personally feels that she needs support, training and guidance for this to happen.

	Statement	Most Agree	Statement	Most Disagree
FATLR2	(15; 4)	If we don't use digital technology with students, we will be doing them a disservice	(8; -4)	I don't think students have the skills or motivation to learn online
	(24; 4)	Teachers need more training for online pedagogy	(11; -4)	Digital technologies are a distraction for students' learning
	(7; 3)	Digital technology enables students to take ownership of their learning	(14; -3)	Solely online education will become more impersonal between student and teacher
	(19; 3)	If I were to teach online, I would need training for this	(33; -3)	I think technology will have a negative impact on the future role of the teacher
	(37; 3)	We need to understand what a quality online experience looks like, what is outstanding?	(40; -3)	Vocational education is practical; you can't do that online
	(42; 3)	Digital education is the future for teachers, we need to embrace it	(41; -3)	Classroom teachers will become extinct

Table 9: Participant FATLR2's most agree and most disagree statements

FATLR2 crosses over the positions of factors 1, 2 and 3 with a strong viewpoint that students are ready to learn online (factors 1, 2 and 3) but she is not necessarily ready to teach online (factor 3). A statement that reflects FATLR2's strong agree and disagree statements is: *"We will be doing students a*

disservice if we do not use digital learning technologies, but I need training and support for me to use these technologies with my students.”

4.5 My interpretation of participants' responses in answering Research Question 1 (RQ1): How do FE teachers position themselves on how their professional practice will change in the future, because of digital technologies?

Table 10 lists statements that are relevant to RQ1 and represent the participants in factors 1, 2 and 3. The Q-data distribution grid placement score is displayed for each statement within each factor column. By comparing this data horizontally, similarities can be observed, for example (s28;-1,-1,-1) shows a disagree consensus across all three factors, whereas (s35;0,3,-4) shows a statement which is controversial across factors 1, 2 and 3.

No.	Statement	F1	F2	F3
27	I see the future role of the teacher as a coach or facilitator, someone who guides the student through online learning	0	3	-1
28	I worry that digital technology creates an expectation of immediacy of response for teachers	-1	-1	-1
29	I believe there is a requirement to change my teaching practices because of digital technology	1	3	-1
30	Digital technology will dehumanise and de-professionalise teaching	0	-2	-3
31	It is the responsibility of the teacher to stay up to date, particularly in relation to sector specific technology	1	4	2
32	There is a danger to teachers being always accessible, you don't get the time back or the energy	-3	-1	0
33	I think technology will have a negative impact on the future role of the teacher	-1	-3	0
34	Technology developments have led to a blurring between work, education time and social time	0	1	-2
35	I use social media and feel it is a great way to engage with students	0	3	-4
36	Digital technology offers better opportunities for staff to develop communities of practice	-1	1	1
37	We need to understand what a quality online experience looks like, what is outstanding?	2	0	3
38	Technology is a way of saving money	1	0	1
39	Teaching will certainly change as digital education takes a more predominate role	3	-1	1
40	Vocational education is practical; you can't do that online	1	-4	0
41	Classroom teachers will become extinct	-3	-4	-4
42	Digital education is the future for teachers, we need to embrace it	2	2	3

Table 10: Represents statements related to RQ1's Q-data with the distribution grid position for each factor.

4.5.1 Interpretation of all factors and qualitative data for RQ1

All factors show that participants are ambivalent or disagree with the statement that digital technology will dehumanise or de-professionalise the teaching profession (s30;0,-2,-3) and all strongly disagree that classroom teachers will become extinct (s41;-3,-4,-4). Participants from all factors have similar viewpoints regarding the future of teaching, agreeing with statement 42 (s42; 2,2,3) saying that 'digital education is the future for teachers and we need to embrace it' (Table 10).

As identified through initial observations the participants' perspective within each of the factors shows different positions for the teachers. It is clear from the results that the participants represented in factor 2 are more confident and hold a stronger position for digital technologies in their teaching than those represented in factor 3 or FATLR2. Likewise, participants represented in factor 1 display a position of confidence for digital technologies but have some reservations or caution about the implementation of digital learning technologies in their teaching. FATLR2 highlights concern that if teachers do not change their teaching practice because of digital technologies, they might be doing a disservice to students.

As is commonly experienced from the initial analysis it was clear the Q-study raised more questions than answers. It showed complexity in the participants' positions that I wanted to clarify and extend further in my post-Q data collection. I arranged semi-structured interviews with five advanced teachers (FATLR2, FATLR4, FATLR5, FATLR6 and FATER8) and a group discussion with all eight

TED students. This qualitative data is also included in my interpretation in the following sections.

4.5.2 Factor 1: “*I am confident and feel prepared for the future,*” an interpretation of factor 1 participants’ positions and qualitative data collected through post-Q interviews and group discussion.

The participants represented in factor 1 consist of three advanced teachers and two TED students. Factor 1 participants feel strongly that teaching will certainly change as digital education takes a more predominate role (s39;3). The group do not believe that there is a danger of teachers being always accessible (s32;-3) or expected to respond immediately to students because of the accessibility of technology (s28;-1). These participants, including advanced teachers and TED students, appear to have a position of confidence with their view of changes to their professional teaching practice because of digital teaching and learning technologies. They are comfortable in managing student behaviour and expectations regarding digital technologies. However, they agree that we need to understand what a quality online experience looks like (s37;2) and doubt that practical vocational education can be done wholly online (s40;1). During the advanced teachers’ interviews, I explored further their viewpoint for a quality online experience, statement 37. Where the advanced teachers had experienced online teaching and learning, their insight was interesting; FATLR4 explained “*I have observed an online lesson and there were missed opportunities to engage students.*” FATLR4 identifies missed learning opportunities within a single online session, which is not sufficient to make a judgement of online learning as classroom session observations may also show missed opportunities to engage students. She did acknowledge this argument

but stressed the importance of the teacher knowing whether learning is taking place during an online lesson. She also demonstrated some frustration around this point indicating some discomfort with online lessons. From the conversation, it was clear that FATLR4 was a confident teacher but articulated a limited experience of online teaching and learning, and therefore was less confident to commit to an opinion.

For the factor 1 participants there is a belief that there is a requirement to change teaching practices because of digital technologies (s29;1) albeit that the agreement is slight, scoring +1. Likewise, the group did not disagree with statement 31 (s31;1) that it is the responsibility of the teacher to stay up to date, particularly in relation to sector specific technologies. In the TED students' discussion I asked whether the TED students felt it was the teachers' responsibility to stay up to date with digital technology (s31) or change their teaching practice (s29). TED students agreed, but went on to say "*Funding is not always available to send us on those courses for industrial specialism,*" and "*the College development days should be used for upskilling in our sectors.*" One TED student went on to give an example of how his construction evening students are very knowledgeable because they are working in the sector and therefore expect teachers to be at the forefront of the subject, "*[t]hey are expecting to learn something from us.*" Expressed with some anxiety and concern, this comment highlighted that there is not enough done to support teachers' industry-relevant digital upskilling. This is combined with the added pressure that many part-time students are working in industry and therefore have high expectations that teachers will teach the latest innovations.

In response to RQ1 factor 1, participants do not perceive technology as having a negative impact on their role as teachers (s33;-1). These teachers acknowledge that digital technologies are playing a role in their professional teaching practice and will continue to do so into the future. The advanced teachers' interviews enthusiastically supported this with comments such as, "*as teachers we should be the leaders, the demonstrators, the mechanism for people to use technology in a way that makes their life more enriched.*" (FATLR4). The comment "*we should be leaders, the demonstrators...*" by FATLR4 not only acknowledges that teaching is changing but also recognises the need for teachers to set an example and prepare students. This is further expressed by statement 31 that it is the responsibility of the teacher to stay up to date, particularly in relation to sector specific technologies. When asked to discuss whether digital technologies are changing teaching and learning, one TED student explained "*technology is already changing the way in which we teach.*" He went on to say, "*I think it is true because I use QR codes and different technologies with my students.*"

Considering factor 1 holistically for RQ1 and including all statement placements, it highlights that although these teachers are confident and feel prepared for a digital future, they hold concerns and reservations regarding how their industry is changing. This brings forward a challenge as to how teachers keep updated and current in their vocational practice as well as in digital teaching and learning skills.

4.5.3 Factor 2: “I feel stimulated and believe it is my responsibility to stay up to date,” an interpretation of factor 2 participants’ positions and qualitative data collected through post-Q interviews and group discussion.

The participants represented in factor 2 comprise four advanced teachers and one TED student who is external to the College. As identified above, factor 2 participants agree with statement 42 (s42;2) that digital education is the future and we need to embrace it. The participants agree strongly that it is the responsibility of the teacher to stay up to date, particularly in relation to sector specific technology (s31;4). This received the highest priority score of all factors.

Factor 2 represents the teachers who strongly agree (s29;3) that there is a requirement to change their teaching because of digital technology and see the future role of the teacher as a coach or facilitator, someone who guides the student through online learning (s27;3). They slightly disagree with statement 39 (s39;-1) that teaching will certainly change as digital education takes a more predominate role. For this group it may simply mean they are already on this journey, as they do not worry about the impact of digital technologies on their future professional teaching practice.

I was surprised to see FATLR5 in factor 2 as I had observed that FATLR5 was one of the least confident teachers when using digital learning technologies and factor 2 presents a very confident approach to technology. I interviewed FATLR5 and she consistently expressed her viewpoint that technology is right for the students. *“I think I am inclined to agree, Gosh am I actually saying this?”*

Because they are living in a technology age.” In the tone of the comment FATLR5 was reflectively agreeing, *“Gosh am I actually saying this?”* FATLR5 acknowledged how natural her students are with digital technologies and therefore felt more use of technology is a given because of their lifestyle. She said *“you can find an app for everything, I am amazed by it all and think wow!”* (FATLR5). However, most factor 2 participants acknowledged that students require support to develop their digital and online skills.

The participants represented by factor 2 do not disagree with statement 34, suggesting that they are finding the boundaries between work, education and social time are blurred because of digital technologies (s34;1). They are the only group who agree strongly with statement 35 (s35;3), saying I use social media and feel it is a great way to engage with students. They also do not disagree with statement 36 (s36;1) believing that digital technologies can offer better opportunities for teaching and learning communities of practice. During the interviews I asked whether the social side of technology brings opportunities for sharing best practice with colleagues; FATER8 agreed, saying *“learning technology brings people together to solve problems and learn. We all have similar issues with technology and so helping each other as a team is really good.”*

Factor 2 participants believe the practical activity of vocational education can be online, strongly disagreeing with statement 40 (s40;-4) which says ‘vocational education is practical; you cannot do that online.’ This has the potential to change the future professional teaching practice as vocational teachers. This group of participants has a confident viewpoint when answering

RQ1 and they strongly disagree that technology will have a negative impact on the future role of the teacher (s33;-3). When interviewed FATER8 said, *“technology will support what we are already doing, rather than technology leading the way. It is people leading it and technology just happens to be something to help you do that.”* This is a comment I would have expected from FATER8. FATER8 is a teacher represented by factor 2 and, from my observations, she is a more confident user of learning technologies who will lead the adoption of technologies for teaching and learning across her teaching and assessment practice.

4.5.4 Factor 3: *“Students are more confident than we are and so I feel I need training,”* an interpretation of factor 3 participants’ positions and qualitative data collected through TED students’ group discussion.

The participants represented in factor 3 consist of three TED students, including one who is external to the College. Factor 3 participants strongly agree and acknowledge that digital education is the future for teachers and we need to embrace it (s42;3). However, factor 3 participants have the least confident position for RQ1 expressing the need to understand what a high quality online experience looks like (s37;3) and strongly disagreeing with statement 35 (s35;-4) on the use of social media to engage with students. I felt I needed to raise the social media response at the TED students’ group discussion, as a part of my research, which opened a discussion regarding social media as a distraction to learning. The TED students explained, *“Students get bored and technology is a distraction. If they go on the computer they access social media.”* There was oral agreement from most of the TED students in the room. The TED students continued to express their view that social media is a distraction

saying, “*Students know how to use social media but not necessarily anything else.*” This is a contrasting view to that of the factor 2 participants who saw social media as a learning tool. I challenged the TED students, suggesting that social media could be used for teaching and learning, but on this point there was a clear disagreement with my suggestion. They expressed frustration with social media, suggesting it causes their students to disengage from learning because they engage in whatever is happening on social media. My observations of their frustration led me to believe that the real concern here was student behaviour and classroom management rather than the digital technologies. This adds to the emerging theme that TED students are not always prepared, trained or experienced enough to incorporate digital technologies into their teaching and learning practice and therefore would prefer not to.

The participants did agree with statement 36 (s36;1), seeing the potential for digital technologies to offer better opportunities for staff to develop communities of practice; they could see how it can benefit their teaching and learning community. They also agreed that it is the responsibility of the teacher to stay up to date, particularly in relation to sector specific technologies (s31;2) and have a view that teaching will certainly change as digital education takes a more predominate role (s39;1).

When discussing as a group, the TED students said that technology is forever changing and that they need time and opportunity to train and develop. It can be argued that upskilling has always been a challenge within FE and that there is never enough time; they were reaffirming what is already commonly

understood within the sector. However the TED students did explain that this is made worse by the speed of technological changes today. Statement 18 is a strong priority for this group, scoring 4 (s18;4) with the view that students are more confident than they are using technology.

This opened a discussion about students' competencies using digital technologies. One participant commented, *"You would automatically think that students are growing up with technology; some of the students do not even have a smart phone, some have basic phones and no Internet connection."* Another said that *"for some subjects, students will not like using technology, it ostracises them."* The TED students expressed their concern that their students who are not digitally literate for learning or do not have the correct equipment could be disadvantaged and might feel excluded from learning.

The TED students' group discussion also challenged the merits of flipped learning, *"I mean, with flipped learning how do you know the students have watched the video and what if some don't?"* They went on to say *"different subject areas are different, each has different needs."* I interpret that this group did not demonstrate an understanding of how digital technologies can support teaching, learning and assessment, and had a barrier around how to manage students using technologies both in the classroom and (or) online. I will explore this further through RQ3 when discussing teachers' perspective on their confidence using digital teaching and learning technologies.

When asked whether they saw themselves as a coach, facilitator or teacher (s27;-1) most said, *"all three."* This led to participants challenging the role of the teacher in an online environment, saying *"I don't think you can be a*

facilitator if you were a virtual teacher, I don't think it would be as effective.”

This supports the strong priority response from factor 3 participants to statement 16 (s16;3) *“I am nervous about being a virtual teacher, it is not for me.”* At this point I asked about their ITE programme and to what extent they learn about digital teaching and learning technologies. The TED students explained that they use a digital reflective journal to record their reflective practice but very little actual digital teaching and learning technology design, online pedagogical development, or digital learning technology in their teaching practice.

All the participants of factor 3 are TED students (FTED2, MTEDEx3 and FTED7). When considering the ambivalent statements, scored ‘0,’ it is apparent for these participants that their views may be connected to their experience:

- There is a danger to teachers being always accessible, you do not get the time back or the energy (s32;0)
- I think technology will have a negative impact on the future role of the teacher (s33;0)
- Vocational education is practical; you cannot do that online (40;0).

These teachers are yet to form an opinion through experience, but I believe the ITE programme should effectively prepare new teachers for an ever-increasingly digital environment that will affect their teaching approaches in the future.

4.6 My interpretation of participants' responses in answering Research

Question 2 (RQ2): What is the FE teachers' position on how digital technologies affect the teacher and student relationship?

Table 11 lists statements that are relevant to RQ2 and represent the participants of factors 1, 2 and 3. The Q-data distribution grid placement score is displayed for each statement within each factor column. By comparing this data horizontally, similarities can be observed, for example (s2;-2,-2,-2) shows a disagree consensus across all three factors, whereas (s12;2,-3,3) shows a statement which is controversial across factors 1, 2 and 3.

No.	Statement	F1	F2	F3
1	I think the relationship with the student needs to be face-to-face	0	-2	1
2	I am concerned that the quality of learning will go down if students are expected to learn online	-2	-2	-2
3	I have real concerns with large chunks of learning being delivered online	-2	-1	-2
4	I believe students are digital natives and feel more comfortable learning online	-2	2	2
5	I think through online support the student; teacher relationship can be as effective as face-to-face	0	0	-3
6	Using technology, you can resolve issues quickly and motivate students exactly when they need it	-3	0	-1
7	Digital technology enables students to take ownership of their learning	0	1	2
8	I don't think students have the skills or motivation to learn online	-3	-1	-3
9	Students are leading change as they make a definite choice to use digital resources over print	-2	1	0
10	I think technology brings many opportunities for both the teacher and student	2	3	0
11	Digital technologies are a distraction for students' learning	-1	-3	0
12	Digital education needs to be carefully supported by teacher and student ground rules	2	-3	3
13	Learners' attitude to learning must change before they will be able to learn online	0	-2	-3
14	Solely online education will become more impersonal between student and teacher	1	-3	1
15	If we don't use digital technology with students, we will be doing them a disservice	1	1	-2

Table 11: Represents statements related to RQ2's Q-data with the distribution grid position for each factor.

4.6.1 Interpretation of factors and qualitative data for RQ2

Research question 2 gives a more pedagogic focus to my enquiry with statements about the teacher-student interaction and the students' learning experience. All factors indicate that participants are not concerned that the quality of learning will go down if students are expected to participate in online learning (s2;-2, -2, -2) or if large chunks of learning are online (s3;-2, -1, -2). All factors disagree with statement 8 (s8;-3, -1, -3) indicating belief that students have the skills and motivation to learn online. Overall there is a positive viewpoint on how students respond to online learning, as illustrated by the results for statements 11 (s11;-1, -3, 0) and 13 (s13;0, -2, -3) respectively.

During both the advanced teachers' semi-structured interviews and the TED students' group discussion, concerns around multiple digital divides were raised. Student digital divides were not something I had originally thought about, and were not included in my original research questions. Both groups expressed passion for ensuring that the teaching and learning experience for all students is equitable and inclusive. FATLR2 commented "*we make assumptions but many students, particularly adults, do not have the kit or Internet connection. I am worried from a social justice aspect. We may exclude people who we do not intend to divide, technology is not cheap.*" FATLR4 said it is not just equipment but skills and knowhow, "*some students have never used the Internet for topical information, they do not know anything outside their world*" (FATLR4).

The TED students' discussion expressed concerns about "*ostracising*" and excluding those without the digital skills or technological equipment for learning.

They gave examples of where students did not have the digital skills for learning or did not have access to the appropriate digital technologies. In the context of the geographical catchment area of the College, 68% of 14-19 year olds attending the College are drawn from band 1,2 or 3 areas of deprivation (DfCLG 2015). Therefore the impact of any digital divides has got to be a consideration for any future online provision.

4.6.2 Factor 1: “I am confident and feel prepared for the future,” an interpretation of factor 1 participants’ positions and qualitative data collected through post-Q interviews and group discussion.

Factor 1 participants’ responses to RQ2 statements highlight that participants strongly disagree with statement 8 (s8-3) and believe students do have the skills and are motivated to learn online. They believe that digital learning technology brings many opportunities for both the teacher and student (s10;2). This group does not disagree that if we do not use digital learning technologies with students we will be doing them a disservice (s15;1).

This viewpoint was further supported through the advanced teacher interviews and the TED students’ group discussion, where one advanced teacher described how using digital technologies has enabled her to engage students who previously did not actively participate in question and answer sessions. She explained “[d]iscussions and activity online allow every individual student the opportunity to answer. This is very inclusive practice” FATLR4. The confident digital teaching habitus of factor 1 participants highlight the benefits of effective use of digital learning technologies that encourage all students to participate. The advanced teachers were able to give several examples of

using digital learning technologies effectively with students in their day-to-day teaching and learning practice.

I gave direction to the TED students' group discussion by asking how digital learning technologies are used with students and whether their group's students engaged in online learning. The discussion started with one TED student giving an example of how she offers blended learning, *"I have a student who only comes in one day a week and the rest of the time is distance learning. However, she needs that one day a week with the teacher."* The TED student emphasised the importance of the face-to-face interaction with the teacher. This was an example of a mature, level 3 student who was juggling study with her childcare responsibilities and therefore one day a week gave the flexibility this individual needed.

Although factor 1 participants acknowledge that students have the skills and motivation to learn online (s8;-3), they strongly disagree that, by using digital technology, issues can be resolved quickly and students motivated exactly when they need to be (s6;-3). During the interviews this led to the advanced teachers expressing anxiety around unreliable technology. FATLR2 explained *"[i]f the technology is unreliable, the teachers' credibility and the students' faith in the teachers' ability can be undermined; this is key within the first few weeks of term to build the students' confidence."* Several participants went on to say they would use digital technologies more often if they were confident that they would work every time in all environments and they expressed frustration in this matter.

For factor 1 participants they did not disagree that wholly online education may become more impersonal between student and teacher (s14;1) and they agreed that digital education needs to be carefully supported by teacher and student ground rules (s12;2). When discussed in more detail the participants expressed caution towards the extent of online engagement. Further discussion revealed the nuances in types of digital technologies used in teaching and learning; for example, several teachers felt that blended learning is acceptable to both teacher and student but expressed concern with any suggestion of distance learning. FATLR2 said, *“I’m fine with blended learning but feel we should be cautious about distance learning. It depends on what you are trying to do.”* In this context distance learning means self-directed and autonomous learning and blended learning means regular face-to-face contact with a teacher supported by online learning. Statements 1 and 5 regarding the effectiveness of face-to-face learning compared to online, shows this group of participants have an ambivalent position, scoring ‘0’ for both, indicating they have not yet decided a clear view. When asked to explain their position this group of participants expressed concerns about the students’ digital capabilities for online learning.

The response to statement 4 indicates a belief that students are not digital natives and do not feel more comfortable learning online (s4;-2). I decided to raise the subject of the students’ digital competencies at the advanced teachers’ interviews where FATLR4 expressed caution. *“There is a notion that young people are digitally native; most of our students would prefer face-to-face.”* FATLR4 recognised that although students are constantly interacting

with digital technologies in their lives, this does not mean they are skilled enough to use digital technology for learning.

Factor 1 participants are aware of changes and what digital learning technologies may mean for the future relationship of the teacher and student but have an understanding that this is complicated and yet to be fully defined. Their view that students are not comfortable learning online demonstrates an understanding that students use technology in their everyday digital life but do not necessarily have the skills required to learn online.

4.6.3 Factor 2: “I feel stimulated and believe it is my responsibility to stay up to date,” an interpretation of factor 2 participants’ positions and qualitative data collected through post-Q interviews and group discussion.

Factor 2 participants agree strongly that digital technology brings many opportunities for both the teacher and students (s10;3) and digital learning technology enables students to take ownership of their learning (s7;1). This group did agree that students are leading change and are choosing digital resources over print (s9;1) and that teachers will be doing students a disservice if they do not use a range of digital technologies (s15;1). However, they strongly disagree that technology is a distraction from students’ learning (s11;-3). This view was supported in the advanced teachers’ interviews with comments such as, *“it is not a distraction, it just needs managing correctly. If a student is working, engaged and doing their work, if they reply to a text message, who is it hurting?”* (FATER8). This view demonstrates the confidence of the teacher

in effectively managing students' behaviour and use of technologies in a learning situation.

Statement 14, saying 'solely online education will become more impersonal between student and teacher,' is a priority statement for factor 2 participants, where they strongly disagree (s14;-3). They agree that the interaction with students does not need to be face-to-face (s1; -2) but they have an ambivalent view of statement 5 (s5;0), which says that through online support, the student teacher relationship can be as effective as face-to-face. Because I had observed a disconnect between these statements I felt it necessary to discuss it in more depth at the interviews, I therefore asked the advanced teachers to expand on their thoughts in this matter.

One teacher who had this year run a distance-learning programme for the Level 3 Teaching Award shared the following experience, *"I have experienced students' disengagement on my distance learning programme. Setting up and delivering the course worked really well but as soon as I handed the reins to them, I had to be a little more flexible than I had thought I would do"* (FATLR6). When asked to explain, FATLR6 identified that the students have busy lives and were balancing their professional careers with studying; she emphasised that students did complete the work but at a time that suited them. Although this situation might also occur in a face-to-face scenario it is clear that teachers are confident in using established teaching strategies to re-engage and track the students' progress face-to-face. In this instance, and because the course was online the teacher felt less confident and did not necessarily know what

strategies to put in place, resulting in the teacher saying that she felt the course had not gone to plan.

As the FE Sector ventures more towards digital, flexible ways of teaching and learning, the College needs to consider change in behaviours of both teachers and students. Furthermore, this research shows that teachers' expectations of the online learning experience need to be better defined. This highlights the importance of a greater understanding of digital, online, self-study pedagogy and student engagement.

The interviews reinforced the view that there should be regular teacher interaction with the students in both blended or distance learning models. It is clear that most factor 2 teachers are confident with digital classroom technologies and learning technologies that support traditional face-to-face teaching and learning, such as flipped learning, virtual learning environments and social media, but are less confident with distance learning models.

Factor 2 participants' responses to RQ2 show confidence in the future of the teacher-student relationship within a digital education environment, with a viewpoint that students are ready and able to learn online and that teachers can benefit from online opportunities. Although participants show a very positive position, this is expressed and balanced against the reality of their personal experiences. During the interview with FATER8 there were a number of comments regarding perception in the workplace and how she feels using digital devices to support her apprentices. Over 99% of apprentices at the College use an online e-portfolio and FATER8 explained

“we have to be careful about perceptions, we have the technology on an app which is fantastic, but when you start using your phone people do not think you are doing your job, they think you are texting friends or playing. This is particularly difficult to manage in the workplace. It feels awkward even though you would have done the same with paper.”
(FATER8)

4.6.4 Factor 3: “Students are more confident than we are and so I feel I need training,” an interpretation of factor 3 participants’ positions and qualitative data collected through TED students’ group discussion.

Factor 3 participants take a strong view that the online teacher-student relationship cannot be as effective as face-to-face (s5;-3) and say the relationship with students needs to be face-to-face (s1;1). The group discussion demonstrated different viewpoints, with TED students questioning the merits of online learning. Whether distance or blended there was disagreement between the TED students in the group with one TED student saying *“my level 3 students are doing really well using technology and have progressed well”* and another saying *“it is about variety, I use the first hour to engage and interact which sets them up for research for the second hour.”* These TED students were suggesting that this is normal and appropriate use of digital learning technologies that works really well for their students.

Other TED students challenged the motivation of their students, saying *“it is the motivation, students get too distracted with technology, especially students studying at level 2.”* *“We do not use online learning with our students or only on occasions, our students need face-to-face.”* The discussion highlighted the need of students transferring from school to college at level 2 who require a lot of teacher support, whether face-to-face or through digital learning

technologies. The examples given above illustrate the challenges teachers face when considering the level of the course and the students' ability to learn online. The example given of the student who studied through distance learning was at Level 3, whereas the students referred to as needing face-to-face were at Level 2. Overall the TED students felt that the lower level students were not sufficiently mature, motivated or skilled to use learning technologies effectively, saying "*there is a need for face-to-face interaction with the teacher for the lower level courses.*" These comments indicate that there is a real requirement for lower level students to 'learn how to learn' as a mandatory element of their study programme. This is an activity the College already do with students but following this research should consider reviewing, to what extent, for online learning.

Factor 3 participants show a strong agreement with statement 12 (s12;3); that digital education needs to be carefully supported by teacher and student online ground rules. Given the importance assigned to statement 12 on ground rules and RQ1 statement 37 regarding quality, these participants do not have the confidence to interact as naturally online as they do in the classroom; this is combined with being uncertain about the online standards and structures. These TED students are looking for teaching and learning strategies, structure and guidance around the use of digital learning technologies with their students.

The participants agree that they are not concerned about large chunks of online learning (s3;-2) but do not disagree that solely online learning will become more impersonal between the student and teacher (s14;1). RQ2 creates a pedagogic discussion looking at the teacher-student interaction, their relationship and how

students learn. Although the participants recognise that students have the skills, motivation and attitude to learn online (s8;-3), factor 3 participants do not agree that we will be doing students a disservice if we do not use digital learning technologies (s15;-2). Factor 3 is the only participants' factor to disagree with statement 15.

Factor 3 shows that the participants agree that digital technologies enable students to take ownership of their learning (s7;2) and that students are digital natives and feel more comfortable learning online (s4;2). This correlates with how they feel about RQ3 (s18;4), that students are more confident than they are in using a range of digital technologies. Participants were ambivalent about statement 9 (s9;0), indicating that they have not yet decided whether students are leading change by choosing digital resources over print.

From the factor 3 results for RQ2, it is evident that these participants are the least confident about the future teacher-student relationship using digital learning technologies in practice, even though the results also indicate that they believe students are confident and ready to learn online. The post Q-study group discussion qualitative data gives a more mixed picture with some participants giving examples of how they effectively use digital learning technologies both in the classroom and through a more blended approach. The group identified the difference between the course levels, suggesting different approaches for level 2 students compared to higher levels. There is a clear argument for defining digital learning technology guidance, structure, and teaching and learning strategies to support teachers and students when engaging in online, distance or blended learning.

4.7 My interpretation of participants' responses in answering Research Question 3 (RQ3): How confident do FE teachers feel about using digital teaching and learning technologies in their teaching?

Table 12 lists statements that are relevant to RQ3 and represent the participants in factors 1, 2 and 3. The Q-data distribution grid placement score is displayed for each statement within each factor column. By comparing this data horizontally, similarities can be observed, for example (s23;2,1,2) shows an agree consensus across all three factors, whereas (s18;-1,0,4) shows a statement which is controversial across the three factors.

No.	Statement	F1	F2	F3
16	I am nervous about being a virtual online teacher, it is not for me.	-4	0	3
17	I feel confident with digital education technologies.	3	2	-1
18	Students are more confident than we are to use technology.	-1	0	4
19	If I were to teach online, I would need training for this.	-1	-1	2
20	I am confident in teaching myself how to use different digital technology.	4	2	-2
21	It is a pressure to keep up with constantly changing digital technology.	-2	0	0
22	I feel stimulated and confident to use digital technology for teaching and learning.	3	4	0
23	There needs to be more staff development for digital technologies to improve digital literacy.	2	1	2
24	Teachers need more training for online pedagogy.	3	-2	1
25	I enjoy incorporating different digital technology to suit my delivery.	4	2	4
26	I feel unprepared for a digital education future.	-4	0	-1

Table 12: Represents statements related to RQ3's Q-data with the distribution grid position for each factor.

4.7.1 Interpretation of factors and qualitative data for RQ3

Research question 3 explores the confidence of teachers in using digital teaching and learning technologies. All factors show that participants agree,

factors 1 and 3 strongly, that they enjoy incorporating different digital technologies to suit their teaching (s25;4,2,4), likewise factor 1 and 2 participants strongly agree with statement 22 (s22;3,4,0) 'I feel stimulated and confident to use digital technology for teaching and learning.' All participants agree that there is a need for more staff development in digital technologies to improve digital literacy (s23;2,1,2) (Table 12). This is a particular need for factor 3 participants who believe students are more confident in using digital technology than they are (s18;-1,0,4).

When considering the Q-study for all participants, including RQ1, RQ2 and RQ3 responses, even those teachers who were most confident, need support and development for how and when to use digital learning technologies for teaching and learning. I interpret that digital technologies are used by teachers but not necessarily pedagogically designed and, as a result, the teachers experience student disengagement, as highlighted in their responses to RQ1 and RQ2. An example of this is that teachers will ask students to carry out some research online, searching and finding information, but then could facilitate an online peer-to-peer discussion to share the new-found knowledge.

4.7.2 Factor 1: "I am confident and feel prepared for the future," an interpretation of factor 1 participants' positions and qualitative data collected through post-Q interviews and group discussion.

In response to RQ3 factor 1 participants have a very strong confidence position, agreeing that they feel confident with digital learning technologies (s17;3), saying they are confident in teaching themselves how to use different digital technologies (s20;4). FATLR2, MATLR3 and FATLR4 all commented in their

interviews that they were happy to teach themselves, *“I’m happy to have a go, ask for help if needed and practice, play”* (FATLR4). They feel stimulated and confident to use digital technologies for teaching and learning (s22;3) and strongly agree that they enjoy incorporating different digital technologies in their teaching (s25;4).

This group of participants feels prepared for a digital future (s26;-4) and believe they can be online virtual teachers (s16;-4). Furthermore, they do not need training for teaching online (19;-1). When considering factor 1’s Q-study findings homogeneously, including RQ1 and RQ2, it is evident that training would be helpful and beneficial to the participants. This is because they are confident with the learning technologies they know and use but have a limited understanding of digital learning technologies per se, for example the benefits that technologies such as immersive simulation learning environments can bring to students’ learning (s40;1). This group agrees strongly that teachers need more training for online teaching (24;3) and more staff development to improve digital literacy (s23;2). FATLR4 says *“It is about how we help staff in their confidence, take the fear out, you cannot break it.”*

Factor 1 participants are the only group to disagree that students are more confident than teachers at using technology (18;-1,0,4). Statements placed in priority positions indicate a very confident group of teachers, who will grow in confidence through further staff training and development.

4.7.3 Factor 2: *“I feel stimulated and believe it is my responsibility to stay up to date,”* an interpretation of factor 2 participants’ positions and

qualitative data collected through post-Q interviews and group discussion.

Factor 2 participants continue to demonstrate their confidence in using digital learning technologies for teaching and learning in response to RQ3, strongly agreeing with statement 22 (s22;4) feeling stimulated and confident to use technology and agreeing with statements 17 and 20 (s17;2) (s20;2). Furthermore, they do not feel they need training to teach online (s19;-1). Factor 2 participants do not disagree, scoring +1, that there needs to be more staff development to improve digital literacy. These participants believe training is the wider requirement for staff generally, rather than for themselves. I decided to raise staff development at the advanced teachers' interviews and TED student group discussion.

Most of the participants felt that they personally were confident enough to 'have a go and play' with learning technologies and they felt that *"fewer people are frightened of technology these days."* (FATER8). Unsurprisingly there was a consensus that teachers are at different places, with varying abilities. Therefore, from novice level right through to more advanced levels, digital skills training is essential in establishing a digital workforce. This was echoed through the teachers' interviews, with comments such as: *"staff have to get over the fear, not liking change, different subject areas are different"* (FATLR6) and *"We have a lot of training; confidence comes with playing with it. Staff have to develop trust, have a backup and be confident"* (FATER8).

Even though factor 2 participants are ambivalent about statement 21 (s21;0), several participants in their interviews highlighted the challenge that technology

moves too quickly and therefore *“trying to keep up can be off putting”* (FATLR5). This can also bring its challenges to the organisation in keeping abreast of the latest technologies, staff CPD and facilitating what teachers want to use for teaching and learning.

4.7.4 Factor 3: *“Students are more confident than we are and so I feel I need training,”* an interpretation of factor 3 participants’ positions and qualitative data collected through the TED students’ group discussion.

Factor 3 illustrates the viewpoint of the least confident participants when using digital technologies for teaching and learning (s17;-1). They strongly agree that students are more confident using technology than they are (s18;4) and that being an online virtual teacher is not for them (s16;3). This is contrasted with statement 25 (s25;4), saying “I enjoy incorporating different digital technologies to suit my delivery.” These participants acknowledge the need for training and staff development, recognising that they would require training if they were to teach online (s19;2) and agree with statements 23 and 24 (s23;2) (s24;1) that there is a need for staff development and training for online pedagogy.

The group discussion soon focused on staff development with an agreement from all the TED students that staff development days in their colleges do not allow teachers to develop their teaching skills but focus too much on mandatory training such as PREVENT and Safeguarding. Comments suggested that the staff development days do not allow time to reflect on teaching or to share best practice. Several participants expressed their frustration, *“there is too much crammed into development days, we have not got the time, I would like to practice new skills.”*

I was aware that the TED students were still experiencing their ITE programme and therefore it seemed obvious to ask about how the course is preparing them for digital learning technologies in their teaching. The students explained that there was very little content within the course for digital education and learning technologies, *“we have an online portal and build our online portfolio; however, we do not experience how to teach online e.g. a virtual lesson.”* The TED students use technology as students but not as teachers; they are not being given the opportunity to explore and conduct an online lesson or webinar, or learn the theory, for example concerning online student motivation and engagement techniques. Arguably, this is not preparing the new teaching professionals for the modern workplace or exposing them to a range of digital teaching and learning tools or learning opportunities.

These participants are not confident to teach themselves how to use different technologies (s20;-2) but do feel prepared for a digital education future (s26;-1). They are ambivalent about whether they feel stimulated and confident in using digital technologies for teaching and learning. In the discussion one student commented, *“Depends, I’m not rushing into it”*, with a negative undertone, and others in the group laughed. Most in the group did not feel stimulated and confident, with some TED students expressing the opinion that they would avoid digital teaching and learning technologies as they felt these were more of a distraction than a benefit to students.

4.8 Summary

In this chapter, I have presented and interpreted the research findings from the Q-study and qualitative data. Through my interpretation, I have discussed the research findings against each of the three research questions, compared the three factors and

discussed responses from the semi-structured interviews and group discussion. From the research, emerging themes will be discussed and compared alongside literature in the following chapter.

Chapter 5

5. A discussion comparing the Q-data and qualitative findings to literature.

From the research findings, I have interpreted emerging theme for discussion from the Q-study and qualitative data. This chapter discusses those themes alongside relevant literature.

5.1 The changing role of the teacher and the teacher-student relationship.

Although participants do believe their professional teaching practice is changing because of digital technologies, most do not believe technology will dehumanise or de-professionalise teaching (s30;0,-2,-3) and strongly disagree that classroom teachers will become extinct (s41;-3,-4,-4). Selwyn (2014, p.60) critically questions the political and commercial motivation and whether we should distrust educational technologies for our changing times or at least technological changes in education (Richtel 2011; Selwyn 2014). He argues the risk here is that these same ideologies dehumanise and de-professionalise the people in an educational context, thereby diminishing the role of the teacher and the interaction between student and teacher (Selwyn 2014). This research shows that the majority of participants disagree that their role will be dehumanised and have the view that digital education is the future for teachers and therefore we need to embrace it (s42).

Participants' semi-structured interviews and group discussion highlighted the progress made in areas such as robotics, artificial intelligence and algorithms but balanced this with the view that the teachers' presence is important and therefore they did not feel threatened by technology. A TED student explained, *"Teacher guidance and student interaction with the tutor is really important."* Another TED student went on to say, *"There is a big fear that teaching will be*

replaced by robots, but I do not think that will happen; most students want a relationship with their teacher.”

There is a consensus among participants that the quality of learning will not go down if students are expected to learn online (s2; -2,-2,-2) and that students are motivated to learn online (s8; -3,-1,-3). However, both factor 1 and 3 participants agree, albeit slightly, that online education will become more impersonal in terms of the relationship between student and teacher; this position contrasts with the view of participants of factor 2 (s14; 1,-3,1). Dewey (1938), like Vygotsky (1978) and Hattie and Yates (2014) describe why the teacher-student relationship is important and suggest that a positive relationship will lead to visible advantages for students a decade later, because *“positive relationships produce good experiences, and good experiences promote positive relationships”* (Hattie and Yates 2014, p.21). Hattie and Yates explain the major reason for developing positive relationships:

“it requires confidence that we can learn, it requires an openness to new experiences and thinking, and it requires understanding that we might be wrong, we may make errors and we will need feedback. Learning for many students is a risky business.” (Hattie and Yates 2014, p.21).

Of course, in the context of online learning and blended and distance learning, the risks can feel much greater for some teachers and students, as the TED students' group discussion revealed *“We do not use online learning with our students or only on occasions, our students need face-to-face.”* Newman, Beetham and Knight (2018, p.14) highlight that students are not convinced that digital technologies make them feel more connected with tutors or other students, though 37% of FE students would like to see digital learning

technologies used more on their courses (Newman, Beetham and Knight 2018, p.57). This puts greater pressure on the teacher to provide the digital learning experience for students. Savin-Baden (2015) explores the challenges of learning in an age of digital fluency where students are digitally tethered and constantly connected through carrying, wearing or holding devices. Savin-Baden (2015) questions current research as to whether digital tethering presents opportunities or is a problem for students' learning. Factor 1 and 2 participants express through their Q-sorts a belief that technology brings opportunities for teaching and learning (s10; 2,3).

The participants in this research highlighted concerns expressed by teachers who are nervous about their loss of control of the teaching and learning process when teaching online. They also conveyed a concern regarding their connection with students and about knowing whether students are engaged and motivated, and so cannot be confident that learning is taking place. Hattie and Yates (2014) comment that a positive teacher-student interaction relies on the expectations for both the teacher and student being met and on their shared experience. The example shared by FATLR6 highlights the tension she felt when the students behaved differently on her distance learning Teaching Award Programme. It was FATLR6 who felt anxious, partly because students were learning and completing their work later than expected, which was not anticipated by the teacher. This illustrates that the traditional approach of the teacher, knowing what the student needs to have learnt by when, is at play here. Although this research does not advocate that students have the freedom to do as they please, teachers will need to adapt to the increasing empowerment of the student. Savin-Baden (2015) advocates giving students

control over their learning through peer collaboration, problem-based learning and co-construction (Vygotsky and Kozulin 2012). Dean *et al.* (2014) suggest that the extent of change in the social and domestic use of technologies in the students' life is driving up the students' expectations of their learning experience. Dean *et al.* (p.18) go on to say “[t]his means that institutions are no longer the gate-keepers to technology or knowledge.” Newman, Beetham and Knight (2018, p.12) suggest that students working collaboratively with others in digital spaces are developing an essential skill for the workplace. In their recent report, they say that 27% of FE students have not experienced collaborative online working with other people (2018, p.12).

Dewey (1938) and, more recently, Salmon (2013), Laurillard (2013), Garrison (2015) and Savin-Baden (2015), remind us that the students' learning experience will depend to some degree on a teacher designed learning opportunity, therefore the role of the teacher throughout the students' learning experience is essential. Dean *et al.* (2014, p.19) identify key factors in digital learning as being the involvement of the teacher, communication between teacher and students, managing cultural changes and the students' confidence. Savin-Baden (2015, p.44) acknowledges that emerging digital approaches to learning are diverse, complex and could interrupt the teachers' view of teaching and learning but what seems disruptive now will become standard practice in the future if teachers embrace digital opportunities. *“Thus, it is important for staff and students to be prepared to manage the disruption and change”* (Savin-Baden 2015, p.44). The participants in factor 3 acknowledge that students are ready to learn online, but the disconnect is that the teachers are not ready to teach online. This situation can lead to a difference in teacher-student

expectations and therefore impact on their relationship and, ultimately, the learning experience.

In this research, teachers highlight concerns about how, when and how effectively a student is learning online, highlighting that even the most confident teachers find knowing whether learning is taking place online a challenge. This may be easier in the future by the introduction of artificial intelligence (AI), to track and support the student online. The Further Education Trust for Leadership (FETL) suggests that AI has the potential to provide teachers with timely feedback and insights that allow them to give help and support at just the right time (Barber 2016, pp. 67–74). Barber (2016) argues that AI will bring greater personalised learning opportunities for students, whilst liberating the teacher from burdensome administration. The teachers' role then becomes one of facilitating learning and providing the empathy and creativity that only people can. Newman, Beetham and Knight (2018) highlight that FE students like learning using digital technologies but acknowledge that over one third of FE students rely on their tutor for help and support to develop their digital skills.

More recently, technology commentators such as Mitra (2018) give examples of how using innovative, augmented reality and computer vision technologies can revolutionise learning if we empower both teachers and students. Mitra (2018) suggests digital learning technologies open up amazing opportunities but *“will never replace a great teacher”* Mitra (2018).

5.2 The pace of industry technological change.

Most participants believe it is the responsibility of the teacher to stay up to date with digital changes both in the subject area and for teaching and learning

(s31;1,4,2). The demands and speed of changing digital technologies are presenting a challenge for teachers to stay up to date. McDonald and Cullen (2009) suggest we need to be aware that the pace of change is particularly challenging, with teachers feeling constant pressure to keep up with technology. This challenge is recognised by a wider body of research and is more recently highlighted in Jisc (2018a), Phipps, Allen and Hartland (2018) and ETF (2018b). Beetham (2015, p.8) says *“Professional and academic/teaching staff respond to these changes in a variety of ways, from excitement to distress.”* Beetham goes on to highlight that *“stress and distress arise from fear of ‘not keeping up’ when changes are experienced as too rapid, too extensive, or being introduced in a way which staff cannot control.”*

Hargreaves and Fullan (2012) echo that teachers are feeling that they are constantly catching up with digital technologies and therefore their professional practice must be supported by a continuing professional development (CPD) programme. Mitra (2018) suggests that the pace of technological change means that technologies become obsolete, creating a concern for organisations that are purchasing new devices or providing staff training and development on already stretched budgets.

In this research one TED student gave an example of how his construction evening students are very knowledgeable because they already work in the sector and expect teachers to be at the forefront of the subject. This highlights the pressure that teachers feel as a result of the technological changes within their sector subject specialism, in this case building technologies. This then creates a perception, within the College, that not enough is done to support

teachers' industry upskilling. The research participants felt strongly that, working within a vocational college, they are preparing students for their future workplaces. Newman, Beetham and Knight (2018, p.48) suggest that students have a different perspective, with only 50% of FE students agreeing that the software on their courses was industry standard. Furthermore, only 41% of FE students felt their course was preparing them for a digital workplace. This supports my research, indicating that colleges are not meeting students' expectations in terms of preparing them for the digital workplace.

Most participants questioned the lack of real opportunity for teachers to upskill in their role, whilst all agreed with statement 31 that it is the responsibility of the teacher to stay up to date. Most participants recognise that digital technology is changing many industry sectors jobs and workplaces. If the release of the Post-16 Skills Plan (DfBIS 2016) and the embedding of digital skills into qualification standards is to support the national requirement for digital skills development (ECORYS 2016, p.78), there must be an understanding of the teacher upskilling requirement in all FE Colleges. ETF (2018b) is establishing professional standards for teaching with digital technologies, and although it is too soon to demonstrate its impact on the FE Sector, it will help to provide much needed digital teaching and learning guidance. Although the ETF (2018b) identifies a category for industry specific teaching, this category is brief and focuses on digital technologies for keeping up to date with industry specific developments rather than using industry specific technologies in education. As industry specific digital technologies are changing many industries, I believe the ETF framework does not go far enough to meet these changes and this needs a greater focus.

5.3 Changes to the FE Sector brings further technological challenges for teachers in FE.

The introduction of the Technical Level (T-Level) qualification reforms from 2020 to 2023 (DfE 2018) and current changes to the apprenticeship standards require the teacher or assessor to be confident in their digital skills in their industry specialism. For the reforms to be successfully implemented this also requires confident and skilful use of digital technologies in the teachers' teaching, learning and assessment practice (ETF 2018a, 2018b; Jisc 2018a). The ETF Technical Education Expert Panel is currently considering the impact of the qualification reforms on the FE sector workforce and identifying the potential size of the cohort in transition (ETF paper unpublished). The ETF has commissioned Frontier Economics to explore the potential gap in technically skilled teachers; they have estimated the overall gap to be in the range of 4,700 – 10,900 full time equivalent teaching staff by 2024-25 (ETF paper unpublished). The former Secretary of State for Education, Justine Greening, announced in her speech on the 6th July 2017,

“We need to do more for teachers in technical education – those career professionals who will lead the teaching of the new routes. So over the next year I will bring forward a package of support for teachers in FE. ... this will include a dedicated programme to help industry experts join the profession.” (DfE 2017)

These initiatives to attract industry experts into the teaching profession are a move forward but the speech did not acknowledge the challenges for upskilling existing teaching staff. The work of the Commission on Adult Vocational Teaching and Learning (CAVTL 2013) and the ETF with Teach Too over recent years in building strong links with employers is a step forward but this is

currently too small scale and arguably underestimates the skills development challenge for the FE Sector. In her speech, Greening identified a significant challenge by saying, *“I’ll start with technical education and further education – because it’s here I feel that we have the furthest to go”* (DfE 2017). She has however not announced a programme of training or appropriate funding for FE Colleges at this time.

The ETF (2018a, 2018b) bolsters its role in preparing the FE Sector for the reforms identified in the Post-16 Skills Plan (DfBIS 2016), suggesting that support will include the recruitment, development and maintenance of sufficient numbers of technical teachers with the right skills. From this research, it is clear that teachers have strong views on ensuring we prepare students for the world of work, including in their digital skills. Teachers want the digital skills themselves to be effective in supporting students but feel a lack of investment in their CPD. The TED students expressed frustration that CPD days are often used for mandatory training for safeguarding updates, PREVENT, mental health awareness, and teaching and learning but not for subject sector digital upskilling. Although some of these views have already been aired in FE, the strength of feeling in this research suggests that the pace of change is accelerating, and action needs to be taken.

5.4 The digital teaching habitus and initial teacher education (ITE)

The participants’ three factors demonstrate that there is a significant position difference between those teachers who are already confident in using and embedding digital technologies in their teaching, mostly advanced teachers, and those who are not, primarily comprising TED students. This has prompted

reflexivity on my own opinions and beliefs as highlighted in section 3.4.1. I was expecting the TED students who are new to the teaching profession to be committed and enthusiastic about learning technology and more digitally skilled than those experienced teachers who I had perceived to be traditional. The change in my thinking has led me to question the teachers' habitus. English and Bolton (2016, p.18) suggest that by applying the Bourdieusian lens of habitus, understanding can be improved and so, therefore, is the possibility for change, as Bourdieu believed that "*habitus is not static, habitus is not a destiny, rather it is evolutionary, constantly changing*" (English and Bolton 2016, p.31).

Arguably, this research suggests more experienced teachers have the confidence to change their teaching habitus and reassess their teaching and learning approaches. Factor 2 participants have evolved their habitus to include confidence in using digital technologies, developing their digital capital; this may be due to the teachers' individual or shared digital teaching habitus or their position in the FE teaching and learning field. The factor 3 participants' digital teaching habitus is developing and will evolve over time, through shared digital teaching and learning practices and the right learning experiences (Bourdieu (1984).

There were 38,500 TED students enrolled on an FE teacher training course in 2015/16 (Zaidi *et al* 2018, p.5), this has prompted me to reflect on the ITE programmes and whether these programmes are preparing new FE teachers for the future; developing the teachers' digital capital is essential to their future digital teaching habitus.

In 2014, Taylerson (2014) highlighted that the then ITE curriculum was not fit for purpose with respect to learning technologies, with a lack of robust diagnostic systems for digital literacy and, therefore, a lack of differentiated support for TED students. Four years later, Jisc (2018a) released a digital capability framework that could be used as a diagnostic system but, again, this is too recent for evidence of impact on the FE sector to be visible at this time. As this research has suggested, the College's ITE programme includes the use of digital reflective portfolios for TED students but does not include experience or the requirement to prepare and teach online or provide an in-depth understanding of online pedagogy. The College's ITE experience does not develop a teachers' digital capital and therefore the digital teaching habitus is not evolving to include the confident use of digital teaching and learning technologies.

The issue here is what Dewey (1938) highlighted, which is that if teachers are not fully acquainted with or have experienced learning in a particular way themselves, in this case through digital technologies, they may find it difficult to create the conditions, environment and situation for an effective digital learning experience for their students. From this research it is evident that the more confident teachers become with digital technologies the more likely they are to take responsibility for their digital skills, as illustrated by factor 2 participants who feel strongly that it is their responsibility to stay updated.

It seems that little progress has been made since the Taylerson (2014) report with regards to a robust digital learning technology experience within the ITE programme studied at the College. The students' digital learning experience is

complex but ECORYS (2016, p.77) reminds us that the students' experience will depend, to some degree, on the digital competencies of those teaching them.

5.5 Concern raised about the digital divides.

Factor 2 and 3 participants agreed with statement 4 (s4;2,2) believing that students are digital natives and feel more comfortable learning online. This is in contrast to the concern raised regarding digital divides within the student population. If young people are digital natives, Bennett and Maton (2010) argue these are by no means characteristics shared by all young people, nor are they only the preserve of the young. Moreover, claims that technology is changing more rapidly than ever before convey a sense of urgency, putting pressure on teachers to keep up or otherwise risk being left behind (Bennett and Maton 2010). Hattie and Yates (2014) suggest the notions that young people have increasing levels of depth and sophistication in learning due to digital technologies, or that they think and process information differently, are incorrect and unrealistic.

This research suggests that teachers are very concerned that we may exclude students from digital learning opportunities because of the students' lack of digital skills. This is particularly evident in the discussion with TED students regarding the lower level students, who require more teacher time than the higher-level students.

The Department for Culture, Media and Sport (DfCMS) released the UK Digital Strategy in March 2017, identifying that in a digital economy a significant amount of people remain digitally excluded, citing that one in ten adults have

never used the Internet (DfCMS 2017), and others are missing out on opportunities due to a *“lack of connectivity, digital or motivation.”*

DfCMS (2017) suggests that due to the rapid pace of change in digital technology, it is essential for everyone to continually develop their digital skills throughout their lifetime. This supports the teachers’ argument, that they must have the time and opportunity to upskill in subject sector technological developments as well as their professional teaching and learning technology skills. The ECORYS (2016) report commissioned by the DfBIS and DfCMS, recommendation 3, point 5 says *“Educators in FE and HE should be able to access CPD programmes to acquire and update their digital skills”* (ECORYS 2016, p.6). However, in the context of the importance assigned to digital skills for the UK economy in the ECORYS report and bearing in mind the importance of FE in providing those skills, there appears little evidence of significant support for the FE Sector.

5.6 Structure, guidance and online teaching and learning strategies

A theme that has emerged from this research is the need for structure, guidance, and teaching and learning strategies for digital technologies. Even the most confident participants, who could cite examples of their current online teaching and learning practice and experiences, worried about student engagement, motivation and managing learning in a distance or blended learning approach. In November 2018, the ETF released a digital teaching professional framework that acknowledges some of the challenges mentioned above (ETF 2018a; 2018b). Over recent years the College has introduced a number of digital teaching and learning technology frameworks, including the

Microsoft Certified Educator Programme (MCE) (Hallissy *et al.* 2013) and the FutureLearn, Blended Learning Essentials Programme (FutureLearn 2018). It is clear from the participants in this research that there is a need for online teaching and learning guidance for all staff, from novices right through to more advanced users of teaching and learning technologies. This should mean that all staff have the opportunity to increase their digital capital, which is essential in establishing a digitally competent workforce.

5.7 Teachers need time to explore and practice

The progress made with learning technologies in recent years means that being an online virtual teacher is achievable through online technologies. This requires the teacher to be confident enough to reconsider the design of the students' online engagement, learning opportunities and experience to ensure the students are not simply passive recipients of information. Students are demanding more from their educational experience with over a third of FE students wanting more use of digital technologies on their course (Newman, Beetham and Knight 2018). Factor 3 participants expressed anxiety and nervousness around being a virtual online teacher, managing flipped learning or using the latest technologies. Unlike participants from factor 1 and 2 these participants are not confident to teach themselves how to use different digital technologies (s20; 4,2,-2). This is understandable as new teachers are not always currently trained in these skills and often rely on their own exploration of digital technologies before using them within their teaching. This research highlights that teachers who have developed a confident digital teaching habitus are more likely to experiment with and explore digital teaching and learning technologies.

The work of Trowler (1998, p.154) suggests that teachers are not simply passive role players, rather they can be engaged and actively involved in creating change. Allowing teachers time to experiment with digital teaching and learning technologies is often limited by financial constraints for FE Colleges but this requirement is becoming essential for the future of FE. Hargreaves and Fullan (2012, p.169) emphasise that organisations need to take a risk and trust teachers to innovate through collective empowerment, which this research shows is evident with the more confident teachers. These teachers have developed a confident habitus where they are happy to have a go and play with the latest technologies. Trowler (1998) says teachers need time to experiment and adapt to changing situations, as ownership will not be achieved unless teachers have learnt something new in advance.

This research shows that the teachers with the least confident digital teaching habitus will need a CPD programme for the development of their digital skills and are less likely to experiment with technology. ETF (2018c, p.37) says that only 27% of individuals in colleges undertook digital training in 2017, with only 4% thinking the training was of 'most value' (ETF 2018c, p.69). All factors show that participants agree that there needs to be more staff development for digital technologies (s23;2,1,2) and factor 1 participants strongly agree that there is a need for more training for online pedagogy (s24;3,-2,1).

ETF (2018b) and Jisc (2018a) were released two years after the data collection in this research. Nevertheless, there are similarities between my findings and the frameworks now being released, for example, in the importance assigned to industry specific as well as generic digital teaching, learning and assessment

skills. Beetham (2015) suggests that student digital skills go beyond college as digital technologies are having a significant impact and are changing the world of work. Digital skills and the ability to be agile and flexible are essential employability skills and therefore the teachers' digital capabilities are increasingly essential. Beetham (2015, p.13) acknowledges the challenge that colleges are facing as to whether to invest in digital infrastructure or staff skills and suggests that, although short-sighted, investment in infrastructure often wins out. It is not the technology but who is using it and how it is being used that are important. Harrison (2018) says "*no silver bullet, no quick fix...but it is how teachers and learners confidently and competently use technology which seems to be the answer.*"

5.8 Summary

This chapter has identified the research emerging themes and discussed what this means for the FE Sector alongside current literature. I have discussed briefly, in this chapter, the habitus of the participants and what this means for the initial teacher education (ITE) programme. In the next chapter I will discuss in more detail Bourdieu's theory of field, habitus and capital (Bourdieu 1984; 1998).

Chapter 6

6. A discussion on FE teachers' positions and the different digital teaching habitus within the FE teaching and learning field.

Most teachers in this research hold the view that today's digital technologies are changing teaching and learning and therefore the role of the teacher needs to be continually revisited. Bourdieu (1984) argues that field and habitus are dynamic which allows the relationship between the structure of the field and the structuring habitus to be of varying degrees of fit or misfit with change. The teachers acknowledge that technologies bring opportunities for both teacher and student. For some teachers there is a belief that by not using digital technologies with students, they will be doing the students a disservice (FATLR2). This view is grounded in the acceptance that students' lives are saturated with social and domestic digital technologies and therefore students expect to be using technologies for learning too (Newman, Beetham and Knight 2018). Students' digital and globally connected world is, for many, a part of their learning habitus, their culture of being digitally tethered (Savin-Baden 2015). This opens up significant benefits for teachers to reassess how they can exploit teaching and learning technologies to engage and enhance learning in an increasingly digital education future. This will require teachers to change their digital teaching habitus to match the evolving social context of the FE teaching and learning field combined with the students' learning habitus.

The variety and complexity of perspectives that teachers hold, from believing that students are more confident than they are, through to teachers being digitally self-reliant, demonstrates the varying habitus of the different groups of teachers. Bourdieu (1984, p.225) reminds us that the position people hold within the social field, in this case FE teaching and learning, is crucial to their evolving habitus. A change in the

social position puts the habitus into new conditions. Whether we interpret these positions as the result of experience, time spent teaching or the digital teaching and learning skills acquired by the individual teachers. It is clear from this research that teachers need a differentiated support if they are to exploit digital teaching and learning opportunities with students.

The introduction of the T-Level route of qualification (DfE 2018) means teacher industry upskilling for sector specific digital skills will be essential and adds another dimension to the future digital skills that teachers will need to acquire. Fullan (2013, p.68) emphasises that digital teaching and learning technology should be integrated into both student and teacher roles and that leadership and teachers need to proactively create this world. Grenfell (2014, p.45) suggests that habitus is both pre-constructed and evolving according to the defining principles within the social field. As the social context changes a person's habitus will evolve or possible mismatch can occur; consequently, this mismatch can take the person out of their perceived 'comfort zone'. I have taken and considered these different emerging positions and through my interpretation, I suggest that staff have a level of digital capital, which is not dependent on the level of confidence within their digital teaching habitus. However, this research demonstrates that the position within the FE teaching and learning field combined with a confident digital teaching habitus helps the adoption of digital technology for teaching. Figure 6 is a matrix of the different positions held by the

participating teachers in this research.

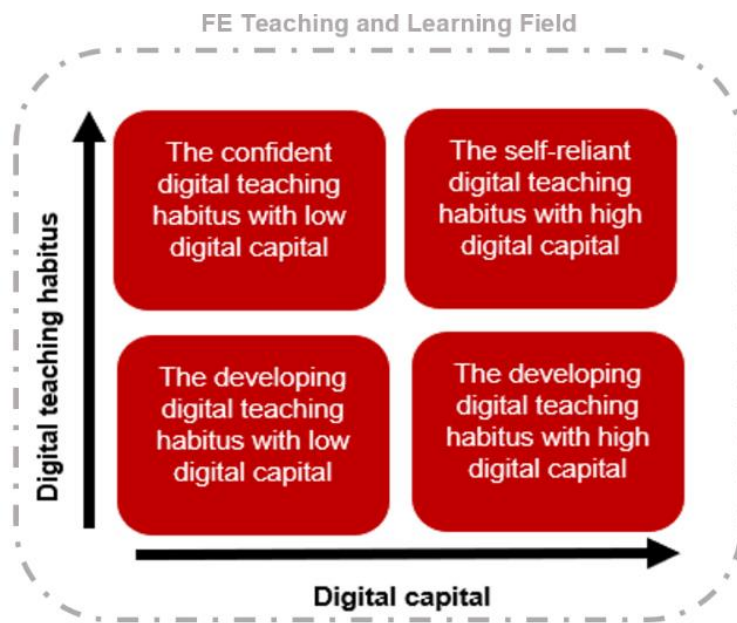


Figure 6: The digital teaching habitus and digital capital matrix within the FE teaching and learning field.

6.1 The self-reliant digital teaching habitus with high digital capital within the FE teaching and learning field (factor 2)

"I feel stimulated and confident to use technologies for teaching and learning..."

These teachers have a confident position within the FE teaching and learning field with an established digital teaching habitus and high digital capital (Bourdieu 1984). These teachers are self-reliant in their accountability; they are confident in using digital technologies (digital capital) and believe it is important to take responsibility to keep themselves up to date with the latest innovations (structuring habitus). They are happy to explore and experiment with new technologies saying, *"we have a go and play."* The trust and confidence to 'have a go and play' is important, as Hargreaves and Fullan (2012, p.51) say that it is crucial for teachers to be innovative in their future practice. Beetham (2015, p.9) stresses the positive impact of teachers having

the opportunity to explore and experience digital teaching and learning technologies, whether formal or informal.

The self-reliant teacher feels that he or she can manage the expectation and immediacy of digital interaction with students, but feels a blurring between work, education and social time as teachers become more accessible through technology. Through the semi-structured interviews, it was revealed that these teachers were already involved in distance learning courses and their experiences highlighted that teachers' perceived a loss of structure for when students are learning online is challenging. Students behaving differently online means that teachers need to gain trust when giving students independence and more control over their learning (Savin-Baden 2015). An area of development for these teachers is understanding the teacher-student online interaction and how to optimise the students' learning experience through peer-to-peer and student-led co-learning and co-construction of knowledge (Vygotsky and Kozulin 2012).

Even though this research shows evidence that self-reliant teachers are confident about teaching themselves digital teaching and learning technologies, they only know what they have been exposed to and have experience of and therefore would benefit significantly from structured approaches to their professional development. This group of teachers will embrace and apply in their teaching a range of technologies including immersive world and augmented and virtual reality, if given exposure and the chance to learn. Beetham (2015) argues that when staff are fully developed, they are stimulated

to innovate in their professional teaching practice, adding value to the teaching and learning experience, in this case digital.

6.2 The confident digital teaching habitus with developing digital capital within the FE teaching and learning field (factor 1)

“I am confident in using and teaching myself digital technologies for teaching and learning...”

These teachers have a confident and evolving digital teaching habitus within the FE teaching and learning field but low digital capital. They believe their role is changing and as a result they are developing their digital capital, becoming more confident in using digital teaching and learning technologies in their teaching. These teachers clearly understand that students are living in a digital world and therefore motivated and ready to learn online but are unsure about the quality of the online experience. They have reservations about how, as teachers, they know high quality learning is taking place. They are keen to understand what a quality online experience looks like as, from their personal experiences of blended learning, they want reassurance that students are engaged and motivated when learning online. For this group, a positive teacher-student interaction depends on whether the expectations for both the teacher and student are being met through their shared experience (Hattie and Yates 2014; Dewey 1938).

This group of teachers see digital technologies as core practice rather than as a specialism (Beetham 2015). As identified in the semi-structured interviews and group discussion, teachers expressed the view that digital technologies are changing every aspect of our lives and workplaces. They acknowledge that they

have a requirement for training and will benefit significantly from professional development opportunities; especially with regards to online pedagogy and managing teacher-students and student-student online interaction.

6.3 The developing digital teaching habitus with high digital capital within the FE teaching and learning field

The TED student group of participants demonstrated different levels of digital capital and developing digital teaching habitus within the FE teaching and learning field (Bourdieu 1984). All of these teachers are new to the FE teaching and therefore, at this time in their career, hold different positions within the field. Likewise, the level of digital capital and their evolving digital teaching habitus is yet to establish its position.

Several TED students had viewpoints and perspectives of digital technologies similar to the participants of both factors 1 and 2 positions, showing that these TED students are developing their digital capital but this research suggests that this use of digital technology occurs within a developing digital teaching habitus. All TED students had a view that their ITE programme was not preparing them for a digital future.

6.4 The developing digital teaching habitus with low digital capital within the FE teaching and learning field (factor 3)

“I enjoy incorporating digital technologies in my practice but students are more confident than we are...”

These teachers are new to the FE teaching and learning field with low digital capital therefore these teachers hold the least confident digital teaching habitus. Not being up to date, especially with sector industry skills is a source of anxiety

for these teachers who can find themselves overwhelmed with the pace of change. The teachers enjoy incorporating digital technologies in their teaching, which is mainly classroom based, but feel a lack of confidence to experiment with online learning and are reluctant to explore social media as a learning tool. They believe that technology is playing a role in education and will continue to do so in the future, and have a view that students are more confident with digital technologies than they are.

This research suggests that the least confident teachers using digital technologies require training that includes clear guidance, digital teaching and learning strategies and structure for online learning design. From this research I interpret digital teaching and learning strategies, policies and quality procedures should give structure by which teachers can gain an understanding of how to design and facilitate online learning and the student experience. This should go further in supporting staff to manage students' technological behaviours both in the classroom and online.

This research has identified the different habitus at play across the different teacher positions. I believe that ITE programmes need to train and develop future teachers in digital teaching and learning technologies and are currently ignoring a significant opportunity. Hargreaves and Fullan (2012, p.55) say *“capabilities, skills and qualities that lead to accomplishment build confidence.”* The accomplishment of a confident digital teaching habitus helps and supports teachers to develop their digital capital.

6.5 Summary

This chapter has explored and discussed the results and findings of this research from which a number of themes and positions have emerged. Staff and student beliefs, culture, values, backgrounds, skills and experiences highlight the diversity of pedagogic approaches necessary to ensure that all teachers and students receive the appropriate support to develop their digital habitus and digital capital within the FE teaching and learning field. Evolving the teaching and (or) learning habitus for today's Britain will mean building the confidence of teachers to meet students' needs and exploit digital opportunities in an increasingly digital education environment.

Chapter 7.

7 Conclusion and Recommendations

From my discussion, there are a number of recommendations for the College, which was the research setting. These recommendations are likely to be equally relevant and important for the whole of the FE and Post16 Sector.

7.1 Teachers recognise that digital technologies are changing the world of work, with significant digital innovations changing most industries. Therefore, the College needs to implement continuing professional development that focuses on the subject industry digital innovations.

7.2 The College's ITE programme should include digital teaching and learning and assessment technologies in a practical and applied way, and so that all TED students have the opportunity to develop their digital capital. Designing online learning experiences for students, conducting a virtual lesson and developing an understanding of teacher-student and student-student online interaction should be routine content for the College's ITE programme.

7.3 The pace of technological change is challenging for organisations, but college leadership should plan and devise a clear digital workforce investment strategy that goes beyond technology infrastructure. This investment should have the digital capital of both teachers and students at its heart to ensure both are well prepared and competent for the digital workplace.

7.4 For equity and inclusion of all students the multiple digital divides of access, ownership, skills, confidence and agency should be understood by the organisation. Rather than believing these divides to be barriers for students, teachers should deploy strategies to ensure students are not disadvantaged and are given the opportunity to develop their digital capital.

7.5 For flexible ways of teaching and learning, there needs to be consideration of the change in student and teacher behaviours and expectations around online interaction. This is intrinsically linked to the culture, values, beliefs and agency of both groups and should be managed carefully to develop a positive teaching and learning habitus. It is important that both staff and students are prepared to manage the disruption and change.

7.6 Digital development from novice right through to more advanced uses of teaching and learning technologies should mean that all staff have the opportunity to increase their digital capital, which is essential in establishing a digitally competent workforce. Pedagogically designed use of learning technologies and not simply the mechanics of using technologies should be at the forefront of ongoing teacher training and development.

7.7 Leadership should develop a clear framework, set of standards, guidelines and quality assurance processes for online teaching, learning and assessment, which are disseminated to and understood by teachers.

7.8 Leadership should explore the cost benefits of developing a culture where the teaching workforce have time to innovate and share their teaching, learning and assessment best practice and ideas.

Chapter 8

8 Contribution to practice and recommendations for future research

8.1 Contribution to practice

This research has explored and revealed the complexity of the participating FE teachers' positions and viewpoints in relation to digital teaching and learning technologies within a FE college setting. By using a mixed method research approach with Q-methodology followed by qualitative semi-structured interviews with advanced teachers and a group discussion with TED students, this research has been able to extend previous research and add understanding and knowledge to an ever-changing digital education environment.

Q-methodology has given depth of insight into the position held by teachers and identified the nuances in confidence between groups of teachers. By selecting advanced teachers and TED students, the research demonstrates the importance of the digital teaching habitus, whether evolving through long-term teaching experience or through the initial teacher-education programme.

This research has illuminated the views of teachers and TED students, which should influence leadership's strategic and operational decisions. Due to my senior position within the College this research has already influenced the implementation of differentiated levels of support for digital teaching and learning training and development for staff. These training opportunities have ranged from one day digital awareness sessions through to a Microsoft Certified Educator programme. Two years after collecting the data for this research, the College plans to adopt the ETF (2018b) professional digital teaching framework and training opportunities.

I have explored the concept of the digital teaching habitus through Bourdieu's lens, which has been an innovative outcome from the research. For example, the participants revealed a continuum of positions and development of digital capital at play within their digital teaching habitus. Of course, teachers' digital teaching habitus is underpinned by wider and well understood pedagogic principles but these are sometimes forgotten or ignored in online teaching and learning. The teachers' voice has provided current knowledge on what teachers feel is important to the teacher-student relationship in a digital education environment and the emphasis FE teachers place on preparing students for a digital workplace.

8.2 Limitations of this research

Through my EdD I have learnt an enormous amount about my philosophical positioning and research methodologies. It has taught me to evaluate and consider different research approaches and the joy of exploration for new learning. Using Q-methodology for the first time has presented challenges, with much personal learning throughout the experience, while carrying out this research. Inevitably it has thrown up things that could have been done differently or better. An example of this is the Q-study 'conditions of instruction' given to the participants directly before the Q-sort activity. I had planned to capture interaction and discussion between participants during the Q-sort activity, but did not explicitly give them the instruction to freely discuss during the Q-sort. Consequently, participants completed the Q-sort activity in silence and as a researcher I gleaned very little extra verbal richness or qualitative insight; this was a missed opportunity.

I am happy with the process of producing the Q-set statements grounded in the teachers' voice; however, the diversity of terminology for digital learning technologies

has caused me some difficulty when reporting my findings. In future research, I will adopt a consistency of terms and language for the given topic of research.

Although the PQ Method software is straightforward and step-by-step, the theory behind the factor and statistical analysis is not. With Q-methodology the researcher does not have to be a mathematician, the software does the calculation. The researcher does have to acquire the knowledge to make decisions and interpret what he or she is seeing. It took a minimum of several iterations of using the software and reading Schmolck (2014), Brown (1980a; 1996), Stephenson (1993), and McKeown and Thomas (2013) to feel confident.

My previous qualitative research experience had left me feeling troubled, with the understanding that interviews only capture what participants are prepared to give. This led me to explore other methodologies, hence using Q-methodology. Although, the Q-study provided me with a holistic representation of the participants' positions, I felt the research questions needed additional qualitative methods, such as semi-structured interviews and a group discussion, to add richness to my interpretation. This was my preferred approach as a researcher and I am not suggesting that this is a weakness or limitation of Q-methodology. On the contrary, the Q-study gave a richness of data for discussion and, in some cases, the conversations were different because of the insight that the Q-study had provided. I believe this was significant for both the participants and myself because it created a trusted environment that removed the organisational positions of the individuals, inasmuch as I felt an alongsider rather than an outsider. For one individual the Q-sort revealed a different viewpoint to that expressed in the pilot focus group. Due to what was revealed through the Q-sort, I felt the post-Q semi-structured interviews allowed a more open discussion

with that participant. I believe this goes back to what participants are prepared to give in an interview, especially when the interviewer is a senior leader within the organisation.

Ideally, I would have preferred to have post-Q interviews with all participants but, due to the availability and time constraints of the (TED) students, I was unable to arrange individual interviews with each of them and so I organised a group discussion. This presented as a limitation in the research as I would have hoped for parity of process for both groups. Although I believe the group discussion worked well, there were limitations. For example several participants from two different factors disagreed equally with a statement, which I suspect, because of the individuals' overall views, their reasons were very different. This was difficult to establish without one-to-one interviews.

Schwartz (1978) gives a reflective account of the opposition he experienced when using Q-methodology for his dissertation, suggesting that at that time and due to its limited use in social sciences, it was a risk. He goes on to conclude that the benefits of Q-methodology were significant and worthwhile. My experience of Q-methodology is positive and productive; I believe it has revealed data that I would have struggled to discover through other methods alone. Participants enjoyed the activity and they discovered perspectives they had not realised themselves through their own personal reflection.

The limitations I have identified in this research and in my research assumptions will inform the design of any future research.

8.3 Recommendations for future research

Further areas for future research have emerged that I have not had the scope in this research to investigate. For example, the impact of digital divides upon the teacher-student interaction and how teachers and (or) organisations manage the challenges of digital inclusion. I believe exploring what the digital divides mean through the lens of Bourdieu's dominant culture and social reproduction would be an interesting future area of research (Bourdieu and Passeron 1990).

As we move more into digital, flexible ways of teaching and learning, I have made a recommendation that there needs to be consideration of the change in student and teacher behaviours and expectations concerning online interaction. Dewey (2011, p.57) talks about the aims of education being the reconstruction of social habits. I believe this to be a valuable area for future research that could inform and impact on online teaching and learning approaches, especially within the emerging design and use of AI in education.

8.4 My personal reflection

At the first EdD workshop in November 2012, group members were asked to select a card that represented how they felt. I selected a tandem parachute jump; I am the one covering my eyes! This card was chosen because I felt somewhat frightened and



apprehensive of the unknown and I was fearful that I would not be able to cope with this level of study. This was neatly parcelled with a feeling of excitement for a new challenge, a keen willingness and readiness to embrace the world of research and the confidence to go forward. When asked to narrate the card, I explained that there was a strong focus on the role of the novice

and expert. I identified that there would be times when I would be the novice, learning from others, and times when the role of the expert would be more appropriate, sharing my found understanding, knowledge and experience with others.

Starting my EdD was a significant decision which has had a huge impact for my personal and professional learning over the past six years. The experience has evolved my perspective and thinking in a variety of ways. My understanding of research approaches, positioning within the research enquiry and development of my knowledge of hermeneutics and different philosophical perspectives have been thought provoking. This resulted in deep thinking and profound conversations with my EdD peers. Reading the theories and philosophies of great minds has increased my curiosity not only about my area of study but also about life, and has given me a sense of humility. I believe the EdD has taught me thoughtfulness and detail of thought, and how to be measured and considerate about the position of others in both my personal and my professional approach. The six year journey has been demanding, challenging and all-encompassing, with times when only my tenacity has got me through; these most challenging times have resulted in my personal growth.

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APPENDIX 1

The 42 statements in themes corresponding with the three research questions (RQ).

Number	Statement	RQ
1	I think the relationship with the student needs to be face-to-face	2
2	I am concerned that the quality of learning will go down if students are expected to learn online	2
3	I have real concerns with large chunks of learning being delivered online	2
4	I believe students are digital natives and feel more comfortable learning online	2
5	I think through online support, the student, teacher relationship can be as effective as face-to-face	2
6	Using technology, you can resolve issues quickly and motivate students exactly when they need it	2
7	Digital technology enables students to take ownership of their learning	2
8	I don't think students have the skills or motivation to learn online	2
9	Students are leading change as they make a definite choice to use digital resources over print	2
10	I think technology brings many opportunities for both the teacher and student	2
11	Digital technologies are a distraction for students' learning	2
12	Digital education needs to be carefully supported by teacher and student ground rules	2
13	Learners' attitude to learning must change before they will be able to learn online	2
14	Solely online education will become more impersonal between student and teacher	2
15	If we don't use digital technology with students, we will be doing them a disservice	2
16	I am nervous about being a virtual online teacher; it's not for me	3
17	I feel confident with digital education technologies	3
18	Students are more confident than we are to use technology	3
19	If I were to teach online, I would need training for this	3
20	I am confident in teaching myself how to use different digital technology	3
21	It is a pressure to keep up with constantly changing digital technology	3

Number	Statement	RQ
22	I feel stimulated and confident to use digital technology for teaching and learning	3
23	There needs to be more staff development for digital technologies to improve digital literacy	3
24	Teachers need more training for online pedagogy	3
25	I enjoy incorporating different digital technology to suit my delivery	3
26	I feel unprepared for a digital education future	3
27	I see the future role of the teacher as a coach or facilitator, someone who guides the student through online learning	1
28	I worry that digital technology creates an expectation of immediacy of response for teachers	1
29	I believe there is a requirement to change my teaching practices because of digital technology	1
30	Digital technology will dehumanise and de-professionalise the teacher	1
31	It is the responsibility of the teacher to stay up to date, particularly in relation to sector specific technology	1
32	There is a danger to teachers being always accessible; you don't get the time back or the energy	1
33	I think technology will have a negative impact on the future role of the teacher	1
34	Technology developments have led to a blurring between work, education time and social time	1
35	I use social media and feel it is a great way to engage with students	1
36	Digital technology offers better opportunities for staff to develop communities of practice	1
37	We need to understand what a quality online experience looks like; what is outstanding?	1
38	Technology is a way of saving money	1
39	Teaching will certainly change as digital education takes a more predominate role	1
40	Vocational education is practical; you can't do that online	1
41	Classroom teachers will become extinct	1
42	Digital education is the future for teachers, we need to embrace it	1

Q-sort instruction script

Thank you for participating in this Q-sort activity for my research into the teachers' position and viewpoint of their role in a digital education environment.

You all have a distribution grid with a range of -4 to +4; +4 meaning you most agree and -4 meaning you most disagree or least agree with.

There are 42 statements that have been taken from teachers from my pilot study.

Can you firstly read through the statements and place the statements you agree with in one pile, the statements you disagree with in another pile and the statement you are not sure about in a third pile.

Once you have your three piles can you then decide which statement goes in which placement on the distribution grid. Statements you most agree with on the + right hand side and statements you disagree or least agree with on the – left hand side.

When you are happy that all statements have been placed can you write the number of each statement in the box on the grid.

Thank you

APPENDIX 3

The colour coded view of the Advanced Teachers' Q-sorts

Statement	FATLR1	FATR2	MATLR	FATLR4	FATLR5	FATLR6	MATLR	FATER8
1 I think the relationship with the student needs to be face-to-face	0	-2	-1	0	0	0	0	-3
2 I am concerned that the quality of learning will go down if students are expected to learn online	4	-1	0	-2	4	-1	-1	0
3 I have real concerns with large chunks of learning being delivered online	3	-2	-2	-2	4	-1	0	0
4 I believe students are digital natives and feel more comfortable learning online	-2	-1	-1	-1	0	3	2	4
5 I think through online support, the student teacher relationship, can be as effective as face-to-face	-1	-2	0	-2	-2	4	-1	-2
6 Using technology you can resolve issues quickly and motivate students exactly when they need it	-4	2	-1	-1	-1	2	-1	-2
7 Digital technology enables students to take ownership of their learning	-4	3	-1	-1	-1	1	0	-2
8 I don't think students have the skills or motivation to learn online	1	-4	-1	-3	-2	-2	-2	-1
9 Students are leading change as they make a definite choice to use digital resources over face-to-face	1	0	-2	-2	0	0	1	4
10 I think technology brings many opportunities for both the teacher and student	-1	1	4	1	1	0	3	3
11 Digital technologies are a distraction for students' learning	-2	-4	0	-1	2	-4	-1	-3
12 Digital education needs to be carefully supported by teacher and student ground rules	0	2	0	3	2	1	-3	0
13 Learners' attitude to learning must change before they will be able to learn online	-3	-1	0	-1	3	0	1	-4
14 Solely online education will become more impersonal between student and teacher	-1	-3	2	1	1	-3	-2	-2
15 If we don't use digital technology with students, we will be doing them a disservice	0	4	2	0	-1	2	-2	3
16 I am nervous about being a virtual online teacher, it's not for me	-1	0	-4	-4	-1	-4	-2	0
17 I feel confident with digital education technologies	1	1	3	4	-1	2	2	1
18 Students are more confident than we are to use technology	-2	0	-1	0	1	0	0	1
19 If I were to teach online, I would need training for this	0	3	-3	0	-2	-2	0	-1
20 I am confident in teaching myself how to use different digital technology	1	1	3	4	-3	2	3	1
21 It is a pressure to keep up with constantly changing digital technology	-3	0	-2	0	2	-2	1	2
22 I feel stimulated and confident to use digital technology for teaching and learning	-3	1	3	3	-4	3	2	1
23 There needs to be more staff development for digital technologies to improve digital literacy	2	2	0	2	0	-1	1	3
24 Teachers need more training for online pedagogy	2	4	2	3	1	0	-1	-1
25 I enjoy incorporating different digital technology to suit my delivery	0	0	4	3	-3	1	1	2
26 I feel unprepared for a digital education future	-2	-2	-4	-3	0	-2	0	-1
27 I see the future role of the teacher as a coach or facilitator, someone who guides the student	0	-1	0	-2	0	2	4	0
28 I worry that digital technology creates an expectation of immediacy of response for teachers	-3	0	1	-3	-3	1	-3	-3
29 I believe there is a requirement to change my teaching practices because of digital technology	2	0	1	1	-3	1	2	2
30 Digital technology will dehumanise and de-professionalise the teacher	2	-2	1	0	-1	-3	-1	-3
31 It is the responsibility of the teacher to stay up to date, particularly in relation to sector developments	1	2	1	2	-2	3	4	3
32 There is a danger to teachers being always accessible, you don't get the time back or the time to think	0	-1	-3	0	1	-1	0	0
33 I think technology will have a negative impact on the future role of the teacher	-2	-3	0	-3	1	-3	-3	0
34 Technology developments have led to a blurring between work, education time and social time	0	1	-2	0	2	-1	3	-1
35 I use social media and feel it is a great way to engage with students	-1	1	-3	2	-4	0	1	2
36 Digital technology offers better opportunities for staff to develop communities of practice	-1	-1	-3	1	0	3	2	2
37 We need to understand what a quality online experience looks like, what is outstanding	3	3	1	2	0	1	0	-2
38 Technology is a way of saving money	3	0	3	-1	-2	0	-3	0
39 Teaching will certainly change as digital education takes a more predominate role	4	2	2	2	3	-1	-2	1
40 Vocational education is practical; you can't do that online	2	-3	1	1	3	-3	-4	-1
41 Classroom teachers will become extinct	3	-3	-2	-4	3	-2	-4	-4
42 Digital education is the future for teachers, we need to embrace it	1	3	2	1	2	4	3	1

APPENDIX 3a

The colour coded view of the TED students' Q-sorts

Statement	FTED2	MTEDE	MTEDE	MTEDE5	FTED6	FTED7
1 I think the relationship with the student needs to be face-to-face	0	1	4	0	-1	1
2 I am concerned that the quality of learning will go down if students are expected to learn online	-1	-2	1	-3	-3	-1
3 I have real concerns with large chunks of learning being delivered online	0	-1	-1	0	-1	-2
4 I believe students are digital natives and feel more comfortable learning online	1	-1	-1	0	-2	4
5 I think through online support, the student teacher relationship, can be as effective as face-to-face	-3	-2	2	0	0	-3
6 Using technology you can resolve issues quickly and motivate students exactly when they need it	-2	0	-1	-2	-1	-1
7 Digital technology enables students to take ownership of their learning	1	-2	-1	3	-1	3
8 I don't think students have the skills or motivation to learn online	-3	-2	-2	-3	-1	-2
9 Students are leading change as they make a definite choice to use digital resources over traditional methods	0	0	0	0	0	1
10 I think technology brings many opportunities for both the teacher and student	-1	1	-4	0	3	1
11 Digital technologies are a distraction for students' learning	0	0	2	-2	0	1
12 Digital education needs to be carefully supported by teacher and student ground rules	4	0	4	1	4	3
13 Learners' attitude to learning must change before they will be able to learn online	-1	-3	1	1	-2	-1
14 Solely online education will become more impersonal between student and teacher	2	-2	3	-3	3	2
15 If we don't use digital technology with students, we will be doing them a disservice	1	-4	0	1	-1	-1
16 I am nervous about being a virtual online teacher, it's not for me	0	3	-4	-3	-3	3
17 I feel confident with digital education technologies	-2	-1	-1	1	2	1
18 Students are more confident than we are to use technology	2	3	0	-1	-2	4
19 If I were to teach online, I would need training for this	2	3	1	1	-2	0
20 I am confident in teaching myself how to use different digital technology	-1	-1	0	2	2	-2
21 It is a pressure to keep up with constantly changing digital technology	-1	2	0	-4	3	0
22 I feel stimulated and confident to use digital technology for teaching and learning	0	2	-2	3	1	-1
23 There needs to be more staff development for digital technologies to improve digital literacy	3	1	1	1	1	0
24 Teachers need more training for online pedagogy	0	2	3	2	4	0
25 I enjoy incorporating different digital technology to suit my delivery	4	1	0	2	2	3
26 I feel unprepared for a digital education future	1	2	-2	-4	-3	-4
27 I see the future role of the teacher as a coach or facilitator, someone who guides the student	-1	1	-3	2	1	-1
28 I worry that digital technology creates an expectation of immediacy of response for teachers	-3	0	2	-1	0	1
29 I believe there is a requirement to change my teaching practices because of digital technology	-2	-1	-3	-1	1	0
30 Digital technology will dehumanise and de-professionalise the teacher	-2	-3	3	-1	-3	-3
31 It is the responsibility of the teacher to stay up to date, particularly in relation to sector developments	3	1	-2	0	-2	2
32 There is a danger to teachers being always accessible, you don't get the time back or the time spent	-3	0	1	-1	-4	2
33 I think technology will have a negative impact on the future role of the teacher	1	0	2	0	0	0
34 Technology developments have led to a blurring between work, education time and social time	1	-3	-1	2	0	-2
35 I use social media and feel it is a great way to engage with students	-4	-4	-3	-2	2	-4
36 Digital technology offers better opportunities for staff to develop communities of practice	-2	4	1	-1	0	0
37 We need to understand what a quality online experience looks like, what is outstanding	3	2	0	4	1	2
38 Technology is a way of saving money	3	-1	-2	-2	2	0
39 Teaching will certainly change as digital education takes a more predominate role	2	3	-3	3	1	-3
40 Vocational education is practical; you can't do that online	2	0	3	3	-4	-2
41 Classroom teachers will become extinct	-4	-3	2	-2	0	-3
42 Digital education is the future for teachers, we need to embrace it	0	4	0	4	3	2

Q-sort semi-structured interviews – a sample of questions and answers with participant FATLR6

JH – “When asked the question about how your teaching is changing because of digital technologies and whether teachers are better suited as coaches and (or) facilitators. What do you think?”

FATLR6 – “I feel it is positive because if you have the digital technologies that support you as a teacher, I feel it can free up time if everything is online. The marking side can be a lot easier. I think student tracking is easier using digital technologies because I am already doing it, and I think it works really well. I think it is going to enhance teaching and learning rather than make it a negative thing. I think you still need face-to-face but there are different ways of doing that, using different technologies.”

JH – “Do you think your teaching has changed over recent years because of digital technologies?”

FATLR6 – “For me personally and with all the flipped classroom stuff we do in beauty therapy I think it has made it more accessible to the students. They can access learning whenever they want to, especially with videoing all the different techniques that we use in our practical lessons. From a teaching perspective I know that for some of the team it has been great to be able to watch the videos before actually delivering the lesson, to make sure they know exactly what they are doing.”

JH – “So you have a natural community of practice and sharing of good teaching practices.”

FATLR6 – “Yes that’s it, there is standardisation, accessibility for the students and giving ownership to them so they can prepare themselves before coming into the lesson, which is the idea of flipped classroom anyway. It is how we, as teachers, manage it that is important.”

JH – “Are your students confident in using digital technologies for learning?”

FATLR6 – “Our students are switched on, straight from school, at home, they all have technology, and they are in it all of the time. Definitely, yes – all my students have Internet connection, only two students have come and said they needed a bit of help

to use technology, and I think that they were just not as confident as the other students.”

JH: “You scored statement 22: ‘I feel stimulated and confident to use digital technology for teaching and learning’ +3 which indicates you have a strong position on this point; can you tell me why?”

FATLR6: *“We flip the areas we know our students forget and it works well. I use flipped classroom personally and it is more accessible to students. We video our more technical techniques.”*

JH: “You find that helps the students.”

FATLR6: *“They all have Internet connection and most can use the technology. Our 16-18 year old students will also support the adult students. That peer support has worked really well.”*

JH: “The younger students are happy to support the adult students.”

FATLR6 *“Yes they enjoy it”*

JH: “The next theme is about how effective is the teacher-student relationship when using digital technologies?”

FATLR6: *“Yes, I have experienced this first hand this year with my distance learning programme. As time has gone by they have lost their confidence using the VLE, and for their last assignment students were emailing me rather than uploading their work to the VLE. I think I will give them more responsibility next year, it is about getting the balance right.”*

JH: “So have you found an issue with motivation for the students to go online?”

FATLR6: *“I don’t think it is lack of motivation, they are all youth workers and busy, and so it is getting the time, and then there is the family and other things. They completed the work it was just not how I had planned.”*

FATLR6 *“I made the mistake of doing too much for them. The setting up and delivery of the course worked really well, but when I handed it over to them, I had to be a little more flexible than I thought I would have to be.”*

JH: “But that flexibility worked well for the students.”

FATLR6: *"Oh yes."*

JH: "Do you find that the learners are leading change?"

FATLR6: *"The younger students are, they expect it because they are so use to it, and they are not fazed by it."*

JH: "So how do you use blended online learning?"

FATLR6: *"It is about getting the percentage of online activity to face-to-face right for blended learning. I use blended learning with students, for example students who use flipped learning prepare themselves before attending their lesson, and they love it."*

FATLR6: *"I am not sure my 16-18 year old students are motivated to complete solely online with no face-to-face. Like I say I have experienced students' disengagement on my distance learning programme."*

JH: "Do you think technologies can be a distraction to students in the classroom?"

FATLR6: *"Yes I think it is, but students also use social media really well. I have students who use Instagram to create their portfolios. My students get work through Instagram."*

FATLR6: *"We are using mobile phones in the classroom more and more because of students taking pictures for their professional online portfolio."*

JH: "Do you think we would be doing students a disservice if we did not use digital technologies with them?"

FATLR6: *"Yes I do, all the positive things we do with technology, students being able to watch a video over and over again until they know it."*

JH: "The final theme is about how confident staff are in using digital teaching and learning technologies."

FATLR6: *"If I see technology and like it, I have a go, and if there is anything I don't know I will ask, and then I practise."*

Concept map of advanced teachers’ semi-structured interviews – sample of the comments from participants for a particular theme

“Technology can be scary for some learners. We use email routinely and we don’t always realise students don’t.”
FATLR2

“I would like to explore using technology much broader to engage students.” FATLR4

“They have all used technology at school so they expect it.”
FATLR5

“Students live in the computer age, so they like it; they do expect and prefer electronic versions.” FATLR5

“If we are not careful we can lose the interpersonal relationship with our students and each other. Just like the way you see people sitting next to each other texting.” FATER8

“Online learning is not an ideal strategy if you are trying to engage at a deep level.”
FATLR2

“There is the notion that young people are digital natives, most of our students would prefer face-to-face.” FATLR4

“It is getting the percentage of online activity to face-to-face right for blended learning.”
FATLR6

I am not sure students are motivated to complete solely online with no face-to-face. I have experienced students’ disengagement on my distance-learning programme.”
FATLR6

“Discussions and activity allow every individual student the opportunity to answer. This is very inclusive practice.”
FATLR4



“I made the mistake of doing too much for the students.”
FATLR6

“It is not a distraction, it just needs managing correctly. If a student is working, engaged and doing their work, if they reply to a text message, then who is it hurting?” FATER8

“Technology sometimes feels awkward when you are filling in forms in for the learner. We would have done the same with paper but it feels strange.”
FATER8

“I am fine with blended learning but feel we should be cautious about distance learning. It depends on what you are trying to do.” FATLR2

“Mobile phones can distract but students can also use them effectively in class, we use Instagram a lot.” FATLR6

“How do you know the students have not gone down the wrong avenue or have hit a problem that they don’t know how to solve? They lose their safety blanket.” FATLR2

“We have to be careful about perceptions, we have the technology on an app, which is fantastic but when you start using your phone people don’t think you are doing your job.”
FATER8

Face-to-face is also necessary with my group of students.”
FATLR6

Concept map of TED students' discussion group – sample of the comments from participants for a particular theme

“Students get bored and technology is a distraction. If they go on the computer they access social media”

“Technology is always changing, and it is difficult to keep up with the changes.”

“I think we already use digital technology, because I use QR codes and different types of technology.”

“There is a big fear that teaching will be replaced by robots, but I don't think that will happen, most students want a relationship with their teacher.”

“The evening groups of students are really up to date and expect us to be right up to date in the subject.”

“You would automatically think that students are growing up with technology, some of our students don't even have a smart phone, some have basic phones and no Internet access.”

“Students are used to using technology in everyday life.”

“I mean with flipped learning how do you know the students have watched the video and what if some don't.”

“My level 3 students are doing really well using technology and have progressed well.”



“The different subject areas are different, each have a different need for a community of practice.”

“I don't think you can be a facilitator if you were a virtual teacher, I don't think it would be as effective as the classroom.”

“Students know how to use social media but not necessarily anything else.”

“We are also finding that students are losing their skills to write.”

“I think we need to think about health and wellbeing. You can hardly teach PE and promote health and wellbeing watching a video.”

“It is about variety, I use the first hour to engage and interact with my students and then set them up for research for the second hour.”

“In some subjects students will not like technology, it ostracises them.”

“Watching a video is surely better than a book.”

Research Confidentiality Agreement

This agreement is to assure the participant that their identity (name) will not be disclosed to anyone other than the researcher for analysis.

The future role of the teacher is not a problem to be solved, rather a future to be created.

The aim of this research is to empower practitioners to develop insights into their current perspectives, disposition and viewpoint of digital education, and to inform the individual's practical judgement for their future professional digital practice. Teaching practitioners are the enablers for transformation to take effect, without their commitment we have no transformation, evolution or revolution into 21st century digital education (Hargreaves & Fullan 2012).

It is hoped that this research will contribute to a deeper understanding of the perceived future digital role of the teacher in a changing socio-technological and increasing digital education environment. Exploring the perception, predisposition and digital confidence of teachers facing a digital education future. The primary research question is:

- What perception do teachers have about their future teaching role in a digital environment?

Methodology

It is believed that the Q-sort activity will allow the participants to engage in their reflexivity thereby exploring their position and revealing deeply embedded attitudes and dispositions. The distribution grid will force preference of 'most agree' and 'most disagree' from the participants, promoting reflective thought and decision making about the relative importance and unimportance of each item (McKeown & Thomas 2013).

The findings from this research will inform the College's strategy to how staff (in general) are supported in the future adoption of digital education.

Please note: This research will NOT disclose the participant's personal identity (name) or share any person data with anyone else. The research will analyse its findings on characteristics only e.g. gender, age, ethnicity etc.

I am happy to participate in the above mentioned research and for the researcher to analyse my profile e.g. gender, age etc.

Participant's Name:

Participant's Signature:

Research Name:

How do you feel about your role in a digital educational environment

The research report including the findings and analysis will be made available to participants.

Thank you

Factor 1, 2 and 3 Q-sorts mapped to distribution grid

How do you feel about your role in a digital education environment? (Factor 1)

		How do you feel about your role in a digital education environment? (Factor 1)												
		-4	-3	-2	-1	0	1	2	3	4				
2	I am nervous, about being a virtual online teacher, it's not for me													
	I feel unprepared for a digital education future													
4	Using technology, you can resolve issues quickly and motivate students exactly when they need it													
	I don't think students have the skills or motivation to learn online													
	There is a danger to teachers being always accessible, you don't get the time back or the energy													
Classroom teachers will become extinct														
2	I am confident in teaching myself how to use different digital technology													
	I feel stimulated and confident to use digital technology for teaching and learning													
	Teachers need more training for online pedagogy													
	Teaching will certainly change as digital education takes a more predominate role													
5	Vocational education is practical; you can't do that online													
6	Technology developments have led to a blurring between work, education time and social time													
8	I use social media and feel it is a great way to engage with students													
<p style="text-align: center;">Most Disagree ← Neutral → Most Agree</p>														

How do you feel about your role in a digital education environment? (Factor 2)

	-4	-3	-2	-1	0	1	2	3	4
Vocational education is practical; you can't do that online					I think through online support the student/teacher relationship can be as effective as face-to-face	Digital technology enables students to take ownership of their learning	I believe students are digital native and feel more comfortable learning online	I think technology brings many opportunities for both the teacher and student	I feel stimulated and confident to use digital technology for teaching and learning
Classroom teachers will become extinct			I think the relationship with the student needs to be face-to-face	I have real concerns with large chunks of learning being delivered online	Using technology, you can resolve issues quickly and motivate students exactly when they need it	Students are leading change as they make a definite choice to use digital resources over print	I feel confident with digital education technologies	I see the future role of the teacher as a coach or facilitator, someone who guides the student through online learning	It is the responsibility of the teacher to stay up to date, particularly in relation to sector specific technology
2			I am concerned that the quality of learning will go down if students are expected to learn online	I don't think students have the skills or motivation to learn online	I am nervous, about being a virtual online teacher, it's not for me	If we don't use digital technology with students, we will be doing them a disservice	I am confident in teaching myself how to use different digital technology	I believe there is a requirement to change my teaching practices because of digital technology	2
			Learners attitude to learning must change before they will be able to learn online	If I were to teach online, I would need training for this	Students are more confident than we are to use technology	There needs to be more staff development for digital technologies to improve digital literacy	I enjoy incorporating different digital technology to suit my delivery	I use social media and feel it is a great way to engage with students	
			Teachers need more training for online pedagogy	I worry that digital technology creates an expectation of immediacy of response for teachers	It is a pressure to keep up with constantly changing digital technology	Technology developments have led to a blurring between work, education time and social time	Digital education is the future for teachers, we need to embrace it		4
			Digital technology will delimitise and de-professionalise the teacher	There is a danger to teachers being always accessible, you don't get the time back or the energy	I feel unprepared for a digital education future	Digital technology offers better opportunities for staff to develop communities of practice			5
			5	Teaching will certainly change as digital education takes a more predominate role	We need to understand what a quality online experience looks like, what is outstanding?				
			6	6	Technology is a way of saving money				
			8						

Most Disagree ← Neutral → Most Agree

How do you feel about your role in a digital education environment? (Factor 3)

	-4	-3	-2	-1	0	1	2	3	4
I use social media and feel it is a great way to engage with students									
Classroom teachers will become extinct									
2	Learners attitude to learning must change before they will be able to learn online	I don't think students have the skills or motivation to learn online	I am concerned that the quality of learning will go down if students are expected to learn online	Using technology, you can resolve issues quickly and motivate students exactly when they need it	Students are leading change as they make a definite choice to use digital resources over print	I think the relationship with the student needs to be face-to-face	I believe students are digital native and feel more comfortable learning online	Digital education needs to be carefully supported by teacher and student ground rules	Students are more confident than we are to use technology
	I have real concerns with large chunks of learning being delivered online	I don't think students have the skills or motivation to learn online	I have real concerns with large chunks of learning being delivered online	I feel confident with digital education technologies	I think technology brings many opportunities for both the teacher and student	Solely online education will become more impersonal between student and teacher	Digital technology enables students to take ownership of their learning	I am nervous, about being a virtual online teacher, it's not for me	I enjoy incorporating different digital technology to suit my delivery
	If we don't use digital technology with students, we will be doing them a disservice	I am confident in teaching myself how to use different digital technology	If we don't use digital technology with students, we will be doing them a disservice	I feel unprepared for a digital education future	Digital technologies are a distraction for students' learning	Teachers need more training for online pedagogy	If I were to teach online, I would need training for this	We need to understand what a quality online experience looks like, what is outstanding?	2
	I am confident in teaching myself how to use different digital technology	I see the future role of the teacher as a coach or facilitator, someone who guides the student through online learning	I am confident in teaching myself how to use different digital technology	I see the future role of the teacher as a coach or facilitator, someone who guides the student through online learning	It is a pressure to keep up with constantly changing digital technology	Digital technology offers better opportunities for staff to develop communities of practice	There needs to be more staff development for digital technologies to improve digital literacy	Digital education is the future for teachers, we need to embrace it	4
	Technology/developments have led to a blurring between work, education time and social time	I worry that digital technology creates an expectation of immediacy of response for teachers	Technology/developments have led to a blurring between work, education time and social time	I worry that digital technology creates an expectation of immediacy of response for teachers	I feel stimulated and confident to use digital technology for teaching and learning	Technology is a way of saving money	It is the responsibility of the teacher to stay up to date, particularly in relation to sector specific technology		5
	5	I believe there is a requirement to change my teaching practices because of digital technology	5	I believe there is a requirement to change my teaching practices because of digital technology	There is a danger to teachers being always accessible, you don't get the time back or the energy	Teaching will certainly change as digital education takes a more predominate role			6
		6	6	6	I think technology will have a negative impact on the future role of the teacher				
					Vocational education is practical, you can't do that online				
					8				

←
Neutral
→

Most Disagree

Most Agree

APPENDIX 8

Q-study data produced

PQMethod2.35 The role of the teacher in a digital education environment

Path and Project Name: C:\PQMethod\projects\digital\teachers

Dec 27 17

Correlation Matrix Between Sorts

SORTS	1	2	3	4	5	6	7	8	9	10	11	12	13	14
FATLR1	100	4	22	18	26	-12	-13	10	14	-5	3	18	6	-25
FATLR2	4	100	24	52	-22	47	30	35	31	25	-23	52	34	23
MATLR3	22	24	100	55	-17	32	9	13	26	-4	2	46	50	12
FATLR4	18	52	55	100	-21	37	39	36	32	18	5	52	51	15
FATLR5	26	-22	-17	-21	100	-37	-22	-20	13	5	30	1	-11	-2
FATLR6	-12	47	32	37	-37	100	52	35	-5	9	-18	44	28	17
MATLR7	-13	30	9	39	-22	52	100	48	-4	20	-45	28	18	13
FATER8	10	35	13	36	-20	35	48	100	23	23	-47	9	21	24
FTED2	14	31	26	32	13	-5	-4	23	100	34	7	37	11	44
MTEDEx3	-5	25	-4	18	5	9	20	23	34	100	-11	19	11	36
MTEDEx4	3	-23	2	5	30	-18	-45	-47	7	-11	100	5	-2	7
MTED5	18	52	46	52	1	44	28	9	37	19	5	100	22	13
FTED6	6	34	50	51	-11	28	18	21	11	11	-2	22	100	10
FTED7	-25	23	12	15	-2	17	13	24	44	36	7	13	10	100

Unrotated Factor Matrix

SORTS	Factors							
	1	2	3	4	5	6	7	8
FATLR1	0.0651	0.4506	-0.3193	0.7022	0.0078	-0.0760	-0.0370	-0.0501
FATLR2	0.7398	0.0112	0.0523	0.0060	0.1971	-0.1967	0.3389	0.4471
MATLR3	0.5769	0.3651	-0.4232	-0.1218	-0.2729	-0.0888	-0.1654	-0.3009
FATLR4	0.7775	0.2510	-0.2095	-0.0222	-0.0657	0.0943	0.0134	-0.0251
FATLR5	-0.3292	0.5250	0.2254	0.3361	0.2420	0.4479	-0.2105	0.2094
FATLR6	0.6721	-0.3124	-0.1955	-0.2536	0.3121	0.0474	-0.1592	0.0362
MATLR7	0.5933	-0.5022	0.0359	0.1345	0.2370	0.3061	-0.2474	-0.1388
FATER8	0.5939	-0.3354	0.1977	0.4147	-0.2712	-0.0058	-0.2639	0.1647
FTED2	0.4142	0.5298	0.4793	0.1138	-0.1309	-0.3417	-0.0563	-0.0084
MTEDEx3	0.3618	0.0642	0.6414	0.1057	0.0508	0.2754	0.4274	-0.3616
MTEDEx4	-0.2808	0.6586	-0.0492	-0.4626	0.1291	0.1701	-0.1239	0.0757
MTED5	0.6516	0.3636	-0.1127	-0.0305	0.5209	-0.1216	0.0104	-0.1098
FTED6	0.5526	0.1709	-0.2911	-0.1302	-0.4461	0.4468	0.2219	0.1795
FTED7	0.3737	0.1267	0.6579	-0.3509	-0.1826	-0.0326	-0.3144	0.0608
Eigenvalues	4.0046	2.0333	1.6308	1.2549	0.9434	0.7949	0.6937	0.5696
% expl.Var.	29	15	12	9	7	6	5	4

Path and Project Name: C:\PQMethod\projects\digital\teachers

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Cumulative Communalities Matrix

	Factors 1 Thru							
SORTS	1	2	3	4	5	6	7	8
FATLR1	0.0042	0.2072	0.3092	0.8023	0.8023	0.8081	0.8095	0.8120
FATLR2	0.5472	0.5474	0.5501	0.5501	0.5890	0.6277	0.7425	0.9424
MATLR3	0.3329	0.4662	0.6452	0.6601	0.7346	0.7424	0.7698	0.8603
FATLR4	0.6045	0.6675	0.7114	0.7119	0.7162	0.7251	0.7253	0.7259
FATLR5	0.1083	0.3839	0.4347	0.5477	0.6063	0.8069	0.8512	0.8950
FATLR6	0.4517	0.5493	0.5875	0.6518	0.7492	0.7514	0.7768	0.7781
MATLR7	0.3521	0.6042	0.6055	0.6236	0.6798	0.7735	0.8347	0.8540
FATER8	0.3527	0.4652	0.5043	0.6762	0.7498	0.7498	0.8195	0.8466
FTED2	0.1716	0.4523	0.6820	0.6949	0.7120	0.8288	0.8320	0.8321
MTEDEx3	0.1309	0.1350	0.5465	0.5576	0.5602	0.6360	0.8187	0.9494
MTEDEx4	0.0789	0.5126	0.5150	0.7290	0.7457	0.7747	0.7900	0.7957
MTED5	0.4246	0.5568	0.5695	0.5704	0.8417	0.8565	0.8566	0.8687
FTED6	0.3054	0.3346	0.4194	0.4363	0.6353	0.8349	0.8841	0.9164
FTED7	0.1397	0.1557	0.5885	0.7116	0.7450	0.7461	0.8449	0.8486
cum%	29	43	55	64	70	76	81	85
expl.Var.								

Factor Matrix with an X Indicating a Defining Sort

	Loadings		
	1	2	3
QSORT			
FATLR1	0.4191X	-0.3371	-0.1411
FATLR2	0.5215	0.3929	0.3518
MATLR3	0.8019X	0.0152	-0.0438
FATLR4	0.7909X	0.2167	0.1974
FATLR5	-0.0944	-0.6231X	0.1938
FATLR6	0.4339	0.6313X	0.0260
MATLR7	0.1734	0.7437X	0.1494
FATER8	0.1770	0.6016X	0.3332
FTED2	0.3300	-0.2262	0.7224X
MTEDEx3	-0.0117	0.1329	0.7271X
MTEDEx4	0.1374	-0.7043X	0.0060
MTED5	0.7069X	0.0521	0.2589
FTED6	0.6267X	0.1626	0.0137
FTED7	0.0194	0.0867	0.7620X
% expl.Var.	21	19	15

No	Statement	Factors		
		1	2	3
1	I think the relationship with the student needs to be face-to-face	0	-2	1
2	I am concerned that the quality of learning will go down if students are	-2	-2	-2
3	I have real concerns with large chunks of learning being delivered	-2	-1	-2
4	I believe students are digital natives and feel more comfortable	-2	2	2
5	I think through online support, the student, teacher relationship can be	0	0	-3
6	Using technology, you can resolve issues quickly and motivate	-3	0	-1
7	Digital technology enables students to take ownership of their learning	0	1	2
8	I don't think students have the skills or motivation to learn online	-3	-1	-3
9	Students are leading change as they make a definite choice to use	-2	1	0
10	I think technology brings many opportunities for both the teacher and	2	3	0
11	Digital technologies are a distraction for students' learning	-1	-3	0
12	Digital education needs to be carefully supported by teacher and	2	-3	3
13	Learners' attitude to learning must change before they will be able to	0	-2	-3
14	Solely online education will become more impersonal between student	1	-3	1
15	If we don't use digital technology with students, we will be doing them	1	1	-2
16	I am nervous about being a virtual online teacher; it's not for me	-4	0	3
17	I feel confident with digital education technologies	3	2	-1
18	Students are more confident than we are to use technology	-1	0	4
19	If I were to teach online, I would need training for this	-1	-1	2
20	I am confident in teaching myself how to use different digital technology	4	2	-2
21	It is a pressure to keep up with constantly changing digital technology	-2	0	0
22	I feel stimulated and confident to use digital technology for teaching	3	4	0
23	There needs to be more staff development for digital technologies to	2	1	2
24	Teachers need more training for online pedagogy	3	-2	1
25	I enjoy incorporating different digital technology to suit my delivery	4	2	4
26	I feel unprepared for a digital education future	-4	0	-1
27	I see the future role of the teacher as a coach or facilitator, someone	0	3	-1
28	I worry that digital technology creates an expectation of immediacy of	-1	-1	-1
29	I believe there is a requirement to change my teaching practices	1	3	-1
30	Digital technology will dehumanise and de-professionalise the teacher	0	-2	-3
31	It is the responsibility of the teacher to stay up to date, particularly in	1	4	2
32	There is a danger to teachers being always accessible; you don't get	-3	-1	0

No	Statement	Factors		
		1	2	3
33	I think technology will have a negative impact on the future role of the	-1	-3	0
34	Technology developments have led to a blurring between work,	0	1	-2
35	I use social media and feel it is a great way to engage with students	0	3	-4
36	Digital technology offers better opportunities for staff to develop	-1	1	1
37	We need to understand what a quality online experience looks like;	2	0	3
38	Technology is a way of saving money	1	0	1
39	Teaching will certainly change as digital education takes a more	3	-1	1
40	Vocational education is practical; you can't do that online	1	-4	0
41	Classroom teachers will become extinct	-3	-4	-4
42	Digital education is the future for teachers, we need to embrace it	2	2	3

Variance = 4.476 St. Dev. = 2.116