‘Mind The Gap’

A Constructivist Grounded Theory Exploring the Role of Social Media in Augmenting the Professional Learning Journey of Generation Z Undergraduate Student Diagnostic Radiographers

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ABSTRACT

Generation Z (Gen Z) have been born into a fully technological age. They are expert users of social media (SoMe) in their day to day lives yet little has been explored around the use of this same technology during the course of diagnostic radiography undergraduate studies to assist with and augment professional learning activities.

The main aim of this qualitative study was to research the gap identified in the literature by investigating the experience of Gen Z diagnostic radiography students' use of SoMe to augment their professional learning journey.

The study used constructivist grounded theory, which led to a co-created substantive theory. Semi-structured interviews (10) were conducted to gather information about their experiences of the use of SoMe to augment their professional learning.

Data analysis identified that there is a gap in confidence levels between the students' use of SoMe for personal and professional purposes. Personal usage confidence is high, whilst professional usage confidence is low and the intervening gap needs to be addressed if benefits of using SoMe to augment learning during the course of studies are to be realised.

Having heard the participant voices that confidence is low when using SoMe for professional learning, when all other indicators of SoMe usage would point to a high level of expertise, there is scope in the future design of curricula to address this gap and seek out new and innovative ways to address it. In order to support professional learning using social media, we must not forget or fail to utilise the high level of competence that has already been developed within our fully digital native Gen Z students.

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I would like to dedicate this piece of work to my brother Mark. He knows why. He is precious and loved.

CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS

BSc: Bachelor of Science

CGT: Constructivist Grounded Theory

CoP: Communities of Practice

CPD: Continuing Professional Development

DoH: Department of Health

DR: Diagnostic Radiography

Gen Z: Generation Z

GT: Grounded Theory

HCPC: Health and Care Professions Council

Hons: Honours

NHS: National Health Service

SoMe: Social Media

SOP: Standards of Proficiency

WHO: World Health Organisation

ZPD: Zone of Proximal Development

Chapter 1

Introduction

'If our computers are becoming smarter, able to selectively retrieve, store, and alter highly volatile information life cycles, then the role of the learner is changing too. Our students need no longer function like machines that replicate a 'master' knowledge of something that will surely change because technology will continue to make more information available than ever before….' (Privateer, 1999)

1.1 Introduction

This chapter provides the rationale for the doctoral study, background information and key concepts to set the context for the research question. It outlines the research problem and presents the overarching research question and associated sub-questions. In this doctoral thesis, a constructivist grounded theory (CGT) approach has been used to explore the accounts and reflections of Generation Z (Gen Z) student Diagnostic Radiographers in relation to their experiences of using social media (SoMe) during their course of study. A large motivator for this study arose from a professional interest in SoMe and its potential to augment learning in the professional context via content, networking and confidence growing, with a particular focus on Gen Z. It is worth noting that, although this study is looking at the research question through the lens of Gen Z, the history of SoMe dates back to the 1970s with the emergence of the internet. Later, in the 1980s and 1990s, personal computer usage became part of a new normal, which cemented the foundations for SoMe from that time onwards.

For several years now, I have asked the question of what does that mean for education? How are we adapting to a landscape that is changing so rapidly around us? Are educators and students equipped to harness the digital potential? SoMe platforms such as Facebook, YouTube, WhatsApp, Twitter, Instagram and TikTok have become an integral part of daily life. All of the named SoMe platforms will be familiar to Gen Z students – although, as the latter chapters in this thesis reveal,

there are preferred favourites. Carr and Hayes (2015) define SoMe as forms of computer-mediated communication, where users set up their individual profiles but also generate their own content, interacting also with the content of others. The numerous platforms of SoMe can be grouped together under three main headings. These categories are not rigid, as some of the SoMe platforms overlap.

Social Networking – Facebook, Instagram, Twitter
Content sharing – YouTube, Tik Tok
Content creation and editing – Blogger, Google Docs, Wikipedia and WordPress.

Studies conducted in various parts of the globe have proven the benefits of integrating SoMe for facilitating teaching and learning in higher education (HE) (Lo, 2013). Moreover, SoMe can provide an opportunity for students to acquire the skills of communication, collaboration (Zgheib, 2014), critical thinking, creativity and life-long learning (Collins and Halverson, 2018).

A scoping review of the literature, looking more broadly at the professional use of SoMe by healthcare students, was conducted in advance of the data collection and is presented in Chapter 2. This demonstrated that research with specific focus on the diagnostic radiography (DR) student body was very limited. Even over the wider healthcare student spectrum, very little research draws on personal accounts. SoMe is a worldwide practice and none more so than in the younger age groups in society. However, within the literature there are ongoing common themes of debate and uncertainty about the role SoMe plays within the professional education of healthcare students. There have been limited attempts to make sense of the use of SoMe in terms of wider theoretical frameworks. Therefore, this constructivist grounded theory approach to data gathered from GenZ DR students, integrated with existing theoretical frameworks, provides an opportunity to gain fresh insights. Consequently, a grounded theoretical perspective of the use of SoMe for professional learning has been developed, which can inform and develop future radiography curricula.

Over the next 10 years, health needs and care delivery will change significantly owing to the development of technology and artificial intelligence. The NHS Long

Term Plan (NHS, 2019) sets out a new vision for healthcare delivery in the 21st century. This vision is accompanied by the NHS People Plan (NHS, 2020), which highlights how the workforce will need to keep pace with both science and technology advances to be more flexible and adaptive in its professional abilities. Radiographers will need to enter the registered (qualified) workforce with a wide range of professional knowledge and skills. This knowledge, skills and level of competency must be developed during the students' undergraduate learning journey. Although the focus of professional learning in the HE setting is aligned to achieving both the technical and professional competencies required during the course of study, it is still prudent to acknowledge that the context of learning has now expanded to beyond the classroom and clinical placement setting.

The use of technology and the rise of Web 2.0 has significantly altered the opportunity to access learning. Farley et al., (2015) commented on how learning is now available to all, at any time and in a place that is suitable for the learner. Understanding this mode of learning has resulted in scholarly discussions around ideas such as networked learning (Garrison, 2011), connected learning (Ito et al., 2013), connectivity (Siemens, 2006), and public pedagogy (Hayes and Gee, 2010). Accordingly, every new generation entering HE presents a unique set of challenges for curriculum design and delivery. Figure 1 shows the broad definitions of the generations from 1928 onwards.

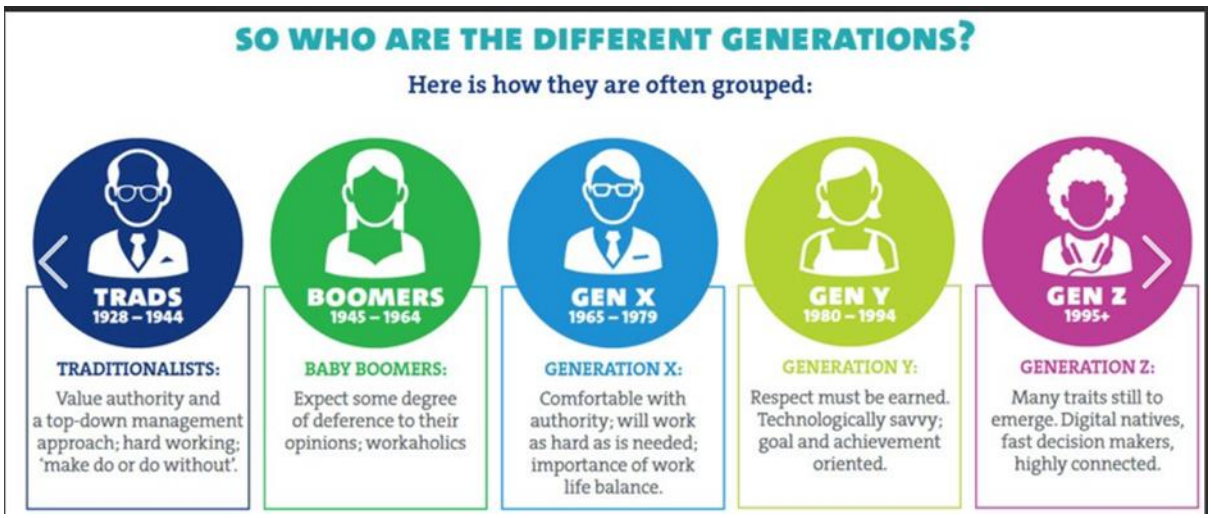

Figure 1 Different Generations from 1928 to 1995+
(Burkett, 2016)

The development of the professional self is a social, cultural, and relational undertaking. In the current digital age, these social, cultural, and relational settings can also occur online via SoMe platforms throughout the professional learning journey from student to graduate and beyond. Several reasons exist why the facilitation of social networks on SoMe support the potential professional development of students:

i. Social media channels are easy to use and are ubiquitous.
ii. In terms of accessing them, there is little need for training (Bexheti, Ismaili and Cico, 2014; Srivastava et al., 2018).
iii. Once established on SoMe, social networks allow people to connect with others who have similar interests, activities, hobbies and backgrounds (Srivastava, 2018).
iv. These often unintentional learning spaces provide an online environment to support relevant professional learning and offer access to a wealth of resources without limitations of geographical location or significant monetary considerations (Westrick, 2016).

Gen Z have experienced life with some formative events that have impacted and shaped their characteristics. Aside from being born into a fully digital age, other impactful factors include a general lack of work experience, the rise of justice movements, with many being led on SoMe and a growing safety-first culture (Livingstone, 2017). They have a plethora of titles to describe themselves, for example: iGeneration, Gen Tech, Online Generation, Post Millennials, Facebook Generation, Switchers, ‘always clicking’ (Dolot,2018). Scholars have also assigned further titles to this generation such as the C Generation, reflecting their connectivity, constant communication, content centricity and community orientation (Cilliers, 2017; White, 2017), and the R Generation, expressing their focus on responsibility (Csobanka, 2016, p. 67).

Figure 2 highlights how the educational views and understanding of Gen Z have shifted dramatically from previous years, into a new space that HE is yet to fully appreciate (Hernandez-de-Menendez et al., 2020). For example, they view internet

connectivity as a human right, they embrace failure and see gaming as a foundation for engagement (ibid).

	Before GenZ	Transition to GenZ
Internet access	A privilege	A human right
Influence	Purchased	Earned
IP/patents	Value creators	Barriers
Failure	Avoided	Embraced
Gaming	Non-value-add play	Foundation for engagement
Uncertainty	Prepared to	Predicted
Retirement	A destination	A journey
Connectivity	A luxury	A necessity

Figure 2 Educational Experiences with Gen Z
(Hernandez-de-Menendez et al., 2020)

Communication amongst Gen Z on their various technological devices, whether this is a smartphone, laptop or tablet, is continuous and, as seen in Figure 2, their connectivity is seen as a necessity of life. Reeves and Oh (2008) makes the claim that Gen Z's first language is a technological one. The report by Liverperson (2021) based on an online survey of 3,200 18 to 34-year-olds, also categorised as Gen Z and Millennials, found the majority of interactions for younger people aged 18-34 has now flipped from an 'in real-life' (IRL) mode to digital communication via messaging and social networks. It was reported by Liverperson (2021) that, in the UK, 74.4% across the age range communicate more digitally each day, than they do in person. Some commentators emphasise the challenges of such a population, citing lack of concentration, a need for immediate screen stimulation and higher mental health concerns (Twenge, 2017; Patalay and Gage, 2019). Others, however, have focused on Gen Z's tendency to be more entrepreneurial, practical in nature, adaptable to new and different models of learning and working, and to be a transformational generation in terms of both their philosophy and actions (Chasteen Miller and Mills, 2019). Gen Z are concerned about climate change, sustainability of the planet, equality, and human rights. In the United States of America, the 2018 'March for Our Lives' event against gun crime hosted Yolanda, the nine-year-old granddaughter of Martin Luther King, who proudly referred to her grandfather's 'I Have a Dream'

speech and shouted confidently to the 200,000 strong crowd that: ‘My grandfather had a dream that we will not be judged by the color of our skin, but rather by the content of our character. Spread the word. Have you heard that we’re going to be a great generation?’ (Ellison, 2018). Yolanda, now 14 years old and, no doubt, looking at potential career options, is a great example of how this generation type view their potential and how it will be outworked within the digital space.

Therefore, it is important to understand more about the role of SoMe within the professional learning of diagnostic radiography students, with a particular focus on current Gen Z entrants to HE. Our goal as educators is to help students reach their potential and this will undoubtedly require a critical look at the tools at our disposal to facilitate this journey.

1.1.1 Rationale and Background

Healthcare literature has been used to describe the characteristics of the millennial generation born in the early 1980s through to the mid-1990s (Seemiller and Grace, 2016; Shatto and Erwin, 2016). They are observed to respond to learning in terms of expectations, aptitude and preferred style in a way that aligns closely with their upbringing and development in a digitally focused society (Roberts, 2005; DiLullo et al., 2011). However, a new generation of students, Gen Z, born between the mid-1990s and ending around 2012 (Turner, 2015; Seemiller and Grace, 2016; Shatto and Erwin, 2016; Twenge, 2017) are the increasing intake into HE from this point in time and onwards. They have not experienced a life without SoMe and it has become their primary source of communication. This new and emerging generation carries some of the same characteristics as the Millennials, but there are also some notable differences. One of these differences in terms of education is that there is a large emphasis on generating their own content alongside consuming it (Nagy and Kölcsey, 2017).

Bowen (2013) outlines that the advances in technology have been moving forward faster in the last 20 years as opposed to the previous 200 years. With such a wealth of information available, combined with the tools and technology available, there has not been such a time to bring education to students in so many ways and from such

a vast repository (Renes and Strange, 2010). This ubiquitous access to digital resources highlights the fact that university campuses are now ‘saturated with digital mediation’ (Gourlay and Oliver, 2012, p.1).

As natives in this digital world, most diagnostic radiography students are well versed in instant communication using WhatsApp or social networking sites such as Facebook and Twitter. They process information differently from the generations preceding them, and it is in this context that Prensky (2011) purports that the assumptions that current teaching methods are effective can no longer be valid. Therefore, it is important for educators to keep abreast of current pedagogy regarding learning theories and techniques. O’Flaherty et al.,’s (2015) blended learning approach outlines the use of more traditional face-to-face lectures alongside the offering of a range of technological resources. With the range of technologies available, including the use of SoMe and the expectations of the Millennial and Z generations, it has been widely recognised as essential that course design and the teaching associated with it, goes beyond the face-to-face didactic lecture (Ferreri and O’Connor, 2013; Ito et al., 2013). Bynam (2011) and Prescott (2014) highlight how differences in the teaching styles of academics influence how they view the use of SoMe in their curriculum design and delivery. The more learner-centred pedagogical approach aligns with a greater use of SoMe, whilst the teacher-centred teaching style leant towards an arm’s-length view of the usefulness of SoMe in teaching design (Prescott, 2014). Similarly, Bynum (2011) concluded that both teaching styles and the curricula must adapt and change to respond to an increasing different landscape of student knowledge creation.

However, despite the exponential growth of SoMe available and, for the majority, accessible literally in the palm of their hands, research on the use and role of this technology in professional undergraduate education is still yet to be fully explored. Cathala et al., (2021) looked at the use of SoMe for learning in a cross-sectional study with international student nurses and concluded that there is little known about how diverse cohorts of student nurses use SoMe for specific purposes at different stages of their learning. How the use of SoMe applies to the professional learning of a radiographer needs to be looked at in the context of the role of a radiographer, and the development of radiography education to the present day.

1.2 Who is a Diagnostic Radiographer?

A diagnostic radiographer, in the simplest terms, is someone who is qualified and equipped with the knowledge and skills to undertake a range of both simple and complex imaging examinations or treatments on various patient types and conditions and across a variety of settings (Health Careers, 2022). They can also exert a level of personal responsibility and make decisions in often unpredictable and difficult circumstances for the benefit of the patient (College of Radiographers, 2022). Competency in these areas is an expectation of professional registration, as outlined by the Health and Care Professions Council (HCPC), by achieving a minimum qualification of a BSc (Hons) degree or equivalent.

1.3 Education of Diagnostic Radiographers

Eraut (1994) recognised five stages of professional knowledge and competence as follows:

1. Period of pupillage or internship, during which students spend a significant amount of time learning their craft from an expert. For a DR this will be taught via a combination of theoretical, practical and practice-based teaching.
2. Enrolment in a ‘professional college’ outside the higher-education system. For a DR in the United Kingdom, this will require registration with the HCPC.
3. A qualifying examination normally set by a qualifying association for the occupation. For a DR this may take various forms of assessment that meet regulatory body required standards and outcomes.
4. Period of relevant study at a college, polytechnic or university leading to a recognised academic qualification. For a DR this will normally take the form of a Bachelor of Science degree.
5. Collection of evidence of practical competence in the form of a logbook or portfolio (Eraut, 1994:6). For a DR, periods of practice-based learning in a clinical setting are recorded and assessed.

Although now firmly established in the HE arena, radiography was one of the late adopters of graduate entry education in the UK, with the transition happening during the period 1990 to 1991 McKenna et al., (1995).

HCPC approves radiography[1] educational programmes in the UK, which health professionals must complete before they can apply to be on the register. This means that anyone using the title 'Radiographer' must be registered with the HCPC before commencing employment. At the time of writing (2022/23), there were 54 approved programmes of education at 25 approved HE institutions covering both diagnostic and therapeutic training courses. Approval of programmes is assessed against the Standards of Education and Training. Meeting these standards via an HCPC-approved course confers eligibility for registration with HCPC. The full set of standards can be found in Appendix A. In relation to exploring the role of SoMe in the professional learning journey of student diagnostic radiographers, these specific standards are the most applicable:

4.6 The learning and teaching methods used must be appropriate to the effective delivery of the learning outcomes.
4.7 The delivery of the programme must support and develop autonomous and reflective thinking.
4.8 The delivery of the programme must support and develop evidence-based practice.
4.9 The programme must ensure that learners are able to learn with, and from, professionals and learners in other relevant professions.
5.7 Practice educators must undertake regular training which is appropriate to their role, learners' needs and the delivery of the learning outcomes of the programme.
5.8 Learners and practice educators must have the information they need in a timely manner in order to be prepared for practice-based learning.

[1] Radiography is the regulated protected title. There are two different training pathways that are distinguished using the terms Diagnostic Radiography and Therapeutic Radiography. This study focuses on Diagnostic Radiography only.

1.4 The Professional Learning Process

The concept of learning is complex and difficult to define (Illeris, 2009; De Houwer et al.,). However, at its core, learning is an active process that results in a change in knowledge or behaviour because of experience and social interactions (Dewey, 1938; Piaget, 1964; Vygotsky, 1986; Rogoff, 1998; Bransford, 2004). Critics, of this type of definition argue that defining learning is more complex (Geary, 2009; Säljö, 2009), with other researchers discussing learning in terms of evolving, complex and contextually relational (Hager and Hodkinson, 2009; Johnsson and Boud, 2010). The term 'learning' has also been used to describe areas that relate to skills development, personal development, and the ability to access information (Fenwick, 2010). Fenwick (2010), alongside the previously mentioned critics of the term, continues to argue that 'learning' as a standalone term is not useful and lacks any sense of overall meaning. With learning, therefore, conceived as a constantly evolving phenomenon, the learner is connected to their contexts in an ever-changing discourse.

As explained in the paragraphs above, DR students are educated to BSc (Hons) academic level 6, with the expectation that they will join the HCPC register and comply with the various codes of performance, conduct and ethics. Furthermore, there are other guidelines, frameworks and statutes that provide structure for the healthcare professional in being deemed a 'professional' (Department of Health, 2007, 2009). The essential goal of the undergraduate training and education is, therefore, to develop and facilitate this professional learning journey and prepare students adequately to fit the role of a healthcare professional, cultivating the meta-skill of professionalism along the way (HCPC, 2012).

The curriculum is subsequently derived of expected outcomes that are set to define what the learner needs to know to practise safely and effectively in the clinical setting, alongside knowing how to behave to fit the title of 'professional'. Graduates are educated to be able to apply critical thinking and make effective clinical decisions, delivering competent and professional care (Thompson et al., 2001; Yildirim and Özkahraman, 2011). The learning experience can involve a wide range of teaching styles, including the traditional lecture, independent study, project-

based and collaborative learning and, more recently, the hybrid approach between face to face and online teaching delivery. The quality of learning is very much influenced by external social factors, of which the current rapid changes in technology must be at the fore (Henard and Roseveare, 2012). It has been argued that a mismatched alignment between an academic's approach to teaching and a student's preferred method of learning can create obstacles to reaching the desired learning outcomes (Romanelli et al., 2009).

This professional learning journey of DR aligns with the definition that 'learning becomes professional when it is goal oriented and work-related' (Zuber-Skerritt et al.et al., p. 7). The core purpose of training DR students is to equip them to enter the qualified workforce with a competent, confident and professional approach.

Webster-Wright (2010) would not see the process of professional learning as 'coerced or controlled', but rather 'supported, facilitated and shaped'. The need, therefore, to not only meet professional regulatory education standards but to also grow professionally requires the ability to assimilate four types of knowledge *(*Tynjälä and Kallio, 2009; Tynjälä and Gijbels, 2012*)*:

1. Factual and theoretical knowledge (e.g. books).
2. Experiential knowledge (acquired through ongoing experimentation and practice.
3. Self-regulated knowledge (focusing on metacognition and 'knowing oneself').
4. Sociocultural knowledge (located in communities of practice and interactions).

1.5 Research Focus

An exploration of Gen Z student diagnostic radiographers' experiences of using SoMe for professional learning.

Aim

The overall aim of this thesis is to define how SoMe is understood within the professional learning of undergraduate diagnostic radiographers from their perspective in order to develop a substantive theory.

This study aims to explore and define Gen Z student diagnostic radiographers' engagement with the professional use of SoMe looking from their perspective and using a constructivist grounded theory approach (Charmaz, 2006; 2014).

Objectives

The central question for this study, as outlined above, is supported by the following research objectives:

- to explore how DR students report their interactions on SoMe in terms of professional learning;
- to examine how DR students' perceptions of SoMe affect their professional learning within their course;
- to investigate how DR students navigate SoMe sites to identify areas of learning that meet their perceived needs;
- to understand what DR students perceive as the barriers and facilitators to engaging with SoMe effectively as a means of professional learning within their course of study.

1.6 Concepts Underpinning this Study

Siemens (2005) proposed connectivism as a learning theory for this new digital age in which we all firmly reside as either native or immigrant. The plethora of learning theories to date have tended to be clustered under the three main headings of behaviourist, cognitivist and constructivist (Lowerison, 2008). However, as Knox (2017) reminds us, these learning theories were developed at a time when technology was not making an impact on instructional settings. Figure 3 below outlines the properties against the main learning theories.

Property	***Behaviourism***	***Cognitivism***	***Constructivism***	***Connectivism***
How does learning occur?	Black box - observable behaviour main focus	Structured, computational	Social, meaning created by each learner (personal)	Distributed within a network, social, technologically enhanced, recognizing and interpreting patterns
Influencing factors	Nature of reward, punishment, stimuli	Existing schema, previous experiences	Engagement, participation, social, cultural	Diversity of network
What is the role of memory?	Memory is the hardwiring of repeated experiences - where reward and punishment are most influential	Encoding, storage, retrieval	Prior knowledge remixed to current context	Adaptive patterns, representative of current state, existing in networks
How does transfer occur?	Stimulus, response	Duplicating knowledge constructs of "knower"	Socialization	Connecting to (adding) nodes
Types of learning best explained	Task-based learning	Reasoning, clear objectives, problem solving	Social, vague ("ill defined")	Complex learning, rapid changing core, diverse knowledge sources

Figure 3 Learning Theories
(Siemens, 2005)

Flynn et al., (2015) examined the conceptual frameworks of medical educators in using SoMe within the curriculum design and mapped these to learning theories. The theories seem to have moved from a behaviourist stance to constructivist which appears towards the end of the spectrum. The spectrum includes Social Development Theory, Communities of Practice, Discovery Learning and Cognitive Apprenticeship**.** The golden thread of the theories highlighted in Flynn's study point to a shared belief that knowledge construction occurs in a subjective manner within a social environment. The learning process occurs with the support and guidance of those with more expertise than the learners, with learners actively constructing their knowledge base through ongoing peer interaction.

The same study highlighted the relevance of connectivism in the use of SoMe within medical education (ibid, 2015). Although Siemens (2006) argues that this is a new theory, critics place it as a framework (Verhagen, 2006), as complementary to other existing theories (Kop and Hill, 2008) or as an 'influential phenomenon' (Bell, 2011, p. 112.) Whilst not in support of connectivism as a standalone theory, the critics all recognise a shift in paradigm for learning in our contemporary digital age. This can

be described as Pedagogy 2.0, reflecting the Web 2.0 technologies (McLoughlin and Lee, 2011). The key elements of Pedagogy 2 are self-directed learning, user-generated content, and personalised learning. The entire group from the study came to a consensus on connectivism as a learning theory that was relevant and reflected their approach to using SoMe in their teaching and learning activities (Flynn et al., 2015).

Connectivism, therefore, also holds strong implications for teaching more broadly in a technological era. The concept that is largely undisputed and remains quite unique to connectivism is that how people learn, work and function is altered by the technology that is available and being used. It is a networked process between people and technology and 'stated simply, connectivism is social learning that is networked' (Duke et al., 2013, p. 6).

Additionally, Downes (2010) discussed connectivism in detail, with a specific focus on networks and distributed learning. His contribution to the connectivism debate calls for a new dawn of learning theory and a desire 'to find a new renaissance' for knowledge (Downes, 2008, p. 100).

Connectivism has driven the learning theory dialogue forward, with some scholars considering it the clear successor to behaviourism, cognitivism and constructivism (Garcia et al., 2015). However, the paper by Goldie (2016) reviews 13 articles, the authors of which remain unconvinced that connectivism is a replacement for the three main schools of learning theories. Indeed, they point to connectivism being a blend of all of them, with the widespread and accessible sources of networked information being influenced by learning theories of the past.

The principles of connectivism, (see figure 4 below) however, do need to be considered in our new technological era to assist educators in their own professional development of curriculum design.

- Learning and knowledge rests in the diversity of opinions.
- Learning is a process of connecting.
- Learning may reside in non-human appliances.
- Learning is more critical than knowing.
- Nurturing and maintaining connections are needed for continual learning.
- The ability to see connections between fields, ideas, and concepts is a core skill.
- Accurate, up-to-date knowledge is the aim of all connectivist learning.
- Decision-making is a learning process. What we know today might change tomorrow. While there's a right answer now, it might be wrong tomorrow due to the constantly changing information climate.

Figure 4 Principles of connectivism
(Siemens, 2004)

Technology and the scope of its potential, is, therefore, undoubtedly changing the way in which we learn and subsequently function. Therefore, leaving connectivism as the potential guiding theory for educators to apply to the new generations of learners in innovative ways. However, I am inclined to stand with Bell (2011), who questions whether a singular theory has ever been sufficient to encompass the complexity of the learning context.

1.7 Impetus for the study

Having completed my master's degree in Strategic Workforce Development several years ago, I began to work in the area of workforce and service development within the National Health Service (NHS). This meant that strands of work were focused on future educational needs of individuals and how these would be supported by educational structures. One project was to help to develop a continuing professional development (CPD) App. This App would bring the vast amounts of knowledge, already available for professionals to access, together into an accessible application available on their phones or other smart devices. I commenced the Professional Doctorate programme in 2018 to broaden my knowledge and understanding in the field of academic curriculum development and in the student learning journey, that would align to the digital age in which we now live. I have always had an innovative approach to my work and have a deepening desire to think critically about innovative local and global practices within education.

Often working as an independent consultant on projects, I became intrigued and engaged with social networking technologies, particularly Twitter, as they helped to keep me connected to my professional peers and also connected with many others in leadership, education and the innovation spheres of practice. Often, I remained on the periphery, but always felt I could do more to expand my learning. This feeling resonates with the concept of Communities of Practice (CoP) as espoused by Lave and Wenger in the late 1980s and early 1990s. CoP are formed by people who engage in a process of collective learning, aiming to share and learn from a shared human endeavour. Wenger, 2011 has poetically described potential CoP as;

> …a tribe learning to survive, a band of artists seeking new forms of expression, a group of engineers working on similar problems, a clique of pupils defining their identity in the school, a network of surgeons exploring novel techniques, a gathering of first-time managers helping each other cope. In a nutshell: Communities of practice are groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly. (Wenger, 2011).

On starting a formal academic role within the HE sector, I introduced the use of SoMe for professional learning purposes into one module. The students reacted favourably; yet, for many, it was a steep learning curve, which surprised me, considering their overall usage of SoMe in their personal lives. This challenged me to want to explore why this would be the case. I concluded I needed to seek out more critical insight into the context of our current digital age and the learning cultures of our upcoming generations of students (Seely Brown and Thomas, 2011).

1.8 Contribution of the Study

Currently, a gap exists in the literature underpinned by research on how SoMe is used for professional learning within the undergraduate healthcare training programmes, in particular diagnostic radiographers. With the digital natives of Gen Z and alpha constituting our pool of upcoming students, it is timely to explore the role that SoMe has on their professional learning journeys. The study by Rambe (2012) suggested a gap in the literature in understanding the relationship between SoMe,

student learning, and effective pedagogy. It is this gap in the research knowledge that this thesis claims to have contributed new knowledge towards.

1.9 Organisation of Dissertation

In this section I outline how I developed and organised my thesis. This was not straightforward for me as a novice researcher, I had to think of where sections should fit and move them around in order to tell a coherent story of my research and its original contribution to knowledge.

Chapter 1 introduces the context of the study aligned to the research question. It discusses the professional learning journey of an undergraduate diagnostic radiographer and introduces this against the backdrop of a digital world. It explains the process of becoming a registered diagnostic radiographer and the regulatory standards required. It has also looks briefly at learning theories in the online technological age. This chapter presents the research focus, the aim and objectives together with some of the main theories of learning.

Chapter 2 presents a preliminary literature review, identifying the range of research that currently exists on the use of SoMe with undergraduate healthcare courses. This literature review takes the form of a scoping review and uses Arksey and O'Malley (2005) framework for this type of review. In this chapter I draw on the work of twenty one different research papers and examine how healthcare students might use SoMe for professional learning. At the end of the chapter, I make clear the gap in the existing literature.

Chapter 3 presents the methodological design of the study, including research paradigm and the rationale for the selected methodology of CGT. It relates the philosophical position of the researcher to the chosen methodology. The chapter also describes the different grounded theory approaches.

Chapter 4 presents the methods used throughout this study. This study applied the constructivist grounded theory methods. This chapter also discusses and justifies the

data collection methods of in-depth interviews, including the use of field notes and memos.

Chapter 5 presents the key findings identified through the stages of data analysis and coding in this study. The theory emerging from the data is presented and the meanings generated by the participants are explained using narrative text and direct quotes.

Chapter 6 further explains the grounded theory, positioning it within the literature and conceptual frameworks which frame the study.

Chapter 7 presents the conclusion of this thesis and brings together all the elements of this study. It provides recommendations for applications to future practice and looks at the limitations of the study and with a look at the original contribution to knowledge that this study brings, alongside some concluding thoughts and reflections.

1.10 Summary of Chapter

This first chapter sets the scene for the doctoral study. It does this by outlining some of the demographic factors afforded to Gen Z, explaining the role of a diagnostic radiographer, and briefly looking at the definition of professional learning. The combination of these three key aspects of the study positions the reader to further explore the thesis with some background understanding. I have shown the rationale for exploring the role of SoMe in professional learning among Gen Z student radiographers with the research question and the aims and objectives. I have used the first person throughout the thesis in recognition of my role in the knowledge construction. This interpretive approach is a means of enhancing the credibility of the methodology with its transparency of process (Tobin and Begley, 2004). My voice will be more evident in some sections compared to others, but at all times it will be an important feature of the narrative.

The next chapter presents a scoping review of the literature.

Chapter 2

Literature Scoping Review

2.1 Introduction

As detailed in Chapter 1, the aim of this research is to investigate the role of SoMe in the professional learning journey of undergraduate diagnostic radiography (DR) students, with a view to developing a grounded theory. This chapter presents a detailed and systematic scoping review of the literature to form an overarching map of the available research (Anderson et al., 2008; Rumrill et al., 2009; Norman and Griffiths, 2014; Peters et al., 2015). The scoping review acts as a rapid mapping exercise, enabling a useful look at broad themes already discussed within the available literature, whilst highlighting the gaps that also exist. Scoping reviews are also recognised in supporting subject areas where limited knowledge may exist or has not yet been extensively explored (Brien et al., 2010; Levac et al., 2010). I commenced a preliminary scoping literature review in 2019 as part of the professional doctorate taught programme, which has been continually reviewed and updated during the study.

2.2 Rationale

The use of a literature review in a grounded theory study has created a diversity of opinions amongst leading scholars (Glaser and Strauss, 1967; Charmez, 2006; Nathaniel, 2006; Holton, 2007). Much of the debate is not whether it should be conducted, but when and in what detail (Cutcliffe, 2000; McGhee et al., 2007). Advocates of the CGT approach view the literature review as an integral component of identifying gaps in the knowledge and needs to be part of the process (Dunne, 2011). Constructivist grounded theorists assert that researchers are ‘part of the research endeavour rather than objective observers, and their values must be acknowledged by themselves and by their readers as an inevitable part of the outcome’ (Mills et al., 2006, p. 2). Therefore, as the researcher, I acknowledge that I am complicit in the process of making meaning, but it is beholden unto me to draw

on my reflexivity and interpretative transparency to make explicit the meanings that I have derived (Carolan, 2003; Charmez, 2006).

Differing from the original concept of grounded theory according to Glaser and Strauss (1967), an evolving and more sympathetic view of the place of the literature review has emerged. I have aligned my approach to that of Strauss and Corbin (1998), being proponents of introducing the literature review at the most appropriate time. This aligns with my view, that it is important to have some prior knowledge of the area of question, whilst still maintaining an open mind to new and emerging theories and any extant literature that becomes of relevance to the ongoing study.

Furthermore, delaying engagement with the literature did not fit with the requirements of the professional doctorate to produce early assignments, apply to the ethics committee, and submit to the yearly doctoral assessment review panels. Within these milestones, a reasonable understanding of the literature and identifiable gaps within is a measured expectation (Cooke, 2014). This preliminary literature review, therefore, provides a key overview of the existing literature to set the context for my study. It highlights the gaps in the knowledge base and makes explicit to the reader the level of prior knowledge of the topic area being studied.

2.3 Introduction to the Study

As discussed briefly in Chapter 1, the Millennial Generation, Generation Z (Gen Z) and beyond have most, if not all, their lives been immersed in a SoMe-driven society. Their preferences for how, when and what they learn have been affected by their digitally saturated upbringing in home, school and social contexts (Roberts, 2005; DiLullo et al., 2011). The Gen Z, being the focus of this study, have not experienced a life without SoMe and, with over 4.26 billion people using SoMe worldwide in 2021, with this number projected to increase to almost six billion in 2027, the scale and prevalence of this phenomenon is here to stay (Number of worldwide social network users 2021 | Statista). We are all familiar with the term ‘social media’, however it is just a short phrase that encapsulates a much wider range of online tools that facilitate communication exchanges (Nyangeni et al., 2015). Users have their own

individual profiles, often generate their own content, share their and other people's content and interact on worldwide platforms with the content of others.
SoMe sites such as Facebook, Instagram, Twitter and TikTok span both the personal and the professional space and have facilities to be private and public. They are extensively used by global society including individuals, celebrities, charities, campaign groups, commercial, educational, and professional institutions. Gen Z-allied health students, including diagnostic radiographers, are well versed in instant SoMe communication. Prensky in his book *Digital Natives to Digital Wisdom* (2011) and, more recently, Price et al., (2018) and Cathala et al., (2021), continue to support the concern that a lack of direction and policy regarding the use of SoMe in a professional learning context is still delaying and hindering the adoption of potentially valuable teaching resources. As discussed in the previous chapter, there is a growing importance for educators to stay updated with learning theories and techniques, particularly in the new digital age (Ferreri and O'Connor, 2013; Ito et al., 2013).

Furthermore, recent studies also highlight how the role of SoMe in education grew exponentially during the COVID-19 pandemic, as it became an effective means of supporting the continuation of education, when the learning experience was conducted wholly online (Khan et al., 2021; Tkacová et al., 2022). School and university life was suspended for face-to-face delivery in over 189 countries (Lampropoulos et al., 2021). Virtual learning has become part of the 'new normal' and SoMe has seen a surge in use for learning, access to news and information sharing (De et al., 2020). In 2016, 21 million students registered for Coursera's courses on their online learning platform. The data from the two years previous to the pandemic showed an annual increase of around 7 million enrolments. However, the increase in new registrations to the learning platform was over three times higher in 2020 and 2021, and the rise is most clearly demonstrated in Figure 5 (The World Economic Forum, 2022).

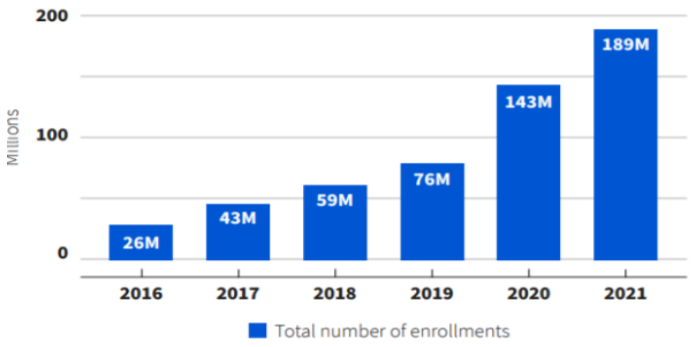

Figure 5 Number of enrolments of Coursera Platform from 2016 to 2021
(The World Economic Forum, 2022)

The statistical data in Figure 5 demonstrates how crucial it now is to grapple with the intersection of this technological and SoMe-driven era and seek credible learning theories to underpin curriculum developments, both now and in the future.

To create a theoretical framework to facilitate the understanding of SoMe in the practice of DR, this study explores how Gen Z (i.e., those born between 1995 and 2004) undergraduate DR students perceive SoMe from their professional learning perspective. Therefore, this scoping review is guided by the following question:

2.3.1 Review Question

How do Generation Z (1995–2004) diagnostic radiography students use social media to augment their professional learning journey?

2.3.2 Objectives

The objectives of this review are to:

- identify the main learning theories in a digital age; and
- explore how the construct of professional learning has been applied to healthcare students' use and understanding of SoMe.

2.3.3 Search Methods and Rigour

A framework developed by Arksey and O'Malley (2005) was used to ensure that the rigour required for the review was employed. The stages of the framework and process can be seen in Table 1 below:

Step 1 identifying the research question	The research question for this study was How do Generation Z (1995–2004) diagnostic radiography students use social media to augment their professional learning journey? The interest in this phenomenon is outlined in Chapter 1. Chapter 3, section 3.2, gives further ontological and epistemological positional exploration to support the research question setting process.
Step 2 identifying relevant studies	Relevant studies were searched using the databases and search terms as detailed in section 2.3.4
Step 3 study selection	Studies were either included or excluded, depending on the criteria outlined in section 2.3.5 and table 2. The search identified 368 pieces of literature for consideration. After duplications were eliminated, there were 179 abstracts left for further identification. Finally, after the abstract screening, 24 papers were further reviewed, with 21 being left for inclusion in this review. A flow chart of the research search is displayed in Figure 6.
Step 4 charting the data	The key information relating to the literature search question was systematically extracted with the following information for each study: author; year of publication; country; research question/hypotheses; methodology; analysis and

	results; conclusions; implications for further research and practice. See Table 3.
Step 5 collating, summarising and reporting the results	This review utilised a narrative synthesis of the included studies to answer the research question. The summative findings align with the core research question. A quality assessment was not undertaken, nor did the review limit inclusion of studies based on their methodological rigor. At this stage, including a wide range of literature was deemed the best way to proceed to get an overview of the current literature.
Step 6 optional consultation	The optional consultation phase was not carried out in a formal sense. Buus et al., (2022) found in their critical review of 66 articles highlighting the use of the consultation phase, that there was no widely accepted consensus on how the consultation phase is conducted. My supervisory team were able to provide a level of consultation in being able to advise and strengthen the overall process.

Table 1 Framework as applied to the literature search

Arksey and O'Malley (2005)

Using the LSBU advanced Discovery service, I searched a wide range of databases for peer-reviewed publications from 2006 (the launch of Facebook and Twitter), as well as hand searching reference lists and key journals. To ensure I was informed of any new literature I set up alerts on Google Scholar. I also searched ETHOS for digital theses. An initial literature search was carried out for DR students, which produced limited results; therefore, the search was widened to health students and across the age spectrum. The question for the literature review was therefore adapted to facilitate a wider search potential: **How do healthcare undergraduate students use social media to augment their professional learning journey?**

2.3.4 Key Search Terms

The following search terms including the use of Boolean operators were used
Students Or college students Or higher education Or university students
AND – healthcare Or health care Or allied health (in abstract)
AND – learning/ learn* Or pedagogy (in abstract)
AND - social media Or Facebook Or Twitter Or Instagram Or Snapchat Or Tumblr Or social networking/network* (in title)

2.3.5 Inclusion and Exclusion Criteria

To ensure I retrieved the appropriate literature I developed a set of inclusion and exclusion criteria. I also attended sessions with the librarians to learn and understand how to perform literature searches. The inclusion and exclusion criteria can be seen in Table 2.

INCLUSION CRITERIA	**EXCLUSION CRITERIA**
Healthcare students only	Papers whose sample was non-healthcare students. Any studies involving patient-led SoMe, including patient education initiatives and any studies looking at the qualified healthcare workforce.
Papers with primary data, i.e. empirical studies, literature reviews and narrative synthesis	Non empirical studies, e.g opinion pieces, editorials, discussion/contemporary papers.
Studies published in English	Papers not published in English.
Only studies published in peer-reviewed journals	Non-peer-reviewed journals or magazine articles.
Only papers published between 2006 and 2021	Any papers published before 2021

Table 2 Inclusion and Exclusion Criteria

The literature review was first undertaken in 2019 as part of the Professional Doctorate taught element. It was updated in 2021 with a refocused research question and again in 2023, as part of the discussion chapter and the need to locate the research findings in the current extant literature. The PRISMA-ScR (Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews) flowchart is seen in Figure 6.

An in-depth evaluation of the quality of the final studies was conducted (Levac et al., 2010). The full articles included in the review, however, provide an overall overview and description of the literature (Coad and Shaw, 2008) and are summarised in Table 3, pg 36-52.

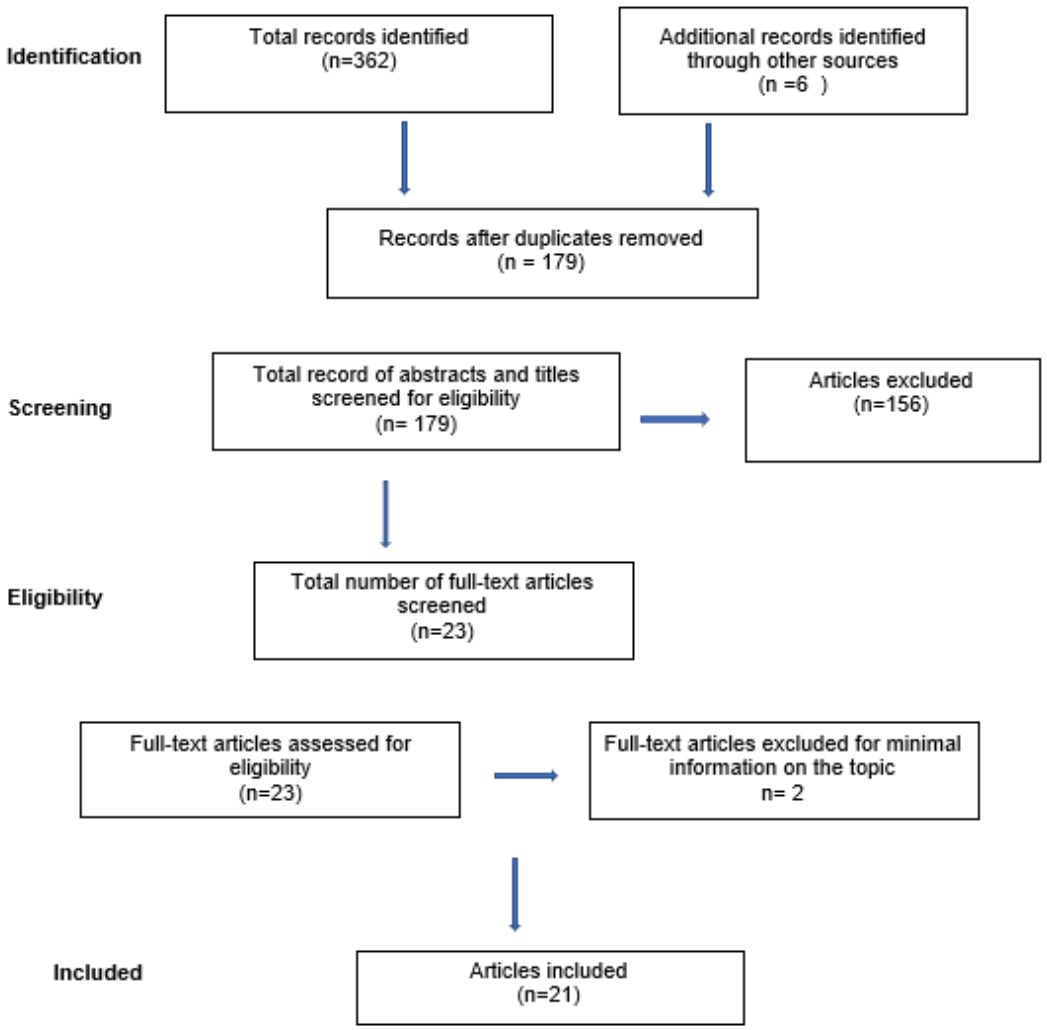

Figure 6 PRISMA flow chart

Table 3 Charting the Headline Data from the Selected Research Papers

Author **Date (year)** **Title** **Location**	**Research Question(s)** **Hypothesis**	**Methodology**	**Analysis & Results**	**Conclusions**	**Implications for future research**	**Implications for practice**
Bahner et al., (2012) How we use social media to supplement a novel curriculum in medical education. USA	Can Twitter/Facebook be used to deliver academic content to mobile devices	Quant. Concepts posted to Twitter daily for students and pushed to their mobile phones – students surveyed following 1 year of intervention.	101 followers on Twitter and 78 on Facebook received daily info. Twenty-seven completed survey. 88.9% found Twitter user friendly, 81.5% found info useful and would like more.	Twitter good use of push technology and can deliver good educational content.	None stated	Use SoMe in curricula. Can you say a bit more
Bich Diep et al., (2021)	Whether using SoMe for	Quant.	Most students in the study (71.3%)	Almost all the students in the	None stated	Recommended that other

Health Science Students' Use of Social Media for Educational Purposes: A Sample from a Medical University in Hanoi, Vietnam	educational purposes might improve academic performance	A total of 297 undergraduate health science students completed a self-administered questionnaire comprising 4 sections related to SM.	used SoMe for shared learning. Most frequent activity was watching study type materials.	study used SoME and this had a positive impact on their performance academically.		medical universities consider developing the use of SoMe in the curriculum as a learning strategy.
Cain et al., (2011) Using Facebook as an Informal Learning Environment USA	To create, implement, and assess the effectiveness of an optional Facebook activity intended to expose students to contemporary business issues	An informal learning strategy was used to create a Facebook group page and guest experts were identified and invited to submit posts. Students joined the group,	Majority of students appreciated this specific informal learning strategy. However, use of Facebook is not universal and some students have decided not to use this tool for	Being optional was a high factor to students using the activity. Because participation was not mandatory, students were not under pressure to read and recall the material.	Repeat study with a control group and include more guest experts, thought leaders, and practitioners.	The Facebook group provided a platform to expose students to contemporary issues pertaining to pharmacy practice, management, business and leadership that

	not covered in the core content of a pharmacy management and leadership course	but participation was optional. Mixed-methods approach using questionnaire and focus group.	various reasons, so using this instructional platform could potentially disadvantage those students.	They could read articles that interested them.		otherwise might not have been broached in the course. Opportunity to engage more experts into this space.
Cathala et al., (2022) An exploration of social participation in Caribbean student nurses' use of social media in their learning journey. Caribbean	Identify how social participation facilitates pre-registration student nurses' learning and professional development using SoMe.	Qual. A social survey using thematic analysis to explore Caribbean student nurses' views of SoMe usage from an open-ended question in a survey.	The SoMe platforms used were WhatsApp® (98%), YouTube® (90%), Instagram® (80%), Facebook® (69%), Twitter® (20%) and LinkedIn® (9%).	SoMe can improve the effectiveness of student nurses' learning, while developing fundamental skills (open-mindedness, critical thinking, professionalism and decision-making) for	The integration of SoMe into the nursing curriculum should be developed and stakeholders, regulatory bodies and students involved to ensure education meets students' needs and is delivered at the	To meet the new generation of student nurses' learning needs, it is important that higher education institutions develop guidance, support and use of SoMe for learning to support student

			The themes that were identified were: (1) SoMe and communication; (2) SoMe and self-care; and (3) SoMe and learning.	nursing practice. Social participation and connectivism theory are embedded in student nurses' learning journey. However, it has been used by student nurses outside the traditional university teaching and their capacity to own their personal learning.	highest standards.	nurses in their education as students and also future professionals.
Cathala et al., (2021)	Identify how student nurses	A cross-sectional survey of	WhatsApp® was the most used	Country, generation and	None stated	The results around the

International Student Nurses Use of Social Media for Learning. Cross Sectional Survey United Kingdom & Caribbean (Jamacia and Trinidad and Tobago)	in each country of study use SoMe for learning. Identify how each generation of student nurses use SoMe for learning.	Jamaica, Trinidad and Tobago, and the UK. 1,050 student nurses across the three countries self-completed the cross-sectional survey between March and September 2019. Data were analysed using descriptive and inferential statistics.	platform with watching videos and downloading articles being 2/3rds of usage. Access was mostly on smart phones. Use of SoMe for classroom activities had no significance by generation, but there was significance (≤0.001) for checking SoMe and messaging in lecture, use of SoMe for studies and classroom	year of education are factors that influence the use of SoMe in student nurses' learning.		significance should be considered by universities in curriculum development and in teaching and learning delivery. SoMe should be incorporated into the nursing curriculum as a learning tool, and guidance and support offered to student nurses on its appropriate use.

			activities by country, generation and year of education.			
Cathala et al., (2021) Demographic Profiling of Caribbean and UK Student Nurses use of Social Media for Professional Development	The study aimed to identify how student nurses use SoMe for professional development in Trinidad and Tobago, Jamaica and the UK.	An online cross-sectional survey was completed by student nurses from the three countries. Data were analysed using descriptive statistics.	The results showed that the main driver for use was watching videos or short clips as opposed to reading and downloading articles in the UK. More than 75% of the study participants across the age range thought that SoMe was	The study showed that SoMe is used within student nurses' professional development albeit with variation across the countries. It was of note that there is currently no national or international guidance on how student nurses	The results present important information that can be used by HEIs and nursing educators for educating and improving effective use of SoMe through embedding it into the curriculum.	An international academic and nursing educators' group should develop an international SoMe guideline on how to use SoMe effectively to inform their use by nursing students and nurses globally.

			likely to help their career.	should use SoMe for the purposes of professional development.		
Flores Vizcaya-Moreno * and Pérez-Cañaveras R (2020) Social Media Used and Teaching Methods Preferred by Gen Z Students in the Nursing Clinical Learning Environment Spain	To explore SoMe use and characteristic of Gen Z nursing students. Explore what the most useful tool and preferred teaching method would be during clinical training.	A cross-sectional research study. Quant. 120 participants under the age of 25.	85.8% said they always use WhatsApp and 71.8% use Instagram for personal uses. 60% highlighted use of Google+ for clinical learning.	Most preferred online tutorials and videos and interactive gaming approaches. Gen Z saw themselves as high users of SoMe and 'cravers' for the digital world.	In light of the pandemic, urgent need to expand knowledge on use of SoMe in clinical learning.	In light of the pandemic, urgent need to expand knowledge on use of SoMe in clinical learning.
Forgie S, Duff J, Ross S (2013)	Use of Twitter as a learning	Literature review	37 articles reviewed alongside blogs	Production of 12 tips for using	Further exploration of	Promotion of student engagement.

Tips for Using YouTube in Medical Education UAE	tool in medical education		and online sources.	Twitter from the body of literature.	Twitter as a fairly new medium.	Create communities of enquiry.
Giordano C and Giordano C (2011) Health professions students' use of social media USA	Do students respond more to SoMe as their primary source of information?	Quant Online survey sent to 644 1st year students and 413 graduating students.	56% of sample said online media was primary source of information. Facebook used by 77% of all students. Majority reported not using Twitter.	Students prefer to get information online. Facebook mostly used – very little on Twitter.	Possibility of SoMe being used for more group work/sharing materials.	Develop more online social space for improved engagement.
Hamilton A, Franks A, Heidel R, McDonagh S, Suda K (2016)	Online delivery of courses and SoMe may be efficient to optimise active learning	Quant. Survey of pharmacy students on management and leadership course	431 students completed survey. 61% preferred blended learning.	Active use of SoMe and some prefer online learning. Inclusion of more in revised	SoMe as tools for further student engagement.	Revision of curricula.

Assessing the Value of Online Learning and Social Media in Pharmacy Education USA		across 2 campuses using 36 question.	90% used smartphones. 58% used SoMe for communication with peers. 21% did not use it to help with learning.	curricula would support changing preferences of students.		
Hayward M (2021) The self-selected use of social media for the pre-registration student nurse journey: An interpretative phenomenological analysis UK	Exploring the lived experience of self-selected SoMe in relation to their studies – student UK nurses.	Qualitative interpretative Phenomenological analysis with 7 pre-reg UK nurses.	Four themes emerged from the study: (i) own space, (ii) whole new world, (iii) opening doors, (iv) journey to be a nurse.	SoMe could be considered as an agent to enhance experience and engagement with studies.	Explore future use and challenges.	None stated

Jeminiwa et al., (2021) Pharmacy Students' personal and professional use of social media	The objectives of this study were to (1) identify predominant beliefs among pharmacy students regarding use of SoMe for professional and personal purposes, (2) characterise pharmacy students' opinions on the effects of SM on their professional career, and (3)	Quant A self-administered questionnaire to pharmacy students at Auburn University (N=450) and Lipscomb University (N=212). Linear regression was performed to predict students' perceptions of the importance of SM to their future professional life.	About 50% of respondents perceived SoMe to be important to their future professional life as pharmacists. Most students used YouTube and Wikipedia while studying or learning.	Pharmacy students most commonly use Facebook, Instagram, and Snapchat for personal reasons, and LinkedIn, Facebook, and YouTube for professional reasons. Educators may leverage YouTube and wikis to support the education of pharmacy students. Pharmacy	None stated	Educators may leverage YouTube and wikis as tools to engage pharmacy students in learning experiences appropriate to this medium.

	determine pharmacy students' perceptions of using SM as to			students appear to be more aware and active with security settings than previously reported.		
Jones et al., (2016) Introducing Twitter as an assessed component of the undergraduate nursing curriculum: case study UK	Could Twitter be used for an assessment in 1st year nursing curriculum?	Qual Case study – Twitter introduced to curriculum under digital professionalism – assessment set.	Small element of assessment needed to encourage use of Twitter for education.	Most students thought it was very useful. Most reported they learnt a lot.	None stated	Introduced assessed use of Twitter.
Maloney et al., (2014)	What are students' use and behaviours with SNSs and	Online questionnaire-mixed methods; 284 sample size.	142 completed. 66% were active users. Facebook, YouTube,	Students want to enhance learning using SM – congruence with	Are privacy issues real or perceived?	Provide opportunities for use in curriculum within year

Social media in health professional education: a student perspective on user levels and prospective applications Australia	their perspectives on potential applications?		Google+ were used for educational purposes.	social constructivist pedagogical theory.		groups. Educator involvement to be limited.
Naidoo D, Govender P, Stead M, Mohangi U, Zulu F, Mbele M (2018) Occupational therapy students' use of social media for	What is the nature of SoMe usage and knowledge of ethical issues for professional learning?	Quantitative survey of entire cohort of Occupational Therapy students. Descriptive stats.	106/128 questionnaires returned. 83% of 4th years, 42% of 3rd years, 75% of 2nd and 74% of 1st years saw SM as important for professional life. 78% used it for academic	WhatsApp, YouTube and Facebook most popular. Play an important role in professional lives. Lack of awareness of ethical considerations.	Extent and benefit of SoMe for professional practices	Embedding SoM e usage in ethics lectures. Recognising value of professional usage.

professional practice South Africa			purposes, 59% for developing skills and knowledge, 53% improving clinical practice, 37% professional discussions.			
Price et al., (2018) First year nursing students use of social media within education: Results of a survey UK	How students viewed SoMe in 1st year of nursing programme.	Quant Cross-sectional survey across fields of nursing; 121 students took part.	Positive view of using SoMe. Use of Twitter grew from 19.8% to 45.5% in 1st year.	Teaching Twitter increases its use for educational purposes.	How to make SoMe productive in courses.	Twitter should be mandatory element of course to facilitate more educational use
Ramage and Moorley (2019) A narrative synthesis on	Explore healthcare students' professional	Narrative review using selection of databases. The inclusion criteria	28 articles included. Themes emerged: Understanding,	Used mostly to communicate with peers. Need for additional	An unexpected theme from this research was the students'	Improved understanding of how to use SoMe safely in a

healthcare students use and understanding of social media: Implications for practice UK	and personal use of SoMe.	considered (I) Any article involving healthcare students, SoMe or social networking (II) Only articles published in English and (III) No narrowing of publication year as this was a contemporary topic of research. The exclusion criterion did not consider (I) Any studies involving patient-led SoMe and (II) Patient	perceptions of use, positive aspects.	training on safety of use as related to professional behaviours.	preference for face-to-face teaching so that they could be told the rules of conduct. An assumption would be SoMe use would imply a preference for some form of e-learning.	professional capacity

		education and health promotion initiatives.				
Sattar K, Ahmed T, Mohammad H, Khan S, John J, Meo A (2016) Social networking in medical schools: medical student's viewpoint. Saudi Arabia	How do medical students apply the use of SoMe to their learning and development?	Quantitative cross-sectional study sent to 647 1st and 2nd year medical students.	432 completed the questionnaire. 95.8% of students used social networking sites to share medical information.	SoMe enable students to stay connected with peers, can share information and enhance learning. Some concerns about privacy.	Student views on privacy concerns using SoMe	Encourage further use if SoMe for learning.
Usher et al., (2014)	Determine use of SoMe in 1st and final year	Quantitative online survey, completed by 637	52% of 1st year students used SoMe as primary	News and information on SoMe is a shared	Student to professional and how SoMe can	Introduction to professional SoM e profile. Promote

Australian health professions student use of SM	health professional students.	1st year students and 451 final year across 12 universities.	source of information and 50% of final year. 86% said they do not use Twitter.	social experience. Less use of Twitter, more use of Facebook.	be used for networking.	information sharing and connections with colleagues.
Waldrop J, Wink D (2016) Twitter An Application to Encourage Information Seeking Among Nursing Students USA	Describe use of Twitter and nursing students' perceptions.	Descriptive mixed methods design. Twitter set up for cohort (66) and tutor tweeted and students engaged. Online survey.	62% of students engaged. 97% followed instructor. 30 completed survey. 53.3% rated quality of tweets as high. 44% believed relevant to practice.	Many students were interested in Twitter feed. They developed new skills. Met professional standards.	Evaluate engagement with students and larger nursing community.	Use this method to send professional information.
Wild C, McCormack C,	What is the usefulness of blogs during a	Mixed-methods descriptive study of a private staff-	Concerns around privacy of blog. Additional	Effective in providing peer support, but not	Explore reflective methods of interactive/electro	How to provide effective eLearning

Warren A, Buckley S, Cahill M (2012) 'Public and Private Blogging during Placements: Perspectives of Occupational Therapy Students.' Ireland	practice placement?	moderated blog during a placement session. Sample size 76–27 participants.	workload. However, useful to share experiences.	pedagogically sound for reflection and clinical reasoning.	nic means using Facebook.	support using Facebook and other methods.

To tell a coherent story of the literature I have structured the review in three parts: i) a brief overview of digital learning theory, ii) an exploration of the concept of professional learning and iii) the emergent themes of the selected papers: (a) professionalism (e-professionalism) student engagement, (b) confidence, (c) learning outcomes and (d) knowledge sharing.

2.4 Learning Theories in a Digital Age

Siemens (2005) has proposed connectivism as a learning theory for this new digital age in which we all firmly reside as either native or immigrant. The plethora of learning theories to date have tended to be clustered under the three main headings of behaviourist, cognitivist and constructivist (Lowerison, 2008). A study by Flynn et al., (2015) supports the philosophical move away from behaviourist theories to those of a constructivist nature. The same study highlighted the relevance of connectivism in the use of SoMe within medical education. Although Siemens argues that this is a new theory, critics place it as a framework (Verhagen, 2006), as complementary to other existing theories (Kop and Hill, 2008), or as an 'influential phenomenon' (Bell, 2011, p. 112). Whilst not in support of connectivism as a standalone theory, the critics all recognised a shift in paradigm for learning in this digital age. This can be described as Pedagogy 2.0, reflecting the Web 2.0 technologies (McLoughlin and Lee, 2008).

The key elements of Pedagogy 2.0 are self-directed learning, user-generated content, and personalised learning, as shown in Figure 7 below:

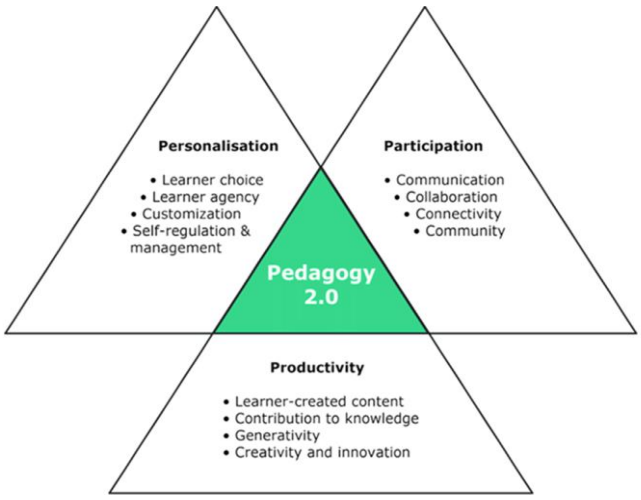

Figure 7 The three Ps of Pedagogy 2.0
(McLoughlin and Lee, 2008)

The theory of connectivism draws heavily on the concept of networks. Knowledge flows through these networks which consist of both human and non-human entities, or nodes as referred to by Siemens (2005). These nodes make up an 'information ecology' that can be between the nodes of people as individuals, groups, systems, fields, ideas, resources or communities (Bell, 2009). Incorporating the theory, therefore, into practice within a learning setting such as a HEI, the ability to be able to establish, develop and recognise relevant connections becomes a vital skill of the connectivist learning approach (Siemens, 2005).

Cochrane (2012) found six critical factors in his longitudinal study from 2006 to 2011 that would underpin the transformation of pedagogy within the learning environment using the Web 2.0 technology. These factors are broadly supported by other scholars (Beauchamp and Kennewell, 2010; Edwards-Groves, 2011; Leu et al.,, 2013), steering to a new era of power and knowledge structures with the vast amount of content that exist in the SoMe arena. The list of these underpinning factors is:

1. *Pedagogically integrating the desired technology into the course and assessments.*
2. *Modelling the pedagogical use of the tools.*
3. *Ensuring that there is a supportive learning community.*
4. *Selecting appropriate mobile devices and Web 2.0 technologies.*
5. *Providing both technological and pedagogical support to students.*
6. *Allowing for interaction that helps to re-conceptualise the roles of teachers and students to co-designers and co-constructors of knowledge.*

Flynn et al., (2015) examined concepts in the conceptual frameworks of medical educators with experience in using SoMe in their teaching practice. The resultant frameworks mapped strongly to the theory of connectivism, with the theories of constructivism, social development theory and communities of practice (ibid, 2015). The constructivist approach embraces the underpinning of learning being social, active and reflective. Although Siemens (2005) argues that the theory stands on its own merits due to the technology being used, there is still more to explore to adequately utilise SoMe for professional learning to its full potential. Technology and the scope of its potential is, therefore, undoubtedly changing the way in which we learn and subsequently function, leaving connectivism as the potential guiding theory for educators to apply to the new generations of learners in innovative ways.

However, I am inclined to stand with Bell (2011) over the question of whether a singular theory has ever been sufficient to encompass the complexity of the learning context and whether connectivism needs further testing in our rapidly change technological context. As Driscoll (2005) and Gould (2008) highlight, the primary evidence of learning is a measurable change in an individual's performance, hence the need to see further evidence-based results clearly bringing into focus the impact that technology, social media and learning nodes have to effect this change.

2.5 Professional Learning

The concept of learning is difficult to define (Illeris, 2009; De Houwer et al., 2013). It is a word used extensively in the educational context with terms such as lifelong learning, learning outcomes, learning environments and students described as learners. Biesta (2009) discusses the 'learnification' of both the practice and language of education with Jan de Hower (2013), commentating how, despite all the use and talk of the word, there is a lack of explicit explanations of the term. However, at its core, learning is an active process that results in a change in knowledge or behaviour because of experience and social interactions (Dewey, 1938; Piaget, 1964; Vygotsky, 1986; Rogoff, 1998; Bransford, 2004). It can be argued that defining learning is not so straightforward, but more complex (Geary, 2009; Säljö, 2009). Learning can be discussed in terms of evolving, complex and relational context (Hager and Hodkinson, 2009; Johnsson and Boud, 2010). The seminal work of Lave and Wenger (1990) sees a theoretical proposal to counteract the overreliance on institutional learning or traditional learning with communities of practice (CoP). These CoPs are places of social interaction and relationships (Roux et al., 2006; Wenger, 2011), whereby novices and experts alike can share and build on knowledge and expertise. This concept of situated learning within a CoP is often linked to Vygotsky's theory of social cognition (1978), where he describes the 'zone of proximal development' (ZPD). It is proposed by Vygotsky (1978) that a child or learner achieves their maximum cognitive development by engaging in social behaviours under the guidance of adult supervision, peer collaboration, or indeed both.

In recent years, the concept of online CoPs has entered the dialogue. Wenger (2004, p. 2) argues that social networking sites such as Facebook and Twitter are not truly online CoPs; however, Ross and Cross (2019) would see online CoPs aligning to Wenger's participatory learning (Wenger, 1998). The components of knowledge

sharing, critiquing and advising, active participation and Continuous Professional Development (CPD) can all take place within this SoMe context (Moorley and Chinn, 2014*).*

The inevitable emerging research of the impact of COVID-19 on learning will need to be assimilated into the thinking of online CoP and how they were formed almost instantaneously after a worldwide move to online interactions, following COVID-related social distancing measures. Rolls et al., (2016) and Thoma et al., (2018) view the online CoPs as creating a space for social belonging, which would have been experienced in totally new ways across the globe from March 2020 onwards. When specifically viewing professional learning, it has broadly been defined as 'learning [that] becomes professional when it is goal oriented and work-related' (Zuber-Skeritt et al., 2015, p. 7).

Professional learning has been described as a continuum throughout a lifelong career, embracing critical thinking, reflective practice and collaboration, from the starting point of a student and thereafter (Eraut, 1994; Groundwater-Smith and Mockler, 2009; Wood and Su, 2014; Loughran, 2015). In the context of Gen Z, the question that must be asked is how will these students want to undertake their professional learning journey? Generation Z have been called various terms by scholars, with the most notable being Gen Z, Gen-Xer, iGen, digital natives, net Generation, Zers, @generation, pluralist generation, Post-Millennials, Tweens, or eBay babies (Hampton and Keys, 2016; Shatto and Erwin, 2017; Chicca and Shellenbarger, 2018; Mohr and Mohr, 2018; Hampton et al., 2020).

Gen Z is the first generation of digital natives bringing their own unique set of skills, attitudes, and beliefs to HE. They are entering HE during a time of transformation, where old ways of delivering education are fading and new, more digitally focused ways are emerging (Mohr, E. and Mohr, K., 2018). Grant (2021) proposes in his book *The New Power University* that Gen Z will use a new power of activism to move forward with the connection of staff and students in both the physical and the digital space. With the focus on the digital and SoMe space, there is an extensive body of research highlighting the palpable tension by students as to the private and professional use of SoMe (Hrastinski and Aghaee 2012; Hayward, 2021). Josefsson et al., (2016) highlight the connection with the professional use of SoMe with not only

learning activities but also the additional professional use associated with that of becoming a professional and career building in that context.

With numerous societal changes incorporating technology at the forefront, there has been a growing responsibility on education providers to develop not only strong discipline knowledge but also a range of other generic skills. For healthcare students, this is demonstrated by the curriculum learning outcomes and alignment to a regulator's Standards of Proficiency. These threshold standards are required to be met to protect the public and set clear expectations of a registrant's knowledge and abilities when they first start practising. The curriculum also seeks to encompass professional body requirements and the ethos of the HEI. For example, at London South Bank University (LSBU), we seek to produce 'LSBU Able Graduates' who have knowledge and professional skills (e.g., analytical and critical thinking skills), professional skills (e.g., relationship building, digital competency) and personal impact skills (e.g., ethical). Archer and Davison (2008) identified that teamwork, problem-solving, and communication skills are highly valued by employers. The professional learning journey of a healthcare student is, therefore, an important aspect, not only for local course delivery but for national employer-led requirements and international recognition and transferability of a qualification (Zlatkin-Troitschanskaia et al., 2016).

2.6 Overview of the Included Studies

A descriptive numerical summary of the final studies included in the review is advocated by Arksey and O'Malley (2005) when undertaking a scoping review. There was a widespread geography of the studies: (N=6) were carried out in the USA, (N=4) in the UK, (N=3) in Canada and Australia, (N=1) in both the UK and the Caribbean, and (N=1) from each of Saudi Arabia, Vietnam, South Africa and Spain. There were three international literature reviews. There is an increasing scholarly interest in the subject of learning with SoMe with the studies starting in 2012 through to (N=7) published in the last five years. All studies were focused on healthcare students. (N=5) of these studies used a quantitative research approach. Two studies were mixed methods, one was a cross-sectional survey, with the remaining 18 being either qualitative or of a narrative review.

The population of learners encompassed a range of health undergraduates: pharmacy (N=3), medical (N=4), nursing (N=8), nursing & midwifery (N=1), generic allied health students (N=3), occupational therapy (N=2) and inter-professional (N=1). Two studies centred solely on the use of Twitter (Jones et al., 2016; Waldrop and Wink, 2016), one focusing on the use of podcasting (O'Connor et al., 2020), the other on blogging (Wild et al., 2012), with the other papers covering a wide range of SoMe platforms. Similar to Hayward (2021) I found that one of the challenges in reviewing this topic is the extensive development of SoMe platforms and their general usage, which is widespread amongst the global population of university students. However, clear themes emerged from the selected studies of both preferred platforms and use for professional learning purposes.

2.7 Students' Preferred Social Media Platforms

The literature review question is to explore how healthcare students use SoMe to augment their professional learning journey. Results of this preliminary review showed that there is a difference in use of the platforms for personal and professional use. For more general usage, five studies found Facebook was the most used SoMe platform (Giordano and Giordano, 2011; Maloney et al., 2014; Usher et al., 2014; Price et al., 2018; Jeminiwa et al., 2021), and three studies reported WhatsApp as the most used platform (Naidoo et al., 2018; Vizcaya-Moreno et al., 2020; Cathala et al., 2021). It is interesting to note that the preferred use of WhatsApp was reported in the study by Vizcaya-Morenoet (2020) specifically targeting Gen Z healthcare students in the inclusion criteria, and the study by Naidoo et al., (2018) having a mean age out of 106 respondents of 22.5. Cathala et al.,'s (2021) study, with 1,050 study participants from Trinidad and Tobago, Jamaica and the UK, had high results relating to WhatsApp, with usage of the whole of the Jamaican sample citing WhatsApp as their preferred platform. This was closely followed by Trinidad and Tobago (97.5%) and the UK (86.6%).

Three studies specifically examined the introduction of Twitter within the teaching curriculum (Bahner et al., 2012; Jones et al., 2016; Price et al., 2018). Results showed both a positive increase in usage of the SoMe platform, but also an increase in the appreciation for its use to assist with professional learning. Bahner et al., (2012) reported that, out of 101 Twitter followers on their dedicated @EDUltrasound account, 88.9% found the Twitter feed user friendly and 81.5% found the information

useful. Out of the 121 students taking part in Price et al.,'s (2018) study, 81% reported finding the use of Twitter had improved their knowledge of nursing issues related to their course. Cain et al., (2011) studied the use of Facebook during a pharmacy leadership course in third-year undergraduate students. Results highlighted that 77% of the Facebook users found the activity either highly valuable or valuable.

For the studies commenting on the professional usage of SoMe, one study highlighted Facebook as the preferred platform (Bich Diep et al., 2021), one study identified LinkedIn (Jeminiwa et al., 2021) and one further study reported the use of Google+/Currents (Vizcaya-Moreno et al., 2020). In the one study using interpretative phenomenological analysis, Twitter was the preferred site by all participants (Hayward, 2021). One study looked at the use of blogs during an occupational therapy course. The results showed that students did not find the blogging process helpful in terms of developing reflective and clinical reasoning skills. The study did not highlight any other usage of SoMe but commented that students indicated they would have preferred the use of Facebook (Wild et al., 2012). The narrative review by Ramage and Moorley (2019), looking at healthcare students' use and understanding of SoMe, and reported that the majority of the papers they reviewed discussed the use of Facebook, with Twitter as the second most studied platform.

2.8 Professionalism

Most of the selected studies (n=15) discussed a range of concerns raised by the students about professionalism on SoMe and the potential differences between their personal profiles and postings, and the association with a new way of presenting themselves and engaging in the SoMe arena. To note, this concept of professionalism is often referred to as 'e-professionalism' in the online setting (Maloney et al., 2014; Duke et al., 2017; Ramage and Moorley, 2019). Three studies highlighted the theme of 'getting into trouble' and breaking relevant guidelines and policies such as those issued by the regulators (Jones et al., 2016; Naidoo et al., 2018; Price et al., 2019). Price et al., (2019) surveyed 121 first-year nursing students and found that the qualitative comments revealed an awareness of the dangers of SoMe, mostly centred around the issues of privacy and confidentiality and the potential to breach regulatory codes of practice. The student participants expressed both the want and the need to have further professional guideline. A quantitative

survey of 128 occupational therapy students showed 96% felt that further consideration of the ethical use of SoMe was important, with 90% expressing the view that negative SoMe behaviours such as inappropriate and unprofessional posts could affect the view of the profession. Two studies reported concerns about the links of SoMe usage as a student with future employability. Jeminiwa et al.,'s (2021) student participants felt it was fair that future employers could access Facebook profiles to assist with recruitment decisions. However, students from the Maloney et al., (2014) study identified, in the free text options of the questionnaire, the theme of professionalism being a significant barrier to potential employment. They were concerned that the volume of personal information that they may have already shared on SoMe platforms directly influencing future job prospects. Ramage and Moorley (2019) in their narrative synthesis identified examples of unprofessional behaviour related to breaching patient confidentiality using SoMe and the dismissal of students from their course of studies as a consequence. One study, Hamilton et al., (2016), reports the involvement of educators in SoMe interactions as a positive indicator for maintaining SoMe professional standards.

2.9 Student Engagement

Some studies reported on the level of engagement with the various SoMe applications and interventions. Wild et al., (2012) report a lack of engagement with the blogs that were introduced as part of the occupational therapy course. Students (n=27) felt the blogs lacked clear aims and reported they did not find them useful for reflection. Overall, the authors felt that students were not as digitally literate as had first been presumed to be and that the use of blogs was not a familiar SoMe tool. This sense of the digital literacy of students in certain SoMe arenas being overestimated is also reflected by other studies (Usher et al., 2014; Jones et al., 2016; Price et al., 2018). Price et al., (2018) argue that SoMe is not always promoted earlier in educational settings as a professional educational tool and, therefore, the students' level of skill in using SoMe for professional learning purposes must still be an important consideration for the educators. Vizcaya-Moreno (2020) found that students (n=120) engaged more than double time (on average 2.56 hrs/day) with personal usage of SoMe as opposed to use for clinical education (on average 1.37 hrs/day). The study by Jones et al., (2016) reported that engagement differed across the various years of the case study intervention. The first-year nursing students in the first cohort (n=450) nearly all used a Twitter account, but activity from the second and

third-year students was 20% less overall. There was a marked increase of engagement with the intervention of the Twitter-based assessment when applied to the second cohort (n=97). These students were more likely to reply on Twitter and send more tweets. Of the second cohort of students, 70.8% said they learnt from Twitter, as opposed to 44.4% in the first cohort. Hamilton et al., (2016) reported that the pharmacy students in their study felt comfortable engaging with their professors on the SoMe sites for educational purposes. This contrasted with other studies, where the engagement with SoMe was affected by concerns of privacy and the personal/professional divide (Sattar et al., 2016; Hayward, 2020).

2.10 Confidence

Aligning with previous observations that students may not be as digitally literate as first presumed, Hayward's (2020) study revealed a strong sense that the use of SoMe in relation to professional learning can result in further improvement for growth in skills and knowledge, underpinned by increasing confidence in this digital space. For example, she found that there was both professional and personal value in using SoMe with a strong link to social bonding, belonginess, knowledge and skills enhancement and a general fostering of wellbeing. The results of Maloney et al., (2014) detailed how students gained confidence not only in being guided through the use of certain SoMe platforms, but additionally in continuing to use SoMe independently in a professional capacity. Their student participants reported that they felt it was appropriate to use social media for educational research and professional communication purposes. Most studies also reported the view that the personal/professional divide remained a strong consideration and was a limiting factor for developing the professional use of SoMe beyond the university setting. Jones et al., (2016) highlight the need to present the use of Twitter as a basic skill to help develop competency and confidence for ongoing use. A key study by Usher et al., (2014) examined the use of SoMe for health professionals across 12 universities in Australia and found that confidence had the potential to grow given the correct guidance, support and professional input. Price et al., (2018) found that, out of a survey sample of 121 adult, child and mental health first-year nursing students, 47.1% saw SoMe as very beneficial to 'increase awareness of nursing issues', with 36.4% thinking it 'increased confidence in sharing ideas'. However, none of these authors clearly articulated what form guidance or support should take or look like.

2.11 Learning Outcomes

The studies with a focus on SoMe as an integral part of the assessed curriculum showed a range of results. Wild et al.,'s (2013) study on blogs was used as part of an occupational therapy placement with the intention of providing increased support. The students found, however, that the blogs did not contribute to their learning in this setting, particularly with respect to reflective thinking and clinical reasoning.
In contrast, Bahner et al.,'s (2012) study demonstrated an appreciation of the SoMe platform in supporting ultrasound education. The majority of the course Twitter followers (88.9%) found the platform user-friendly and (81.5%) found the information useful. Regarding using SoMe as a form of assessment, Jones et al.,'s (2016) study adapted their approach between their two cohorts to facilitate more choice, with SoMe or an essay. They found that the fundamentals of digital professionalism were introduced slowly throughout the module and students responded more favourably in the second cohort. The introduction of an assessment using Twitter was feasible and welcomed by the students. They showed how SoMe can be diffused as an innovation in teaching and learning regarding assessments.

2.12 Knowledge Sharing

My review identified the use of SoMe platforms for peer-driven knowledge sharing. Maloney et al., (2014) reported that students, independently of any educator involvement, created Facebook groups as a space for knowledge sharing and a questions and answers forum. In view of the initial conceptual framework, the Maloney et al., (2014) study describes the major factors of Pedagogy 2.0 (McLoughlin and Lee, 2008), with the knowledge-sharing potential of SoMe being highly actively self-directed, networked and social. Price et al., (2018) and Sattar et al., (2016) also concurred, with the view that online SoMe interactions resulted in a shared learning approach. In their study students often collaborated to enhance their knowledge and understanding of the course content. Furthermore Hayward, (2021), found that her participants valued the opportunity to support others along their professional learning journey in these emerging SoMe communities. Participants from the small-scale interpretative phenomenological study used phrases such as 'I'm invested in other students' journeys…' and 'I've helped create a better student experience...' (Hayward, 2021). Some studies suggest that students' further use of SoMe for professional learning fostered a growing control over their learning

environment, with students' increasing knowledge of hashtags and how to track worldwide conversations on relevant subjects (Usher et al., 2014; Price et al., 2018).

2.13 Discussion

The results of this scoping review showed that SoMe, although used almost ubiquitously in healthcare student cohorts worldwide, is not fully utilised in the context of professional learning but provides a promising platform from which to develop enhancements to the professional learning journey of healthcare students. The aim of this review was to explore how healthcare students use SoMe to augment their professional learning journey. In this review I had set out to explore usage in Gen Z students of SoMe platforms, and the distinction that can be made between this socially driven usage and the usage that can lead to increased professional knowledge as a healthcare student.

Can SoMe be integrated into the curriculum as a useful learning tool? The three aspects of the review (learning theory, concept of professional learning and the emerging themes) have provided some answers and raised further questions, with most of the included studies recommending further research to ensure that the SoMe inclusion in the pedagogical teaching practice enhances professional learning. The first section of the review examined the learning theory of connectivism and explored how the internet – and, perhaps even more so, the Covid19 pandemic – have expedited the use of SoMe platforms to disseminate professional knowledge.
The advent of COVID-19 catapulted the already widespread use of SoMe platforms for the spread of information to an essential tool for updating the world on the disease from verifiable sources such as the World Health Organisation (WHO). The significant and concerning downside of the use of the SoMe platforms is the growing trend towards misinformation and fake news. Ramage and Moorley (2019) and Cathala et al., (2021) highlight this in their research, with a call for universities to assist students in recognising fake news in the first instance. The issue has not only been exacerbated by the pandemic and, therefore, this caution must be heeded and further explored, but is beyond the scope of this review. What is clear from the review is that education is no longer confined to the classroom but is now global and instantaneous. With the new generation of learners (Gen Z), we have the ongoing imperative as educators to meet their learning needs. Connectivism (Siemens, 2005) certainly maintains credibility as a learning theory in this technological age, but we

are yet to see the pedagogical underpinnings and supporting tools to assist healthcare educators in using SoMe appropriately within their teaching (Flynn et al., 2015).

In the second part of the review, I discussed the concept of professional learning. This distinction forms a golden thread of the review, as it highlights the need to enhance the learning potential of the platforms above the everyday news into a specific and outcome-led arena. Each SoMe platform has differing characteristics and functions, and it is this functionality that can be explored further to provide the professional learning capability when used appropriately. The review has highlighted SoMe platforms' used as educational tools, but with notes of caution that should not be ignored for example, training for educators on incorporating SoMe into the curriculum was highlighted by Price et al., (2018), with further concerns discussed around the personal/professional divide spanning professionalism, privacy, and confidentiality issues (Maloney et al., 2015; Sattar et al., 2016; Ramage and Moorley, 2019; Hayward, 2021). Usher et al., (2014) urge educational institutions to incorporate SoMe into professional learning practices, regardless of the specific platform, to capitalise on the Gen Z students' skills in the use of SoMe platforms, even if they do not possess the ability to apply them at the start of their course of study. The concept of the ZPD, (Vygotsky,1978) would allow for the guidance of educator supervision and peer support and collaboration. The critical components, therefore, of knowledge sharing, critiquing, questioning, and advising can all take place within this SoMe context (Moorley and Chinn, 2014*).*

In the last part of the review, I examined the emerging themes from the papers that met the inclusion and exclusion criteria for this review. I found that the use of SoMe for professional learning holds promise for healthcare undergraduate education. As reported throughout the review, students have differing beliefs, perceptions, understanding and real-world experiences of SoMe platforms, but with most of the study participants willing to further incorporate SoMe usage into their professional learning experiences (Bahner et al., 2012; Jones et al., 2016; Sattar et al., 2016; Naidoo et al., 2018; Price et al., 2018; Vizcaya-Moreno et al., 2020). Results showed there were some considerations as to the specific platform to be used (Hayward, 2012; Price et al., 2018), with the study by Wild et al., (2012) reporting a strong dislike by students on using a blogging platform and a preference for Facebook and

Cathala et al. 2021 showing You Tube for learning by video and Whats App for sharing information.

The themes that emerged from my review show that the use of SoMe in the professional learning environment has allowed for increased communication, engagement, knowledge sharing, learning opportunities and confidence. It revealed the interesting phenomenon that students are not necessarily as adept in the application of their SoMe skills as might be first assumed (Wild et al., 2012). There is a strong concern around the professional use of SoMe, where previous usage to date has not incorporated this new way of accessing and using the tools. E-professionalism is highlighted as an important topic for educating healthcare students alongside the application of the SoMe tool in the course (Ramage and Moorley, 2019; Hayward, 2021).

The role of SoMe in the professional learning journey of allied health undergraduate students, therefore, deserves more attention. This is because it is a potential platform to support the rapidly evolving educational context and preferences of today's learners in the form of Gen Z.

Much of the existing research literature has focused on how much SoMe is used by allied health undergraduate students, but not yet to the nuanced level of how it is, or can be, used for professional learning (Cathala et al., 2021). As this study goes into greater depth around the key objectives, it is expected that the overarching research question will be adequately addressed. Early thoughts are that this research will concur with others on the widespread use of SoMe, but will also explore more fully, with the rich data of participants' experience, the implications of further use within the professional learning journey and any barriers and facilitators along the way. It will be of great value to diagnostic radiography students and educators to determine whether curriculum development, including the integration of SoMe into a course, will be of professional benefit. The numerous devices used by a student during lecture times may be directed away from just the social aspect of use and into a connected world of professional knowledge. This potentially could be achieved by including more specific SoMe-related study skills lectures at the beginning of the allied health programmes, building up in the final year to the development of SoMe supported research skills. This 'SoMe scaffolding' will intentionally drive a reduced dissonance

between the high levels of ability to use SoMe versus the ability to use it in a professional learning capacity.

The concepts of connectivism as a new learning theory for the digital age (Siemens, 2005, Cathala, 2023), Vygotsky's theory of ZPD, where young people are learning incrementally and socially with the help of more capable peers (Vygotsky, 1978; Kozulin, 2007), and online CoP, have all formed part of an initial conceptual map.

The concepts of personal and professional space were referred to often within the reviewed papers. The concept of the different spaces for this study was viewed through the lens of online or virtual CoP (VCoP), recognising that the students were likely members of multiple spaces where interactions, sharing, learning and supporting would take place. Bourdieu's (1977) seminal work on 'Habitus' speaks of social networks that provide an internal indication of how to behave without a particular set of rules. The 'habitus' becomes a set of social resources and skills that aid integration into a particular community. Bourdieu extends his theoretical positioning to include the sense of 'social capital' and how social advantages create differing positions of 'habitus'. This study did not explore the social standing of the participants themselves as the initial leveller became the ownership of a smartphone and ubiquitous use of SoMe platforms. However, it has been useful to note the need to know the 'rules of the game' in our various 'habitus' in order to function well in these spaces. This reflects the initial finding from the literature of varying levels of confidence across the personal to professional spaces of SoMe use. The concern remains for healthcare students as to how to explore the new professional SoMe habitus to discover what is beneficial, what might be detrimental and how to behave.

2.14 Gap in Knowledge

This scoping review demonstrates that, a gap exists in the literature underpinned by research on how SoMe is used for professional learning within the undergraduate healthcare training programmes, with a focus on Gen Z, DR students. With the digital natives of Gen Z constituting our pool of upcoming students, it is timely to explore the role SoMe has on their professional learning journey. This research will hopefully be significant. I would also add, critical, because most of what we know about undergraduate students' use of SoMe has been informed from the perspective of the researchers, rather than by listening to the student voice. The Health and Care

Digital Capabilities Framework (NHS,2018) outlines the aspiration for the health and social care workforce to become fully conversant in the digital space, encompassing not only technical skills but positive and professional attitudes towards its uses. Cigognini et al., (2011) expand these skills further, with concepts such as connectedness, critical ability and being able to work flexibly and efficiently between formal and informal learning contexts, with Button et al., (2014) emphasising the imperative to include digital literacy into the pre-registration curricula to ensure access to appropriate lifelong learning. Another potential outcome of the study is that academics and clinicians using SoMe in a professional capacity may intentionally widen their sphere of influence if the resultant theory highlights a need for students to professionally engage further with this medium. The study by Rambe (2012) suggested a gap in the literature in understanding the relationship between SoMe, student learning, and effective pedagogy. It is this gap in the research knowledge that my research aims to address.

2.15 Summary of Chapter

This chapter has presented and discussed the rationale for undertaking a scoping literature review. It provided the search strategy, including inclusion and exclusion criteria, a detailed overview from the selected papers summarises the authors, methodology and findings. This scoping review has highlighted the gaps in the available research knowledge. The following chapter will discuss my epistemology, ontology and theoretical perspective, relating this to the methodology selected to underpin the study.

Chapter 3

Philosophical Positionality, Methodology and Utilisation of Constructivist Grounded Theory

3.1 Introduction

This chapter focuses on the core philosophical foundations for the study and justification for using Constructivist Grounded Theory (CGT) in gaining an understanding of the chosen phenomenon. This study aimed to explore the experience of Generation Z (Gen Z) student radiographers' use of social media (SoMe) for professional learning, utilising CGT. In this chapter, a description is included of the qualitative research paradigm, the alignment of the philosophical positioning with CGT, the divergence of views around the wider context of Grounded Theory (GT), with a further discussion around areas of commonality. The strategies used for the maintaining and evaluating of quality throughout the study and the ethical considerations as related to the methodology are also discussed. Throughout the chapter, the inclusion of the student voice into research on SoMe usage for professional learning remains an important facet of the study.

3.2 Philosophical Position-Ontology and Epistemology

Before either methodology or methods can be established, the researcher should first align with one of the major research paradigms to address the research question effectively (Denzin and Lincoln, 2005; Jackson et al., 2007). There are three main constructs that help to formulate and clarify the chosen research paradigm: ontology, epistemology, and methodology (Guba and Lincoln 1994). A researcher's ontology is concerned with assumptions about the nature of reality and what can be known about it (Guba and Lincoln, 1994). The way we come to know about things that are in existence (Staller, 2012) is known as epistemology. These philosophical underpinnings are often referred to as 'what can we know?' (ontology) and 'how can we know?' (epistemology) (Willig, 2001).

Guba and Lincoln, (1994), advises that the research study under investigation should be guided by the researcher's belief system and world view. Their paradigm classifications are still under much discussion in the present day, but are widely recognised as positivism, post positivism, critical theory and constructivism (ibid).

The understanding of phenomena through numerical or statistical means is within the positivist paradigm; conversely, those studies seeking to develop an understanding of social or human phenomena are placed within the interpretive/constructivist paradigm. Within these paradigms, research methodologies are constructed and are generally described as quantitative (numerical data), qualitative (narrative and observational data), and mixed methods (combination of both) (Yilmaz, 2013). My personal worldview is that of a social constructivist and relative ontology, whereby there is no external, fixed reality, but rather a construction (and co-construction) of reality is made by individuals based on their own experiences and beliefs, interacting with others and the environment. This, therefore, leads to a number of realities that need to be understood in terms of 'negotiated' truths as opposed to 'universal' truths (Guba and Lincoln, 2005). Relative ontology supports the exploration of the different perspectives of Gen Z students, as it acknowledges that there are multiple interpretations of a phenomenon and that reality is socially constructed (Pope and Mays, 2020). I was also drawn to the use of a social constructivist paradigm to understand how the participants developed meaning around the use of SoMe, with dialogue and interaction between myself as the researcher and the participants themselves. Constructivist epistemology, therefore, affords credence to my role as researcher in the construction of the new knowledge created as part of this study, in collaboration with the study participants (Mills et al., 2006; Subramani, 2019).

3.3 Adopting a qualitative paradigm

Alongside my own ontological and epistemological positional exploration, it became clear that the voice of the students within the existing literature (Chapter 2) was sparce and almost non-existent from the diagnostic radiography student body. Curriculum development and the role of SoMe to facilitate student learning were foreshadowed by the understanding and engagement of academic staff. Although the studies saw academics proactively informing curriculum developments with the use of SoMe, the studies were limited in highlighting the thoughts and opinions of students, particularly in the Gen Z age range (1995–2004). It was against this backdrop that I employed a qualitative methodological approach to hear the first-hand experiences of students and to seek meaning from their perspective on the role of SoMe within their professional learning journey. This qualitative immersion in the phenomena allowed for my own personal values to come to the fore in listening to and respecting the views and interests of students, giving due weight to their

experiences and understanding. Other qualitative approaches that Creswell (2010) suggest as relevant were considered. These included phenomenology, ethnography, case study, narrative research and GT.

As part of the professional doctorate programme, I undertook a module in qualitative research: Qualitative Data Analysis. Through this module I was able to learn about different qualitative approaches, have in depth discussions with expert qualitative researchers and present my own idea of using CGT. Before I could have done that, I had to undertake my own reading of other approaches and justify my decision. Phenomenology is mainly interested in the 'lived experiences' of the study participants, gaining subjective understandings of these experiences as espoused by Edmund Husserl (1859-1938) and Martin Heidegger (1889-1976). With CGT considering other data sources, as underpinned by the well-known phrase 'All is data' (Glaser, 2001:145), and the researcher's own views and experiences, it was felt that phenomenology would fall short of the theory generation and insights to answer the research question and objectives.

An ethnographic study, whereby a group of people and culture would be observed in depth, was felt not to be appropriate for looking at the SoMe in the wider context of professional learning. Similarly, to phenomenology, the focus is upon providing rich descriptive detail, but does not look at how meaning is constructed within the associated actions and processes (Charmaz, 2006).

Narrative research places emphasis on detailed data gathering about individuals but does not fully develop the analysis. It stays more at the individual level rather than create a synthesis across participant accounts to produce inductive theory generation. As the aim of the study was to hear across a range of Gen Z viewpoints and experiences to develop a substantive theory, this methodology was not utilised for this study.

A case study approach was given the most consideration alongside CGT, as it looks at a contemporary phenomenon in a real-world context (Yin, 2009). However, this approach, like narrative research, does not readily allow for comparative analysis and a resultant theory.

Despite the expansive range of qualitative methodological approaches available to use, GT offered a focus on interactions and social processes, congruent with my worldview. Section 3.4 on page 70 provides an overview of the various versions of GT and gives a comprehensive rationale for settling with CGT as the preferred methodology.

3.4 Grounded Theory Variations

Since its origin from *The Discovery of Grounded Theory* (Glaser and Strauss, 1967) GT has taken several different forms spanning theoretical perspectives. These forms have encapsulated positivism (Glaser and Strauss, 1967), symbolic interactionism and pragmatism (Strauss and Corbin, 1990) and, more latterly, constructivism (Charmaz, 2000, 2006, 2012). Additionally, the GT process of analysis can be applied to other qualitative methodologies such as ethnography and has been extensively used by researchers of differing methodological stances to complete their data analysis work (Charmaz, 2009; Pickard, 2013). This has, therefore, led to some confusion as to whether GT is a methodology or a selection of methods (Walker and Myrick, 2006; Timonen et al, 2018). Crotty (1998) defines methodology as 'the strategy, plan of action, process or design lying behind the choice and use of particular methods and linking the choice and use of methods to the desired outcomes' (p. 3). This supports the argument for GT as a methodology, as there is a clear linkage of choice and use of methods to the intended outcomes of a theoretical framework or new theory grounded in the data. The Classic, Straussian, and CGT, as outlined below, are not homogenous or interchangeable methodologies, but they do share key features. The shared tenets relate to the data collection and analysis, the constant comparative technique, memo writing, theoretical sensitivity and theoretical saturation (Birks and Mills, 2015). The key features in relation to CGT will be explored in more detail in section 3.5, after first looking at the main points of divergence.

The social, qualitative research during the time of Glaser and Strauss' seminal work was often viewed with less credibility and as unsystematic and anecdotal (Charmaz, 2006). There was a tension between the social and the positivist researchers, leading Glaser and Strauss to address this issue with a method for systematically collecting and reviewing the data and ultimately developing theory (Charmaz, 2006). The original text by Glaser and Strauss, therefore, outlined the process of generating data

that was ‘grounded’ in the data, inviting researchers to use the methods of induction to develop new theory and not rely on existing theoretical frameworks and existing theories (Bryant and Charmaz, 2007).

Glaser and Strauss’ GT method was heavily influenced by pragmatism and symbolic interactionism (Strauss) and positivism (Glaser). This shows itself through the systematic approach combined with the inductive rather than deductive process in the data analysis. It is unsurprising that, with the combining of such divergent approaches, further iterations have emerged to reset the ‘somewhat unsteady ontological and epistemological grounds’ (Charmez, 2009, p.129). The start of the divergence came after Glaser grew uncomfortable with its original invitation to using the methodology flexibly (Glaser and Strauss, 1967). He eventually split from Strauss and took forward his classic GT approach, as shown in Figure 8 below.

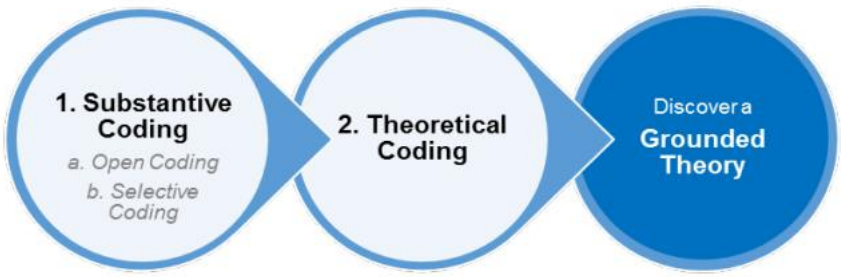

Figure 8 The Coding Procedure of Classic GT
(Holton, 2010)

Strauss, however, expanded his work, often referred to as Straussian GT, by maintaining a focus on verification of theory as opposed to theory development. In 1990, Strauss partnered with his colleague, Juliet Corbin, to co-publish *The Basics of Qualitative Research: Grounded Theory Procedures and Techniques*. The publication outlined a redesign of the coding process that would verify the theory rather than create and discover (Strauss and Corbin, 1990, 1994, 1998). Figure 9 below highlights the increased steps in the coding process from the Classic GT.

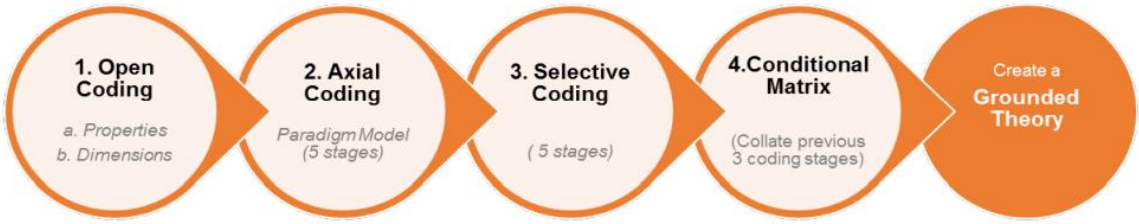

Figure 9 The Coding Procedure of Straussian GT
(Strauss and Corbin, 1990)

Strauss died in 1996 and, subsequently, Corbin published updated editions of the *Basics of Qualitative Research* in 1998, 2008 and 2014. Corbin reviewed their previous step-by-step and formulaic process, which resulted in a move towards the final version for discussion in this paper, that of CGT as proposed by Kathy Charmaz in 2008. Charmaz's CGT perspective proffered a more contemporary version, moving away from assumptions of 'objective external reality, a passive neutral observer or a detached narrow empiricism' (Charmaz, 2014, p.13). This version encompassed the social constructivist philosophy, allowing for more creativity and a co-construction of meaning from the data from the researcher and research participants. Figure 10 below illustrates a more fluid framework to the coding.

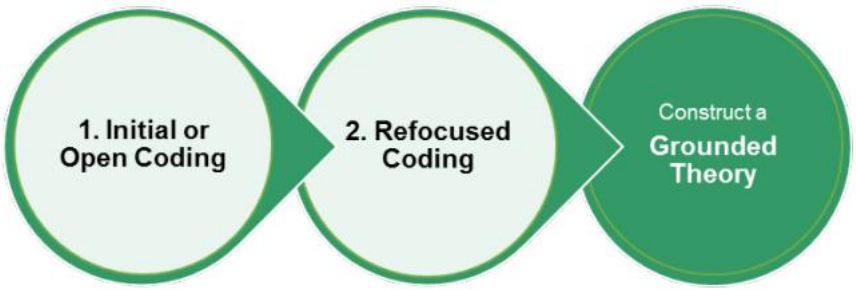

Figure 10 The Coding Procedure of Constructivist GT
(Charmaz, 2008)

3.4.1 Preferred Grounded Theory Approach: Constructivist Grounded Theory

My worldview as discussed in section 3.2, and my understanding that experiences in life involve a measure of interpretation, align to my chosen methodology of CGT. Here, I have aimed to co-construct a GT based on the participants' experiences alongside my own interpretations, in order to construct meaning from the data (Charmaz, 2006; Mills et al., 2006; Creswell, 2007; Wisker, 2008; Coe et al., 2021). The overriding appeal, as a novice researcher, for CGT as opposed to other GT

methods, was the more accessible and contemporary approach. CGT appeared to be a fine balance between 'positivism and postmodernism' (Charmaz, 2000, p.510), although this view has attracted criticism from other scholars (Kenny and Fourie, 2015). The main contention is the strong alignment to a relativist epistemology and the claim that it is contemporary. Frame (2008), however, discusses how relativism can be seen as far back as the 4th and 5th century BC with the Sophists,[2] who advocated that 'reality is what man thinks it is' and held 'that there is no objective truth at all, but only truth "for me" and "for you"' (Frame, 2008, p. 73, 76). Therefore, taking an age-old view of relativist ontology, alongside my own personal use and observations of SoMe for professional learning, it became clear that the phenomenon of SoMe is experienced in differing ways, with differing values and weight afforded to the process of using SoMe for professional learning. Using CGT provided me with the opportunity to follow the participants' experiences as documented in the data, rather than decide beforehand where I wanted the research to go. Brene Brown, in her latest book, *Atlas of the Heart*, recounts a story of Barney Glaser, when he was on her dissertation committee, saying, 'You don't get to decide what the research is about – your participants do' (Brown, 2022).

3.5 Key Features of Constructivist Grounded Theory

Figure 11 below gives a visual depiction of the key features of the CGT methodology. It also outlines the core principles that apply, irrespective of which approach to GT is used. These are discussed in more detail in sections 3.5.1 to 3.5.4 and located in the context of the study:

- Theoretical sampling.
- Constant comparative methods.
- Development of theory.

[2] Greek lecturers, writers, and teachers.

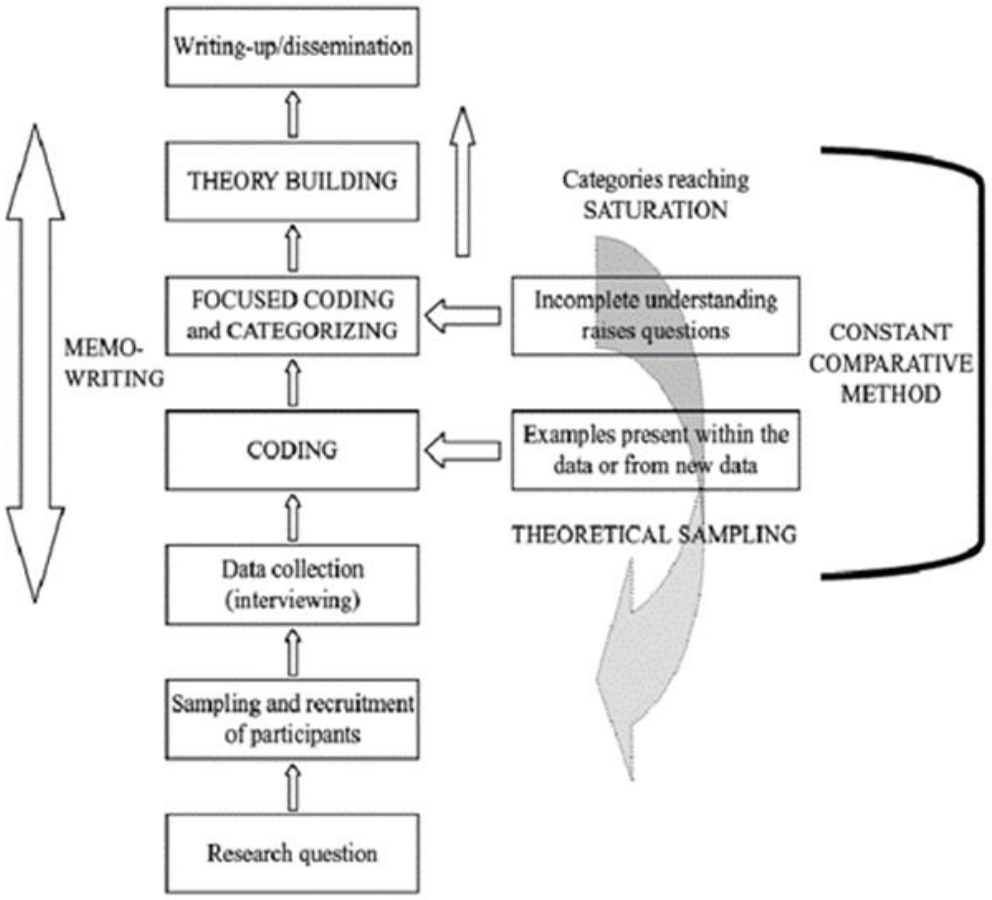

Figure 11 Key Features of the CGT Methodology

(Charmaz, 2006)

3.5.1 Constant comparative method and the Core Category

In GT, data analysis begins immediately, or very shortly after, data collection it starts when early codes and concepts emerge as the researcher listens and documents. This process drives further data collection (Corbin and Strauss, 2015) and may lead to theoretical sampling (as discussed in section 3.5.2 below). The researcher utilising the constant comparative method operates in an iterative space, remaining open minded to emergent themes. Ultimately, this back-and-forth process between data collection and analysis, alongside a reflexive stance, leads to theory development (Hood, 2007). With no predefined theoretical framework guiding the data collection and analysis process, the constant comparative method allows for the theory development to stay grounded in the data, with the researcher walking the iterative and cyclical analytical journey towards the final GT destination (Corbin and Strauss, 2008). The processing of codes in this way leads to an ultimate distilling of the narratives into a core category. Strauss and Corbin (1998, p. 150) describe this as

the researcher finding a ‘gut sense’ about the emerging data and concepts. The core category emerges in the latter stages of data analysis. This ‘imaginative understanding’ as articulated by Charmaz (2005, p. 127) is central to the theory development.

3.5.2 Theoretical sampling

A further key characteristic of GT is theoretical sampling (Holton, 2010). As defined by Glaser and Strauss (1967, p. 45), theoretical sampling is seen as ‘the process of data collection for generating theory whereby the analyst jointly collects, codes, and analyses his data and what data to collect next and where to find them, in order to develop his theory as it emerges’.

Charmaz (2006) highlights the role of theoretical sampling as informing the data collection process with a specific task of developing core categories. Regarding my study, the somewhat challenging process of theoretical sampling was certainly helped by the specific age range of the participants. I was not surprised to find that all the participants were well rehearsed in the use of SoMe and were able to talk freely in the interviews, with many data incidents that were subsequently coded, revealing some key repeated concepts. The constant comparative method enabled this ongoing analysis. However, after the fourth interview, I reflected through a memo (see Figure 12) that the participants so far were towards the latter stages of their course (with one having already finished), and that some new students, either at the start of a new academic year or only a few months into their course, would potentially provide some fresh theoretical insights. First-year students, I felt, would have a different perspective on the use of SoMe to augment their professional learning journey if they were still at the relatively early stages of this journey. This insight was facilitated by being able to recruit participants early in the new 2022/2023 academic year.

I think it would be useful to now collect some data from 1st year students as I am not sure that they were be as confident or as articulate about how to use social media in the context of professional learning. The data collected so far and the codes emerging do seem to demonstrate a level of competence that I am not sure will be there in the earlier stages of the degree.

Figure 12 Researcher’s memo written on 10.08.2022

The combination of constant comparison, theoretical sampling and memo writing helped to guide the latter part of my data collection and further helped the analysis process. Not only did it guide the study, but it also contributed to a growing

confidence in myself as the researcher to adapt the interview guide with more probing questions, particularly in the area of confidence and understanding SoMe through a professional learning lens.

3.5.3 Theory Development and Core Category

Theory development is the ultimate objective of any GT approach. The most common type in a CGT study is substantive theory. Denscombe (2003) describes substantive theory as a set of theoretical suggestions that are more localised to the data environment. The other type of theory, called formal theory, is more conceptual in type and can take a significant amount of time to develop. Both Charmaz (2006) and Goulding (2002) agree that the development of a substantive theory is often the end point of a GT study, as they tend to focus on a specific area of interest. I would agree that the development of the theory in this study, being focused and small in scale, will remain at the level of substantive theory regarding the understanding and perceptions of how SoMe is used for professional learning amongst the Gen Z student radiographers at LSBU.

3.5.4 Reflexivity and Memo Writing

One of the main distinguishing features of CGT is that the researcher does not stand remote but is active and present in the process. Reflexivity is specifically employed to bring challenge to the thinking process of what and how data is gathered and analysed, reflecting on the researcher's values and beliefs (Hallberg, 2006; Charmez, 2008). The researcher is placed as a co-constructive meaning maker. As part of this process, I made a conscious effort to be more reflexive before, during and after the data collection and analysis, being aware of my influences on the generated data.

Initially, I found the activity of memo writing quite stilted, possibly due to the fact that it was a new practice for myself, combined with the need to remain open-minded and not jumping too hastily to any conclusions. However, the more reading I undertook around its purpose, the easier it became to let my thoughts flow more freely. I kept a journal throughout the study with handwritten notes and reflections. I engaged in a handwritten approach because I allowed my thought to flow freely, using diagrams and sketches to help connect the thoughts. This felt more authentic to the process, whereas computer generated notes would have felt more processed and mechanical.

Charmaz (2014) likens the process of memo writing to a private conversation that the researcher has with themselves as they take forward their GT methodology. I would go some length of time in between memos during the earlier stages of my doctoral journey, but these became more frequent during the data collection and analysis phase. I believe this was prompted by the fuller realisation that I had opinions around the field of research being undertaken. Although this is a widely recognised factor in research, with no researcher being able to enter their field completely devoid of any past knowledge (Heath and Cowley 2004; Suddaby 2006), it was an important facet of the process that I needed to consider. However, it became increasingly clear that I needed to differentiate between applying my preconceived ideas to the GT as opposed to having them in the first instance (Gibson and Hartman, 2014).

Figure 13 below gives a short example of a memo where I reflect on some of my preconceptions of the types of SM that might be best for professional learning.

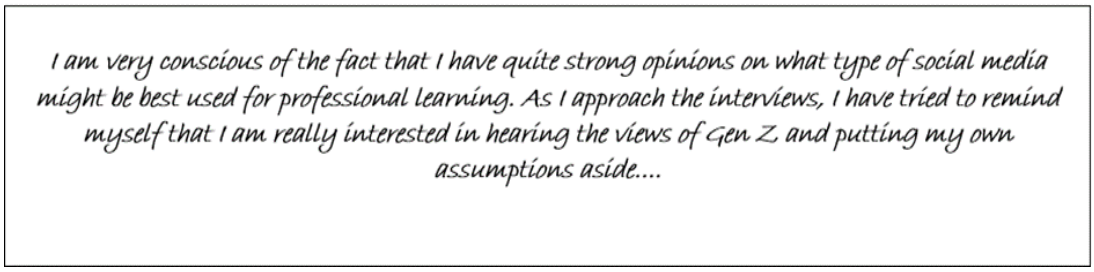

Figure 13 Researcher's memo written 10.05.2022

After I had conducted several interviews, some of my memos referred to my previous assumptions, but with a different perspective. See Figure 14.

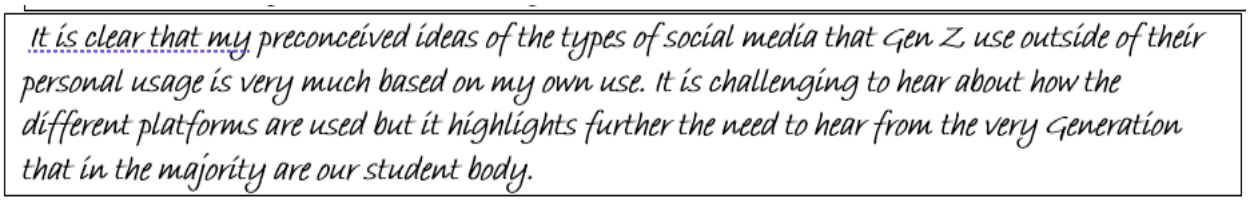

Figure 14 Researcher's memo written 14.07.2022

I also captured diagrams in the journal that, although they may not be fully legible to others, they became a source of making connections between my thoughts and the emerging data. They became my private world of research thoughts and thinking Charmaz (2014) and Birks and Mills (2015) advocate for the use of diagrams to support the research process and help identify connections and build the participants'

stories. My diagrams, although very sketchy at first, were further refined and are used in Chapter 5 as part of the research findings of my study.

3.6 Quality of the Study

With the position of the researcher in CGT as a co-constructor of knowledge, there is a need for openness and transparency in the research process to demonstrate how the research has been undertaken in a systematic and thorough way (Charmaz and Thornberg, 2020).

In the 1960s, the *Discovery of Grounded Theory: Strategies for Qualitative Research* written by Barney Glaser and Anselm Strauss (1967) started the conversation and debate about the quality of qualitative research in comparison to the quantitative tradition. The authors upheld and championed their views of quality within the qualitative paradigm, reflecting the view that there is a diverse spectrum ranging from the positivist model based on objective facts to the phenomenological model of construction of reality by the experiences of human beings (Lincoln and Guba, 1985). They argued that qualitative research should be seen for its own merits and stand proudly along the continuum of methodologies (Charmaz and Thornberg, 2020). Charmaz and Thornberg (2020) agree with Tracy's (2010) indicators of quality in qualitative research, these being: 'a worthy topic, rich rigor, sincerity, credibility, resonance, significant contribution, ethics, and meaningful coherence' (Tracy, 2010, p. 837). In trying to establish how qualitative researchers could demonstrate markers of quality in their studies, Guba (1981) constructed four criteria that are seen as more aligned and relevant to the qualitative research domain. These criteria and how they have been applied in my study can be seen in Table 4 below:

Guba (1981) Criteria	**Traditional Positivist Criteria**	**How This Has Been Demonstrated in my study**
Credibility	Internal Validity	Concurrent data collection and constant comparative analysis, the writing of memos and selection of participants through purposive and theoretical sampling **(section 3.5.1)**.

Transferability	Generalisability	Rich and systematic description of the research setting and processes. Assisting the reader to evaluate the applicability of the findings to other contexts **(section 4.2)**.
Dependability	Reliability	Describing the research design and how it was implemented. Details of the data gathering process **(section 4.3 and 4.4)**. Reflective accounts throughout the study from the researcher.
Confirmability	Objectivity	Regular memo writing to provide reflexivity. My preconceived ideas have been explored throughout the study in the narrative and through the memos **(section 3.5.4)**.

Table 4 Guba's (1981) Quality Criteria

Shenton (2004) and Gerrish and Lathlean (2015) consider these criteria to still be of relevance some years after they were originally defined by Guba in 1981. However, it is widely recognised that assessing the quality of qualitative studies is complex and there is not a 'one size fits all' approach (Tracy, 2010; Altheide and Johnson, 2011; Morse, 2015). To address the longstanding debate, Tong et al., (2007) devised the consolidated criteria for reporting qualitative research (COREQ) checklist, comprising 32 items. The systematic literature review resulted in the discovery of 22 published checklists. These were then compiled into the COREQ 32-item checklist under three core domains*:* research team and reflexivity, study design, and data analysis and reporting. Tong et al., (2007) wanted to see a more comprehensive reporting of qualitative studies, with the focus being on interviews and focus groups. The checklist has, in recent years, been approved for inclusion on the Equator Network (Qualitative research | Study Designs | EQUATOR Network (equator-network.org)). Alongside the use of Guba's criteria (1984), elements of the COREQ checklist have

been included in the narrative in both Chapters 3 and 4 to further substantiate the quality of this study. The full checklist can be seen in Appendix B.

3.7 Data Management

Qualitative research can generate large volumes of data that need to be both accessible and managed in order to stay organised and safe. A systematic approach to managing this process from start to finish is recommended by numerous seasoned researchers (Bryman, 2008; Creswell, 2013; Birks and Mills, 2015). In the sections below I show how I managed the data and overall qualitative research process, including ethical approval, recruitment and power balances.

3.7.1 Recording and transcription of interviews

With the advent of the widespread use of Microsoft Teams, for this study, the audio recording became a relatively simple system to use. All participants gave informed consent, and the interviews were audio-recorded within the Teams programme itself. The recording was started and stopped manually by me; however, the finished recording automatically appeared in the 'chat' function of the Teams meeting arranged for the interview. This recording has an expiration date for being available in the chat, which minimises the opportunity for a data breach after the interview date. I downloaded and saved all the interviews. An automatic transcription is an additional feature of Microsoft Teams. A clear advantage of using this method of audio recording is that it allowed for more focus on the interview itself, without having to operate separate systems. Having both the visual and written recordings allowed for the 'non-verbal' aspects of the interview to be observed alongside the written text. I listened to the recordings alongside reading the transcript to check for accuracy. There were a few anomalies in the transcription, but these were minimal and, overall, I was very impressed with the accuracy of the transcription available through Microsoft Teams. This approach allowed a closer review and analysis of the data in a relatively short timescale, supporting the constant comparative method of analysis and theoretical sampling.

3.7.2 Social Media Reflections

Although the methods for data collection as outlined in the ethical approval process did not formally include collecting data from SoMe, it was evident that certain SoMe

posts that I would read as part of my everyday life were relevant to my thinking and ongoing reflections during the time of my research study. I started to create a folder within Twitter to store 'tweets' that seemed particularly pertinent to my study. In line with the thinking from Glaser (1978), where the researcher is required to treat *'all as data'* at some level, this collection of 'tweets' became part of my reflexive process 'for the purpose of generating the best fitting and working idea' (Glaser, 1978, p. 8). All the 'tweets' that informed the GT process were in the public domain and were not looked for as part of a specific search strategy.

3.8 Ethical Approval

Ethical approval for the study was gained in December 2021 from the Institute of Health and Social Care London South Bank University Ethics Committee (Appendix C). The data collection process began in January 2022 and ended in December 2023.

3.8.1 Recruitment and Power Imbalance

Participants were recruited via the course director acting as the initial gatekeeper of the recruitment process by sending out announcements on the course Moodle site. There was some further snowballing amongst earlier participants, as they were keen to encourage other peers to participate. As I hold a senior role (Dean) within the School of Allied and Community Health, there was a clear need to ensure that no participant felt pressurised to participate in the research study due to a sense of duty or wanting to respond to, or please, a person in authority. The consideration of the power imbalance was considered carefully and addressed throughout the process. I took the following steps, to minimise power balances. I depended on module leaders and course directors to advertise the study on their module and virtual learning sites. As I am the dean, I had to ensure that the gatekeepers did not feel pressured to advertise my study. To minimise this power balance where staff feel obligated to advertise the study, I engaged the student administration team to send out the advert to all course directors and module leaders. This I felt worked well as it removed me from the direct email chain.

Secondly in the interview process itself, where the meeting of researcher and participant in the CGT process became a unique space for the co-creation of

knowledge. The purpose of the interview was to draw the participant into an atmosphere of trust, transparency, and equality to ensure the personal experiences could be freely shared. The researcher (myself) joined in with the narrative and stories of the participants with an enquiring and analytical mind. This interaction benefited from a welcoming environment, not based on hierarchy but on power equality (Karnieli-Miller et al., 2008). I introduced myself as a fellow student who is undertaking a doctoral study at the start of each interview and thanked the participant for their involvement at the end. This approach helped the participants to see me as one of them and again minimise power biases.

3.8.2 Information and Consent

Prior to the interviews taking place, the participants were sent the Participant Information Sheet, (Appendix D). This sheet contained details of the study. If this continued to be of interest and they wanted to proceed, a consent form (Appendix E) was sent prior to the interview. Both forms were written in plain English so that the study could be understood more fully with the aims and objectives outlined. The consent form was written to assure the participants of the confidentiality of the process and informed them of their right to withdraw from the study at any time without any fear of consequences. With the consent of the participants, the interviews were recorded from within the Microsoft Teams platform and the transcript immediately downloaded once the interview was finished.

3.8.3 Storage of Data

The transcript was saved as a Microsoft Word document in a password protected file on my laptop, also protected by a password for login purposes. The transcripts were annotated on the electronic script and so handwritten notes were not required. I kept memos in a notebook throughout the lifecycle of the study and was kept safely in my belongings. All aspects of the data collection process will be stored safely for a minimum of five years following completion of the study in a safe, locked location.

3.8.4 Confidentiality

All participants were allocated a pseudonym to maintain confidentiality and this coding system has been used within this thesis. I ensured that any quotes were not attributable to any of the participants. No participants, at any time, indicated that they

felt upset or distressed due to their involvement in the study. If they did show distress I would have stopped the interviewing immediately and offered support to them. I would only continue the interview if they wanted to and would have also reminded them they can withdraw from the study if they wanted. All participants were given a debrief session (Appendix F) after the interview and advised that help could be sought if any issues arose at a later date.

3.9 Summary of Chapter

This chapter has explored the rationale for using a CGT approach to study the role of SoMe with Gen Z student radiographers. It has examined the various versions of GT and explained why CGT was considered to be the most appropriate methodology for this study. The chapter critically discusses the key components of conducting CGT, including the ethical and quality considerations. Chapter 4 aims to build on the outline of CGT with the step-by-step process of the methods used in the study and how the coding, theoretical sampling, constant comparative method and reflexive approach led to the development of the substantive theory.

Chapter 4

Methods and Developing the Grounded Theory

4.1 Introduction

In the previous chapter, I presented my philosophical position as a novice researcher, my initial guiding theoretical/conceptual framework and the chosen methodology, drawing on Crotty's (1998) definition of methodology. Crotty's perspective helped me to visualise these steps with his framework (2010), as shown in Figure 15.

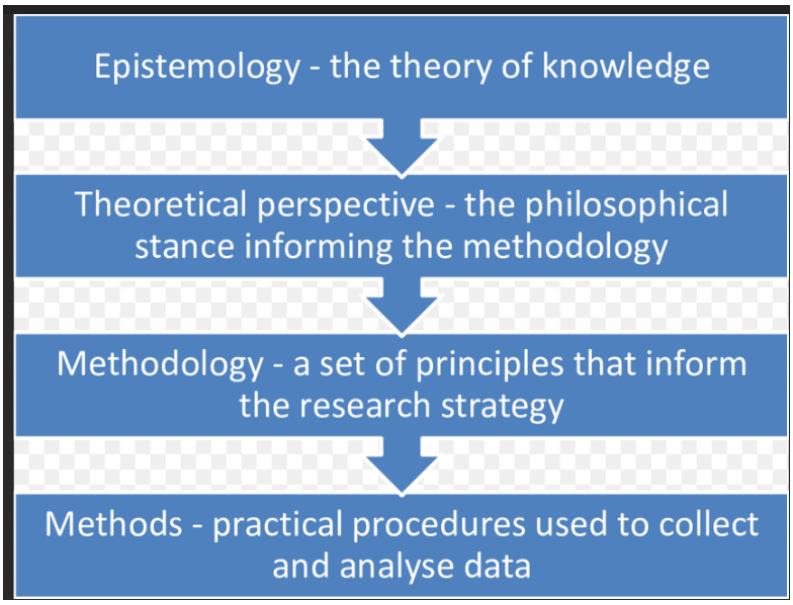

Figure 15 Summary of the four key elements of the research framework proposed by Crotty (2010)

This chapter unpacks the fourth element of this framework in the context of the data collection and analysis process for the study and goes on to further look at the substantive theory development. In this chapter I provide a more in depth detail and description of my methodological decisions in the collection and analysis of data.

4.2 Description of Study Site

London South Bank University (LSBU) was chosen as the preferred study site for the collection of the data. LSBU was founded in 1892 as the Borough Polytechnic Institute. It has undergone several name changes, becoming the Polytechnic of the

South Bank in 1970, South Bank Polytechnic in 1987, South Bank University in 1992 and LSBU in 2003. The university has also merged with a number of other educational institutions incorporating secondary and further education, and this wider family of education providers is referred to as the LSBU Group. LSBU has three campuses in the following areas Southwark, Havering and Croydon. Only nursing students train at the Havering site, with nursing and chiropractic students at Croydon. The DR course is run on the Southwark campus, where the relevant skills suites for the training of DR students are located and so the students were all recruited from this campus site. As I was working at LSBU at the time of starting the Professional Doctorate, it was a pragmatic decision to use LSBU as the chosen study site.

This research study asked the question **How do Generation Z (1995–2003) diagnostic radiography students use social media to augment their professional learning journey?**

Purposive sampling was used to select a deliberate group of participants, that being the diagnostic radiography students at LSBU across the cohorts of the three-year programme. I felt this would give a good representative sample and would further assist with the time constraints of the data collection process (Polit & Beck 2012; Schneider et al., 2013). LSBU is one of the universities in the UK that educate and qualify some of the larger cohorts of DR students and, therefore, is seen as a good recruitment pool available from the outset of the data collection process.

4.3 Recruitment and Participant Profile

The initial recruitment followed the procedure as outlined in the ethics application, with purposive sampling on the target group being diagnostic radiography students, studying at LSBU and in the Gen Z population (born between 1995 and 2004). To ensure the study continued to align with my ontological and epistemological perspective, the participant sample selection needed to recruit students that were most likely to give appropriate and relevant information (Kelly, 2010). The target number of participants was between 10 and 15, with the intention of exploring the phenomena in depth utilising semi-structured interviews. Differences of opinion exist between scholars when ascertaining the optimum number of participants, with Stern (2011) recommending between 20 and 30 participants, whilst Miles and Huberman (1994) remain clear that the depth rather than the number of the resultant participant

sample is important. For CGT studies, Charmaz speaks of an optimum number of 25 (Charmaz, 2006), but also discusses a credible study involving just 8 participants (Speedling, 1981 cited in Charmaz, 2014, p108).

With the focused research question aimed at Gen Z DR students, the purposive sampling approach made use of a limited resource (Palinkas et al., 2015). Participant recruitment took some time, mainly due to the summer break for students and a lack of response from several previous recruitment attempts. Via the student administration team, I asked for the course director to put the call out for participants several times. An early participant asked whether she could encourage her friend to apply, which was a welcome addition to the recruitment strategy. Recruitment, however, happened before and after the summer break with a final number of 10 students consenting to participate.

One early participant was a recent graduate who met the inclusion criteria. Two of the participants were male and eight were female. This was representative of the course gender profile as seen in Figure 16.

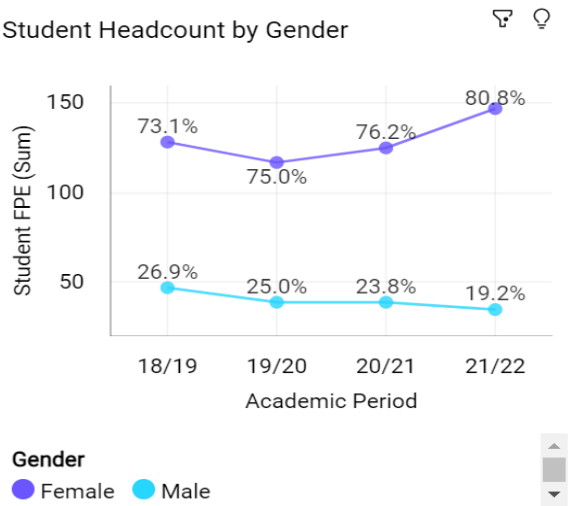

Figure 16 Gender Profile for BSc Diagnostic Radiography at LSBU

The student headcount by age range over the previous four academic years demonstrates a steady increase in the earlier Gen Z age range, with 38.3% of the course population being aged 18–20 (see Figure 17).

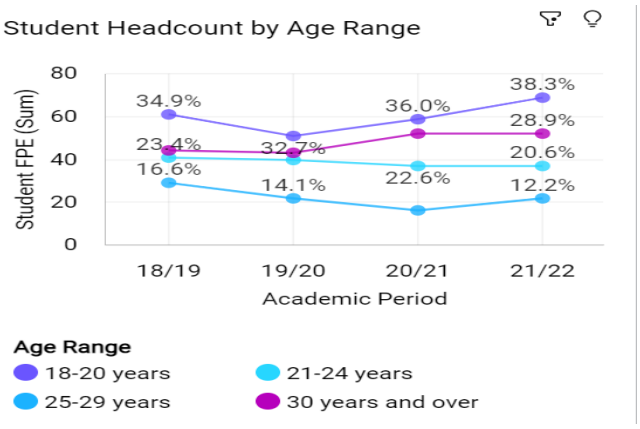

Figure 17 Student Headcount by Age Range for BSc Diagnostic Radiography at LSBU

Table 5 below highlights the age profile of the participant sample and their year of study.

Participant No.	**Year of Birth**	**Age**	**Ethnicity**	**Gender Male (M) Female (F)**	**Year of Study**
1	1995	27	White	F	Recent graduate
2	1996	26	Black	M	2
3	2001	21	Asian	F	3
4	1999	22	White	M	3
5	2003	19	White	F	1
6	2003	19	Asian	F	1
7	2004	18	Asian	F	1
8	2000	22	Black	F	2
9	2004	18	Black	F	1
10	2001	21	White	F	2

Table 5 Participant Profile

There was a spread of ages across the intended Gen Z age range and across the years of study. Participant 1 was a recent graduate, having interrupted their course for a few months due to the COVID-19 pandemic.

4.4 Rationale for Using Semi-Structured Interviews as Data Source

The most effective way of collecting the narrative data for this study was felt to be via the semi-structured interview process and was in keeping with Charmaz's (2014) approach. The disadvantages of this approach were also considered, such as participants having concerns in speaking openly and honestly, not understanding the questions and potentially being too shy or nervous to speak (Nguyen, 2015; Denzin, 2017). I felt this placed more of an onus on myself as the researcher to provide a safe and comfortable space for the interviews to be conducted, clear participant information, and a flexible approach during the interview itself to encourage free-flowing conversation. Therefore, my skills as a researcher were important in this part of the research process.

For many years, the process of interviewing has been seen as a cornerstone in qualitative research methods including grounded theory (Charmaz, 2006; Corbin and Strauss 2008; Mills et al., 2006). Interviews provide the opportunity to discuss the topic in a natural setting and utilise probes for answers, often resulting in an elongated and informative conversation (Weiss, 1994; Schostak, 2006; Alshenqeeti, 2014). Kvale (1983) and Kings and Horrocks (2010) are in further agreement that interviews are the best way to understand a participant's experience. The interviews for my study facilitated an in-depth exploration of the participants' experiences and personal views on how they used, or otherwise, SoMe for professional learning, which in turn enabled the construction of theory (Charmaz, 2014).

Interviews are usually divided into three categories: structured, semi-structured and unstructured (Carruthers, 1990). I used the semi-structured approach because it enabled an interactive dialogue with some measure of direction and exploration being afforded to myself as the interviewer. I had a schedule of questions that could be adapted to remain open and responsive to the interviewee's direction of travel in response to questions. This method gave the advantage of providing structure alongside flexibility. Pertinent topics were prescribed in the interview template (see Appendix G). I used additional probing questions, which allowed the participant

responses to be more fully explored (Carruthers, 1990), leading to a greater degree of interaction between the researcher and interview participant and a richer source of resultant data (Legard et al., 2003; Myers & Newman, 2007).

All the interviews were carried out on Microsoft Teams and recorded using the inbuilt functionality of the system. A short memo captures some of my views on this process in Figure 18. With the advent of the COVID-19 pandemic, this way of conducting meetings has become mainstream within a university setting and, although all participants were offered a face-to-face interview, they all preferred the ease and practicality of connecting over Teams. This online technology has now provided an alternative way to collect data through interviews without losing all the visual and non-verbal cues such as facial expressions, gestures and body language, which O'Connor et al., (2008) view as important for a more contextualised experience. The advantages, though, as discussed by numerous scholars, include geographical reach, saving time and money on travel, and opening increased options for selecting the interview date and time. Archibald et al., (2019) report how nurses preferred interviews on Zoom (a similar platform to Microsoft Teams) as opposed to in-person or telephone. Further benefits of online interviews are explored by Gray et al., (2020) and Oliffe et al., (2021).

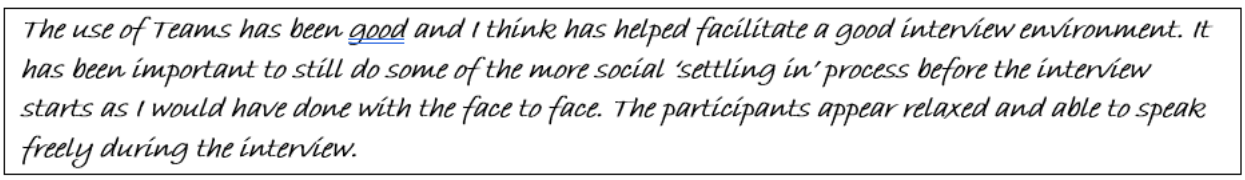

Figure 18 Memo by the researcher on 19.07.22

The average length of time for the interviews in this study was 50 minutes. All the participants appeared relaxed and talked freely, and I believe this was partly related to myself as the interviewer treating them with respect and care throughout the process (Stern and Porr, 2011). I started each interview with a 'thank you' to the participant for taking part in the research process. I introduced myself and went through the research aims and objectives, ensuring that the participant had read the PIS and signed the consent form. As the interviews were all conducted over Microsoft Teams, I made sure the participants were comfortable where they were sitting and had a drink nearby if they wished. I answered any questions they were unsure of and reminded them that the process was confidential. The interviews came

to a natural conclusion after the final question and response was complete, and on asking whether the participants had anything further to add.

The interviews ended with a further word of thanks and a short debrief on the next steps. The interview subject area was deemed low risk for causing any distress; however, all research topics can potentially trigger negative emotions and sensitivities (Corbin and Morse, 2003). Alongside the ubiquitous use of SoMe in Gen Z, there has been a growing body of research looking at the correlation of SoMe usage with user well-being (Morengo et al., 2021; Cingel et al., 2022). Cyberbullying (Kowalski et al., 2012), anxiety (Bayer et al., 2020) and low self-esteem (Burrow and Rainone, 2017) are among the areas linked to increased SoMe use and mental health concerns. All participants were reminded that if any adverse emotions had been stirred as a result of the interview discussion, they could contact their GP or LSBU student services for support. The full debriefing document can be found in Appendix F.

4.4.1 The Pilot Process

I approached the piloting of the data collection through the first interview. I checked whether the information in the PIS was understandable and if any queries or questions were raised at this point that could lead to the PIS being modified. It was agreed that no further changes to the information was necessary and that it was clear and easy to understand. The use of Microsoft Teams and the general ambience of the online interview was observed to be a comfortable space by both myself and the participant. I reflected on the first interview to satisfy myself as the researcher that I had considered the information, the questions, the setting and the power dynamics to gain as much contextual sensitivity as possible. Finding a '*groundedness*' in the context by which I was to collect the data and a test run with the first interview, gave a good level of reassurance that the rest of the study would be successful (Turner, 2005).

4.5 Managing Power Bias

One of the unique aspects of CGT is the intertwined roles of the researcher and participants (Charmaz, 2014). They both contribute to the research process and the resultant grounded theory is ultimately co-created together. The process of data collection, as discussed in section 4.4, aimed to create a comfortable and welcoming

environment with the purpose of creating a suitable and conducive environment to foster a willingness to share personal thoughts, experiences and beliefs (Taylor and Bogdan, 1998, Ben-Ari and Enosh, 2019). The atmosphere needs to ideally move to one of power to equality. As I hold a senior leadership position within the university, there was a clear potential for the CGT co-creation process to be impacted by the power bias inherent between the role of Dean (researcher) and participant (student). In addition, there was a need to address the potential power bias between myself and the other academic colleagues I line managed, who formed part of the research process, specifically the course director of the DR course. I considered them as the key gatekeepers for the study (Eide and Allen, 2005). As part of the ethics approval process, the course director was approached by the administration team via email to ask for their support in sending out the call for participants via the virtual learning environment (see Appendix 7). Once the interviews commenced, I presented myself clearly as 'Rachel, the doctoral student' and not 'Rachel, the Dean' to minimise, as much as possible, the power imbalance. The below excerpt as seen in Figure 19, is taken from interview 3. All of the interviews followed a similar pattern. Section 3.7 in Chapter 3 detailed more of the ethical considerations for this study to ensure that the quality of the study was kept central at all times.

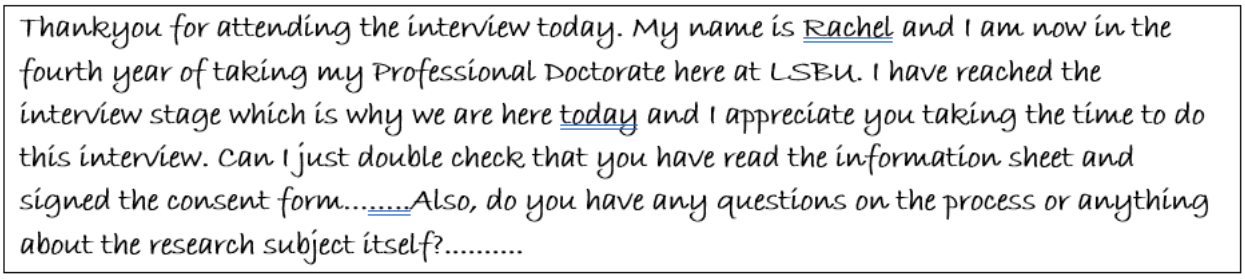
Thankyou for attending the interview today. My name is Rachel and I am now in the fourth year of taking my Professional Doctorate here at LSBU. I have reached the interview stage which is why we are here today and I appreciate you taking the time to do this interview. Can I just double check that you have read the information sheet and signed the consent form.....Also, do you have any questions on the process or anything about the research subject itself?.....

Figure 19 Introduction in interview 3

4.6 Data Analysis Process In Action

Using the function on Microsoft Teams, I recorded the interviews which allowed both visual and verbal capture of the session. The visual aspect was most helpful in being able to create a face-to-face atmosphere, albeit through the screen. The digital medium created a sense of rapport, as reported by Archibald et al., (2019). The audio was clear and interrupted for all recorded sessions. The recording was immediately downloaded and transcribed, ready for open coding. The constant comparative analysis was employed after the second interview took place. This meant that the data collection and data analysis took place concurrently (Glaser and Straus, 1967; Stern and Porr, 2011; Gibson and Hartman, 2014). I found that this

approach kept me close to the analysis and allowed ‘the meaning and construction of concepts to remain under review’ in a dynamic way (Urquhart, 2013, p. 17).

In my study, Charmaz’s (2014) approach to data analysis was utilised. It felt apt that an image using Lego research, seen on my Twitter feed, most accurately represented the way in which I felt the data analysis process developed (see Figure 20, Twitter, 2022). Importantly, this figure shows that data in its raw format is often messy and, for a novice researcher (like myself), it can be overwhelming. It certainly felt that way. For me this messiness related mostly to the scope of the data and how there was a need to maintain focus, whilst not missing out on information that would inform the study. I found that using a structured approach to manage data and analysing it, is key to answering the research question, achieving the study aims and objectives, and telling a coherent story through the participants' talk.

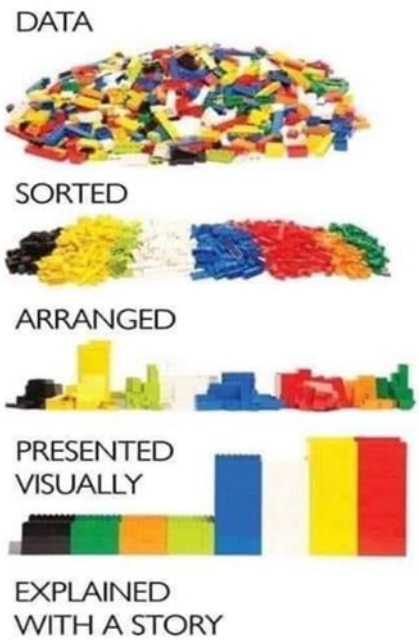

Figure 20 Lego Diagram

(Twitter, 2022)

Grounded theory is set apart from other qualitative research in that the coding focuses on actions rather than descriptive detail. Actions and analytic possibilities form the bedrock of the coding process and facilitate the development of connections (Charmaz, 2008, pp.163–164). In the section below, I explain how I coded the data – in other words, how I moved from the messy data to arriving at a coherent narrative.

4.6.1 Open coding

Open coding is the initial phase from where I developed codes from the participant words using a line-by-line approach. I became familiar with the data by listening to the recording and reading the transcript document at least twice before identifying any codes. Each line was analysed in turn, but some of the resultant codes came from single words, some from a section of the sentence, some from the overall sentence and others from a larger chunk of text.

I utilised ‘gerunds’ which are verbs used as nouns and ending in ‘ing’. Hoare et al., (2012) describe gerunds as the action that becomes apparent in the data. I also used ‘in vivo’ codes as described by Glaser and Strauss (1967), which are codes where the title of the code is taken directly from the participants words. This kept the process grounded in the data and kept me focused on the task at hand. The initial open coding felt, initially, quite random. The memos I had written after each interview were mostly focused on the process of conducting the interviews rather than my thoughts and reflections on the data being heard. However, this changed over time, as I soon learnt to shift my focus to the stories being told rather than the mechanics of conducting an interview. This new focus meant that the memos I made, and the data, were able to be used symbiotically in the back-and-forth process of the data analysis. The line-by-line coding by hand helped me immerse myself in the data and to utilise my memory to make the comparative analysis. I was able to highlight the Microsoft Word document of the transcribed interview and develop the gerunds and in vivo codes relatively quickly from the words on the page. Figure 21 shows a highlighted extract of the open codes.

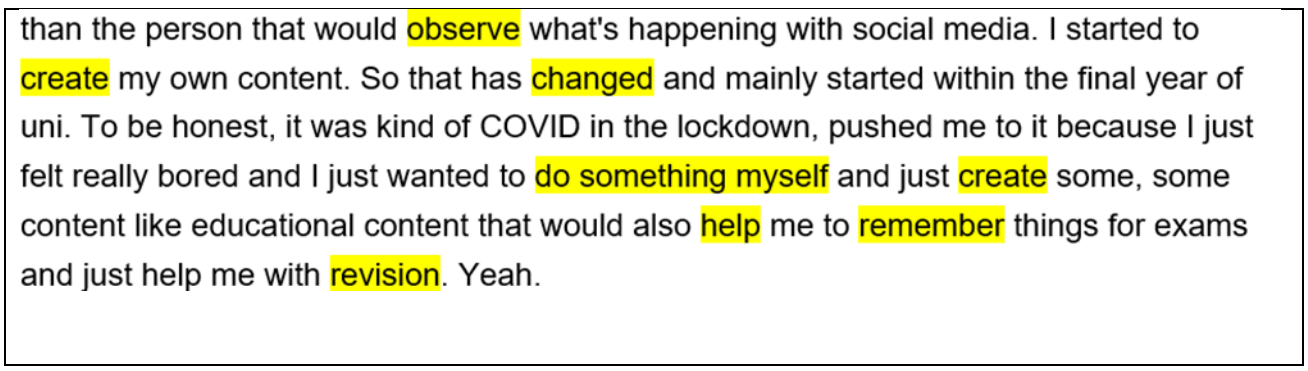

Figure 21 Open Coding Example

Table 6 highlights the developed gerunds and in vivo codes from the highlighted text.

Incident in Data	Gerund	Comments
Observe	Observing	
Create	Creating	Repeated Mention
Changed	Changing	
Do Something Myself	Do Something Myself	In vivo
Help	Helping	
Remember	Remembering	
Revision	Revising	

Table 6 Gerund and In Vivo Codes

During the open coding stage, some of the codes felt quite weak as they did not represent any of the social processes underpinning them. I felt the coding actions were quite basic, and needed to apply caution so that I did not underestimate the process. Therefore, I held firm to the process of constant comparative analysis and revisited the codes often during this stage and remained open to further developments and changes of the coding process. By using this iterative process, I was able to explore some of the emerging themes that seemed important for further exploration in some of the later interviews (Charmaz, 2006; 2012). The last three interviews that I conducted provided an opportunity to go deeper into the more descriptive nature of the responses and ask for specific details. For example, the tentative concept of uncertainty, nervousness and lacking confidence in using SoMe in a more professional manner, as opposed to a personal way, gave rise to probing questions such as ‘On a scale of 1 to 10, how confident would you be in engaging in a radiography specific conversation on social media?’ and ‘How can you see this changing in the future?’

The line-by-line coding acted as a springboard to the next level of focused coding that produced more abstract concepts (Charmaz, 2006).

4.6.2 Focused coding

This phase is undertaken to review the codes, looking at significance and frequency of occurrence. At this stage of the analysis, the objective was to further sort,

compare, synthesise and amalgamate the large amounts of data into concepts and categories.it was at this stage I began to form links between the codes, resulting in groups of concepts and broader categories to bring the ongoing focus required (Corbin and Strauss, 2008; Charmaz, 2014). These concepts and categories were always in my mind and I was continually thinking and moving them around in my head to see how best they could tell the narrative of the participants. At this juncture using memos was very useful. I continued to use memos to capture my thought process and reasoning as I moved towards a core category (Robson, 2011).
Figure 22 is an excerpt of a memo reflecting my thinking on some of the conceptual links between codes. What this memo also demonstrates is how I was developing critical thinking as a researcher.

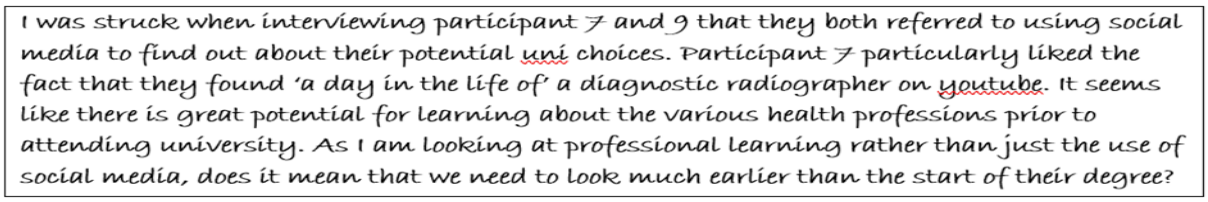
I was struck when interviewing participant 7 and 9 that they both referred to using social media to find out about their potential uni choices. Participant 7 particularly liked the fact that they found 'a day in the life of' a diagnostic radiographer on youtube. It seems like there is great potential for learning about the various health professions prior to attending university. As I am looking at professional learning rather than just the use of social media, does it mean that we need to look much earlier than the start of their degree?

Figure 22 Memo written on 11.09.22

During this focused stage of the data analysis process, seven focused codes were developed, underpinned by the numerous open codes already identified. Table 7 below shows the focused codes supported by some of the open codes that were arranged together to support their development.

Open Codes	Focused Codes
Helping Remembering Revising 'Observing others' 'Looking at interesting facts'	**Developing useful learning strategies**
Using social media all the time Scrolling for hours for fun Accessing several platforms at once 'can't live without it'	**Confidence in Personal Space**
Creating own content 'Doing something myself'	**Creating learning resources**
'Worrying about fake news' Questioning truth	**Worrying aspects of social media usage for learning**

Getting anxious about what is right or wrong Feeling overwhelmed with amount of information	
Researching information Finding new things out Looking things up Using Radiopaedia	**Investigating a wider world of knowledge**
Lacking confidence Worrying about personal and professional divide Seeking help from tutors	**Feeling Insecure**
'Meeting other student radiographers' Following qualified radiographers Joining professional chats Communicating with others 'best thing is student WhatsApp group'	**Relating to others similar to myself/ Finding My Tribe**

Table 7 Development of Focused Codes

In my attempt to stay as close as possible to the CGT approach, the focused codes remained action orientated. Gerunds were used throughout the focused coding process, although this did mean adapting some of the open codes to meet the gerund criteria. For example, instead of developing a focused code titled 'worry/fear', I decided on 'feeling insecure'. I took this approach because it seemed to encapsulate the conflation of the related open codes and represented a more underpinning social process. Also, the focused code 'investigating a wider world of knowledge' encompassed many similar open codes into a more refined definition of the process the participants were discussing in using words such as finding, researching and looking. This focused stage also required more critical thinking about linkages and relationships between the data. For example, I thought long and hard about the relationship between 'meeting student radiographers' and 'following qualified radiographers'. The resultant focused code was 'finding my tribe', reflecting the fact that, whether connecting with students or qualified staff, the open codes created a sense of wanting to find people who spoke the same professional language

and could provide a safe learning space in this new world of learning and of becoming a diagnostic radiographer.

Once the initial focused code framework was complete, I went over the data further to ensure that any uncoded, or less considered, sections of the transcripts aligned into the focused code. I felt that all data were covered by this process, with no outlying open codes left on the periphery. This reflected the definition of **Theoretical Saturation** as proposed by Strauss and Corbin (1998, p.143) being, "the point in category development at which no new properties, dimensions, or relationships emerge during analysis." However, this stage of the process was more by fortune than design, as the collection of data was influenced by the number of willing participants and the time-bounded nature of the study, rather than a true realisation of theoretical saturation via ongoing data collection.

I applied the most effective and active theoretical sampling principles I could, to ensure that the broad range of data across the age criteria was collected. The participants all qualified in the Gen Z age range, but it was evident in the data being collected that there were differences in how the participants approached the use of SoMe for professional learning dependent on age. Therefore, it was important in attempting to reach theoretical saturation that the spread of ages was represented in the data-collection phase. Charmaz (2014) discusses a study based upon rich, substantial and relevant data which stands out, and emphasises the depth and scope of the data, making a difference to the overall study.

I had my own tensions in conducting the data analysis. Towards the end of the focused coding process, the code of ***'feeling insecure'*** appeared to be the most resonant, but in my head I was moving back and forth as I was trying to arrive at how this related to the other codes at this stage. At this stage, I was experiencing the messiness of dealing with data. Uncertainty and ambiguity are, according to Locke (2007), all part of the process of theorising. I found I had to keep asking the question, 'What is going on here?' And to fully explore the phenomenon by listening to participant accounts, asking probing questions, comparing the data from other participants and seeking out the connectivity between the stories.

4.6.3 Development of Core Category

Following the completion of the focused coding analysis stage, the process moved to the development of the core categories. The core category or categories that emerge from the focused coding process evolve from the participant's accounts, ensuring that as the process moves to a conceptual and theoretical space, the participant voice is still retained and resonant within the core findings. The traditional and evolved grounded theory methods discussed in Chapter 3 purport the importance of just one core category. However, Charmaz (2006), in her constructivist grounded theory standpoint, argued that some phenomena under scrutiny may not be suitable for just a single core category and, in her earlier work (1995, p. 132), outlines the constructivist position:

> A constructivist approach does not adhere to positivist notions of variable analysis or of finding a single basic process or core category in the studied phenomenon. The constructivist view assumes an obdurate, yet ever-changing world but recognizes diverse local worlds and multiple realities and addresses how people's actions affect their local and larger worlds. Thus, those who take a constructivist approach aim to show the complexities of particular worlds, views, and action (Charmez, 1995, p.132).

This more flexible view aligns with my underlying philosophy of the existence of multiple realities, and that the phenomenon of SoMe is experienced in differing ways with differing value and weight afforded to the process of using SoMe for professional learning, as discussed in Chapter 3, sections 3.2 and 3.3.

On reflection, although the focused coding leant heavily towards the sense of 'feeling insecure', there was the dichotomy of confidence and ease of use of SoMe in the students' personal lives. The conceptual themes that were emerging seemed to be two sides of the same coin, depending on the context, i.e. the personal or professional. I found my role as a researcher helped to make these dichotomous connections clear and represent more faithfully the voice of the participants. I learnt that research does not fit into neat boxes or categories and, in staying faithful to the data and process, there was a need to develop more than one core category (Munhall, 2001). The glue between these two opposite positions became a further core category of 'communication networks'. Therefore, three tentative core

categories formed the bedrock for representation of the grounded theory. Once the main categories were established, they were further reconnected to the participant quotes to minimise the risk of losing connections with their narratives. Table 8 provides an example of reconnecting some of the quotes in the data and aligning with the action-orientated codes.

Category	Concepts within Category
confidence and ability to use social media proactively in the personal space	Always on my phone, Instagram, WhatsApp and Facebook, “can’t imagine a world without social media”, personal use is very comfortable
feelings of insecurity and lack of confidence in unfamiliar territory in the professional space	Worrying about the difference between personal and professional use, not much use of Twitter, “nervous to do the wrong thing”, “I don’t know what I don’t know”
Importance of communication networks (spanning both personal and professional)	Connecting with fellow students, always chatting to friends on SM, sharing information. “WhatsApp group so helpful when we started uni”

Table 8 Aligning Core Concepts with the data

4.7 Early development of the theory

The early scoping literature review in Chapter 2 outlined the context for the question ‘**How do healthcare undergraduate students use social media to augment their professional learning journey?’.** I had to expand the scope of the literature search due to the paucity of information specifically targeting diagnostic radiography students. I was able to refine my theoretical sensitivity through the early literature search and further literature considered throughout the constant comparative method of data analysis. Further theoretical integration was channelled by the concepts explored in Table 6, pg. 94 and a more extensive search and application of the literature was conducted, the findings of which are discussed in Chapter 5.

4.8 Summary of this chapter

This chapter has presented the practical data collection and a more detailed explanation and discussion of the methods used to analyse the data, as well as the processes followed to develop the substantive grounded theory using focused coding and core categories and concepts.

The next chapter elaborates on the findings and explores the conceptual categories with the extant literature.

Chapter 5

Findings

5.1 Introduction

This chapter discusses the qualitative findings from the participant data and presents a constructivist grounded theory (CGT) of 'Mind the Gap'. The chapter concludes with a summary of the findings.

The main aim of this research was to investigate Gen Z Diagnostic Radiography (DR) students' experiences with SoMe in relation to how they use SoMe to augment their professional learning. Further objectives that were outlined in Chapter 1 include:

- to explore how diagnostic radiography students report their interactions on SoMe regarding professional learning;

- to examine how diagnostic radiography students' perceptions of SoMe affect their professional learning within their course;

- to investigate how diagnostic radiography students navigate SoMe sites to identify areas of learning that meet their perceived need;

- to understand what diagnostic radiography students perceive as the barriers and facilitators to engaging with SoMe effectively as a means of professional learning within their course of study.

The presentation of the findings uses participants' quotes to support illustrative examples of the conceptual categories that emerged during data analysis. Quotations were taken directly from the transcripts and have been kept as close to the original transcription. If any part of the transcription revealed an identifiable person, the name has been replaced with an 'X'. I have retained the conversational murmurings such as 'Yeah', 'Umm' and 'Like' because it keeps the data as close as possible to the original and reflects the authenticity of the work undertaken. This was not a research study using discourse analysis, and I felt that removal of some of the

utterances would not detract from the overall conveyance of information. Each quotation is labelled with the research participant's number from 1 to 10.

5.2 Overview of Constructivist Grounded Theory Model

The empirical findings for a CGT of how Gen Z DR students augment their professional learning using SoMe consist of two inter-related categories: *confidence and ability to use SoMe proactively in the personal space* and *confidence and ability to use SoMe proactively in the professional space.* These findings are supported by the process of *communication networks* that were found to be important in both these categories. The core category has been termed **'Mind the Gap'** as it represents the space between the two other categories.

To remind the reader, the main aim of the research was not intended to investigate 'what' SoMe was used by the students, but 'how' it was used in the context of professional learning. The use of SoMe is recognised as ubiquitous and, indeed, none of the participants hesitated in answering the questions related to its use from their personal perspective. The following quote highlights the underpinning role of SoMe more generally and, therefore, sets the situational context for further exploration:

"…oh yes, social media is just a way of life. I don't know any of my friends who don't use it. Everyone has a smartphone or a tablet. I don't think you could come to university without this technology anymore. I think it would be an expectation of the lecturers that you have the right kit. They often refer in lectures to social media stuff" (Participant 8, age 22).

Having outlined the main components of the model and, as seen in Figure 23 below, the rest of this chapter continues with the analytical presentation of the findings.

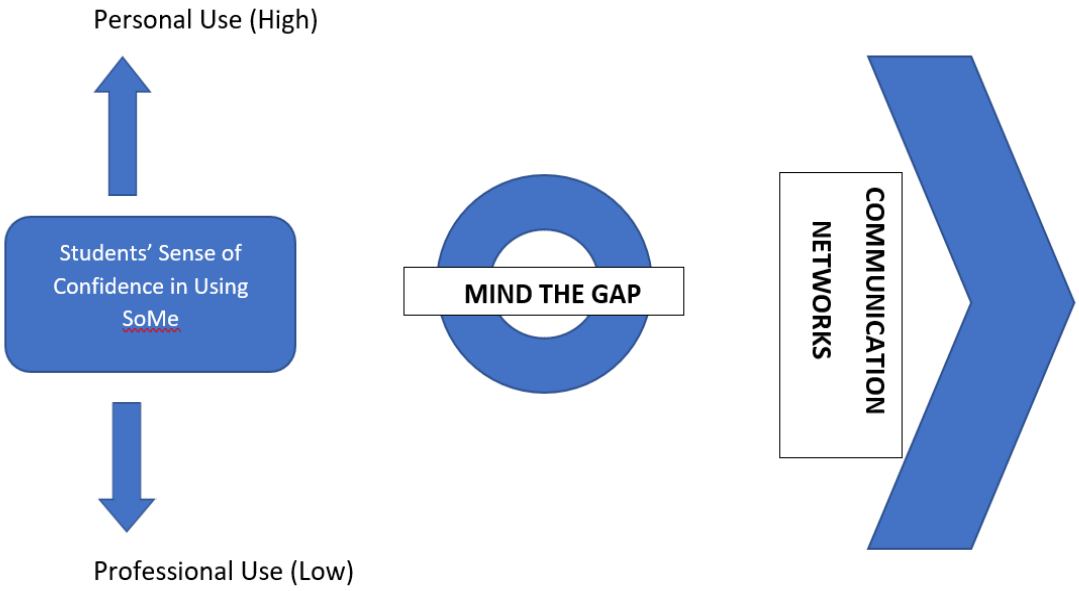

Figure 23 Theoretical model of the substantive grounded theory

The box on the left shows the concept of confidence when using SoMe. The arrow pointing upwards shows the high level of confidence experienced by the participants in the personal space of using SoMe. The arrow pointing downwards shows the lower level of confidence experienced by the participants when discussing the use of SoMe in the professional space. The phrase 'communication networks' is repeated across this continuum as all participants mentioned how the communications with peers, both in the personal and professional context, was a positive and easily understood way of navigating across the divide. The SoMe platforms have become a vital communication tool for students to engage with their peers and receive immediate connection and information related to their course, assignments, timetables and general conversation:

"…I am part of multiple WhatsApp groups which I can't live without. We can quickly check with each other on information needed. Yesterday, I needed to ask more about the assignment and we, like, all got involved. We have also created a Facebook group for one of the modules, but I use WhatsApp more." (Participant 2, age 26).

Participant 9 further supported the vital role SoMe platforms played in joining the University community and making immediate connections:

“I really liked the LSBU app that I used before even starting the course. I asked a couple of questions but could also see lots of answers from others. I met my friend that I hang out with now on the app and we got along straight away.” (Participant 9, age 18)

.

The icon in the centre, spanning the personal and professional space, represents the overarching core category and resultant title for the thesis: **Mind the Gap**. The conceptualisation of the two key categories, based around confidence of using SoMe across the personal and professional boundaries, was supported by the participants’ accounts describing a tangible gap in how they used their obvious SoMe skills to augment their professional learning experience. This gap was most notable in the younger participants, but was mentioned in each interview, irrespective of age. All participants were consciously aware of this ‘gap’ and some had found ways to narrow the ‘gap’, albeit mostly unconsciously, within their own learning journey This is further discussed in section 5.5

The next sections will take the reader from the category representing the high levels of confidence in using SoMe to the category representing the lower levels of using SoMe. It will explore the sub-categories under the main headings. This journey will also highlight the gap presented between these two key categories. I will then explore the common category of communication networks that spans this gap, before expanding on the overarching core category underpinning CGT.

5.3 First theoretical category: confidence and ability to use social media proactively in the personal space

“can’t imagine a world without social media, it is like every day breathing...” (Participant 5)

This theme captures the participants’ confidence and ability to use SoMe in a personal space. The characteristics of this theme were shaped by the enthusiasm in which participants responded to the interview questions. It was a subject that seemed easy to talk about and, as a user of SoMe myself, it was an instant shared area of connection with the participants. It was clear early on in all the interviews that using SoMe in day-to-day life was not optional and was a core component of life.

The majority of the participants referred to SoMe as ‘essential’ and this is succinctly summarised by Participant 2:

“…if you don’t own a smartphone with the socials, then you just find life more difficult. I don’t know anyone who doesn’t have one… except maybe my grandad, but he does have a phone but not a smart one, so just makes calls and texts, but not often.”

In the extract below, the participant is aware of using different types of SoMe for personal use, such as when being out with friends. However, there is less confidence when it comes to using it for professional use.

“I used to use Facebook a lot, but only use Instagram now when I am at home or out with friends. I haven’t used Insta during my time at University cos I am not sure what I should do with it. I think LSBU has an Insta site though, so might check it out.” (Participant 4).

And:

“I am always looking at, you know, YouTube. It has been used quite a lot by the lecturers, but not all of them, but I, umm, used it before anyway. You can find literally anything. I never had a Facebook account, but I do use Instagram. I have started to umm… start a LinkedIn profile, but not too sure what to do with this yet, so I just usually use YouTube and Insta, depending on, like, what I am thinking about at the time.” (Participant 7)

Participant 2’s transcript reveals that the various types of SoMe can be used for different purposes, e.g., learning and family contacts. Even in the personal space, the different learning styles can be seen, as in the extract below:

“I use WhatsApp all the time. I used to use it a lot before coming to LSBU but use it even more now. I sometimes go on Facebook to connect, like, with my family, but not very often. I use Instagram umm quite a bit. I like the more visuals and the stories.” (Participant 2)

The SoMe platform TikTok was mentioned by three participants. They spoke about it making them happy and that it felt a creative space to engage with. Participant 5 and 6 referred to following 'trends' and being able to watch trending videos.

"I use Insta and TikTok. These are the best social media sites for me… I think my friends use the same. I love seeing the trending videos and sometimes I will join in with them, but, yeah always watch out for them." (Participant 5)

And:

"I use Instagram, then TikTok. And I think they're the main two. And then, yeah, I have Twitter, but I don't go on it that much." (Participant 6)

The fast and visual nature of TikTok seemed appealing to these participants. They navigated the sites with apparent ease and confidently spoke about how to use it, albeit none of the usage related to university or course-related interactions:

"TikTok is like, great. It is fun and fast. I do TikToks with friends and umm sometimes by myself. I like watching them. I don't bother with umm Facebook anymore. It's like too old for me. …oh, sorry if you use it, but I don't think us younger people, like, using it anymore." (Participant 9)

The question of whether the participants actually used SoMe at all was not explored explicitly at the outset of the interview. The participants were all asked what SoMe sites they used and there were no hesitations in any of the responses. It was not outside the realms of possibility that a Gen Z student would not be familiar with SoMe, but it would be my assumption that all the participants that came forward were active users. I found this to be best demonstrated by the following quote:

"I was really excited to do this interview. I love using social media and not sure how I would live without my, umm, connections with others. I, like, use it every day and sometimes too much, but anyway it is a good part of my life." (Participant 6)

Participants' (Gen Z) talk in this study so far have demonstrated that SoMe is an essential part of life for them. It has been referred to as a 'friend' and 'part of me'. This starts to describe a sense of embodiment. SoMe, according to the data analysis,

was overall seen as a positive in life. A friend that participants could rely on. A friend who gave them confidence, and a friend who gave them joy. There were some limited concerns about overuse of SoMe in participants daily life, but, on balance, these comments were outweighed by the value and importance that participants placed on SoMe.

"It's how I keep up to date, like having a friend in my hand that sort of knows everything and can get me everywhere. Sounds a bit strange, but don't think I could live without it. I sort of see it as part of me." (Participant 2)

And:

"Social media is just part of life. Don't think about it, just do it. Umm, it is almost as easy as breathing (laughing), but you do have to remember to charge your phone up…" (Participant 3)

Continuing the concept of SoMe as a friend, the connectivity with friends and family nurtured a safe and motivating environment. Ease of use is mentioned throughout the participant accounts. They switched between platforms, depending on the type of activity they sought, with the ease of which each platform offered accessibility and instant results, which was a driving factor of their choice.

"Always easy access to whatever I need to do. Insta is great for giving me a friend boost, too. Love connecting in this way." (Participant 1)

However, this ease of use and sense of SoMe being a 'friend' was starkly contrasted when the participants in this study were asked how they used SoMe for professional learning, which I will explore further in section 5.4.

As the first concept of high confidence and ability in the personal use of SoMe emerged, some of the wider objectives of this doctoral study were also addressed, namely interactions, perceptions and barriers of using SoMe in relation to professional learning. Four participants discussed directly how they saw a distinct divide between their personal and professional usage, with all participants verbalising a higher level of confidence in the personal space.

The selection of quotes below highlight a tension felt by the participants as they considered the tangential shift from connectivity in their comfort zone with friends and family to unfamiliar territory at university. There was a sense of uncertainty, nervousness, and lack of knowing how best to use the technology for professional learning gain:

"I don't really know what I should be doing at Uni with social media. Do you think it is a good thing? …ok, maybe I can use it but, yeah, not too sure at the moment." (Participant 3)

Participant 5 had clear views about how they shared their personal use of social media and also demonstrates that this participant has not considered the professional use of social media for learning.

"I like to keep my personal use of social media to me. I don't think I should share this." (Participant 5)

SoMe posts by the University have been about self-promotion and not concerned with academic content or professional learning.

"I would like to use Instagram more at university but not sure it is possible. But I do follow the university Insta page. Quite good, but nothing to do with our course." (Participant 6)

And below it is clear that educators are aware of the potential use of SoMe for professional learning:

"We do get given some links to YouTube. Umm, not by umm everyone but some. One lecturer talked about setting up a Facebook page but, err, this did not happen. I just use my own Facebook stuff at home." (Participant 10)

Participant 9 felt one of the biggest barriers to using SoMe for professional learning was not knowing what to look for. The data revealed that the participants felt overwhelmed with the vastness of SoMe. In section 5.4.3 I unpack this experience in more detail.

"Everyone was like, where do we start. We said to the lecturers, Oh, could you recommend some videos to watch? And some lecturers did do that. Mostly YouTube videos. I know there was an Instagram page that got recommended, but was only one and I don't know anything else…"

Participant 4 talked about how they felt they had been actively dissuaded from using SoMe because the professional body, Health and Care Professions Council (HCPC), would not approve. In exploring this experience further with the participant, they had felt that a talk given during their university induction week had emphasised the negatives of SoMe in relation to professional standards. Instead of guiding this student towards a positive and professional relationship with SoMe for professional learning, the effect had been to create a bigger divide:

"I think we have to be careful and not do posting of things. X said we had a code or something that we should stick to and not post… so I am just staying in my comfort zone of my normal things. I post a lot and search a lot, but just for me, not for studying." (Participant 4)

The data analysis of the open and focused codes, leading to this key category, indicates that the Gen Z students in this study experience a sense of ease, positive connectivity and instant results. This provides a platform of high confidence and ability with using SoMe in their personal lives. To analyse this category further, the sub-categories of 'A Life Online' and 'Creating own Content' will now be explored.

5.3.1 A Life Online

A unifying feature of all the participants' interviews was the amount of time spent scrolling through SoMe platforms. This generation, as discussed in the scoping literature review in section 2.3, are high consumers of SoMe and are strongly attracted to online communication and connectedness with others via the technology they hold in their hands. They navigate SoMe with ease, reflecting a high confidence in the use of this powerful tool for their own personal uses.

Although the participants did not directly relate the action of scrolling for hours on SoMe with a high level of confidence, it was clear that they managed this interaction

without any manner of forethought or planning. The Cambridge dictionary describes confidence as a ‘feeling of having little doubt about yourself and your abilities’.

Participant 7 related to this definition by saying:

“I don’t know why I scroll so much but I guess it is just easy and it comes naturally…”

Participant 5 described their SoMe scrolling activity as *“instinctive”,* while Participant 9 said it was part of their “*daily routine*.” They recognised they could be spending too much time on SoMe which can be negative, while acknowledging the benefits for health such as relaxing:

“I go on my socials before I get up and then last thing at night. I think I spend way too much time doing this, but scrolling on Insta is a good way to relax and see what is going on out there. You don’t have to think about it, you just do it…” (Participant 9).

There were two participants who expressed different views from the rest of the participant group in relation to this sub-category. Participants 1 and 3 both felt they needed to control the amount of time spent on scrolling. It seemed as if both these participants had been proactive in limiting their time on SoMe in order to maintain a healthy balance with other priorities and to shape a constructive plan for studying.

“I have had to limit my social media usage. I was bad when I first started Uni and would scroll for hours without stopping, even when I knew I needed to be studying, but I think I decided in about year three to work out how to fit it in with my studies rather than the other way round.” (Participant 1)

A further time management strategy is shown in this next quote:

“I used to spend lots of time every day on social media, but now I just limit my time. I have even had a complete break, but I didn’t like that too much. I think some limits to my time is just, er, sort of better.” (Participant 3)

The participant excerpts indicate that one of the potential downsides to SoMe being so easily accessible, is the amount of time that can be spent scrolling with no defined purpose. Participants 1 and 3 had implemented SoMe time management strategies

as they had recognised the need to focus on other tasks without getting distracted. None of the participants spoke about the potential to use the time spent on SoMe for personal usage in exchange for time spent on purposeful scrolling for professional learning.

There was a strong sense from all the participants that SoMe was an integral part of their lives. Three participants stated that they couldn't live without accessing SoMe as it was their main source of communication with friends and family. One participant account stood out and summarised this sub-category:

"Yes, I do think we are the most connected generation on our phones. My mum told me that she hadn't used social media and, er, I don't think she had a phone for a long time. I can't imagine that cos how would you speak with your friends? ...social media is a lifeline I think. It isn't always helpful, but I don't think we could live without it now." (Participant 10)

5.3.2 Creating own Content

Instagram, TikTok and YouTube were the most discussed SoMe platforms during the initial part of the interview when looking at personal usage. These platforms that focus on visuals appealed to all participants, as captured in their narratives. Three participants talked about how these platforms had started to encourage and build their creativity in making their own content. The extract below shows how, once the initial confidence is gained, a whole new world of digital content creation opens up:

"I only started really recently, but I like to do regular stories on Insta. It was a bit of a confidence thing, but I got the hang of it quickly. I have now experimented with TikTok. The speed of the videos appeals to me and I think it will be quite a big thing in the future. I have made a few TikToks now…" (Participant 7)

Creating polls can be a skill to help with engagement, as seen below:

"I enjoy making polls. I ask lots of random questions. But it is sort of engaging me in a different way with social media. I mostly do this on TikTok, but sometimes Insta. You can link both." (Participant 6)

SoMe can help develop structured thinking and lead to focusing on a topic, as related in the following extract:

"Yeah, content creating is really popular and I like to think about what I do and the messages I might send. Insta stories are good and I sometimes do a theme." (Participant 4)

The stories, organised in themes, as discussed by Participant 4, are often in a visual format and can appeal to visual learners. Participant 2 also reveals:

"I just enjoy the visuals of Insta. I find it hard now to read lots of words, but give me pictures and I can focus on them for quite a bit."

And Participant 6 says:

"I switch between Insta and TikTok. They are very interactive. I tend to go on TikTok for more fun, but also YouTube for video content. I have my own accounts and put up videos. We could have much more of this at uni instead of all text based. That can be very boring…"

In summary, the Gen Z participants in this study were not passive but active engagers with SoMe. They enjoyed the option to use different SoMe platforms for different uses. They are a visual and video-driven generation, with what appears to be a desire to move across SoMe platforms quickly, curating the information they seek in a fast-paced environment. They find text more difficult to absorb, but visuals provide a better way of learning.

5.4 Second theoretical category: confidence and ability to use social media proactively in the professional space.

"I don't know what I don't know" (Participant 9)

The distinction between the confidence shown in the first theoretical category and the level of confidence exhibited in the second were significantly marked. Earlier in the first theoretical category, I discussed the range in the confidence spectrum from high (related to personal usage) to low (related to professional usage). This became clear,

not only by the conversations that took place during the interviews that is shown in the narrative below, but also in the pace, confidence and robustness of the answers across the personal and professional divide. The answers were often stilted and required clarifying before the participants could proceed. I reflected on my style of interviewing and whether the questions needed to be altered. I learnt through reflection that it was more the concept of understanding how professional learning itself could be augmented by the use of SoMe, as opposed to the questions themselves.

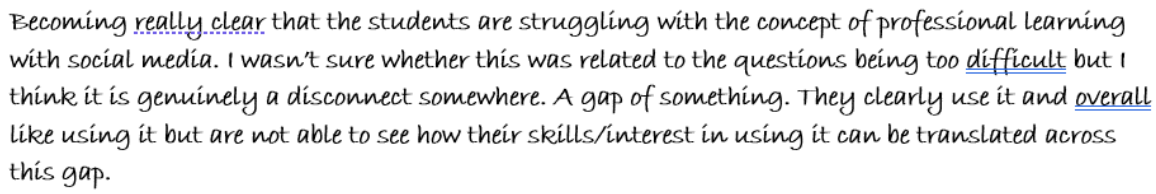

Figure 24 Memo written on 19.10.22.

There was one participant whose views stood out as different from the other participants in terms of confidence for using SoMe to augment professional learning as a DR student. Participant 1 explained how that, due to the COVID-19 pandemic and the first UK lockdown period, there was a need to find ways to occupy their time. Although lacking confidence to begin with, they had the time to explore the use of SoMe in a different way;

"I really enjoy making quizzes on Instagram. That is one of my favourite things when I was still studying and then also participating in other quizzes, sort of stuff related to radiology, really most of it or anything sort of medical, or like anatomy and things like that…"

Participant 1 reflected further by saying:

"I don't think without the enforced lockdown that I would have, like, looked at quizzes for learning. I still don't have much confidence but much more than I did."

Apart from this useful insight from Participant 1, all the other participants were not able to articulate clearly how they used SoMe for their professional learning. When asked about whether they felt more relaxed using SoMe personally than

professionally, Participant 5 approached professional use with caution and alluded that there is incorrect information that one can be fooled by:

"Yeah, definitely. I think personally it's all very easy, but if you're a professional like as a student… I think you have to be more cautious because, yeah, the information that I'm reading, I could really be like, Oh, okay, yeah, that's true and correct. But actually it might not be."

Participant 7 shows that when it comes to professional use, DR students may require support from the university:

"I want to know what to use but just not really sure. X [a educator/lecturer changed for confidentiality] is pretty good at helping with like YouTube videos, but others don't use any. I think we could get more help cos it is different to what we usually look for…"

The same participant went on to say that although they knew of Twitter, it was not a platform well known to them. However, they were eager to learn more:

'The knowledge of like Twitter is still lacking for me. I think we could have been taught more in this area if it would lead to us being better connected and informed about diagnostic radiography. It is quite exciting to think we can learn more. I hope to look further into this, especially maybe radiographers on Twitter. I think it will be very different to how I usually use social media but not a bad thing to learn more. I am very digital savvy so will pick up what I need to do…'

Meanwhile, another participant was not sure whether any SoMe platforms would be useful apart from YouTube, and points towards needing guidance from educators:

"I can see the use of YouTube, but not sure how we would use Insta. I do use Insta for other things but haven't seen anything useful for radiography. But don't know what to really search for." (Participant 6).

Participants 3 and 8 articulated clearly their confident use of SoMe in their personal lives, but both questioned how they could apply this knowledge and ability to their professional learning regarding their course of study:

"I like to use WhatsApp and TikTok the most and enjoy using them. We have set up a student WhatsApp group and I think it will be useful for sharing things, but have only just started… I wonder if we can use TikTok. I have seen some university stuff on it, but not looked much recently, would be good if we could as it is quick and engaging, not too boring." (Participant 3)

And:

"I use Facebook a lot at home. My friends have a Facebook site at their university but they are studying law. Maybe we will have one. Don't know yet, but maybe good idea. Will see." (Participant 8)

This sense of feeling insecure in using SoMe for professional learning was often related to the ability of and interactions with the academic staff. Four out of the ten participants felt the lecturers/educators did not know how to use SoMe. One participant remarked:

"X (lecturer) said they were a bit of a dinosaur with technology so don't think we will use it much in those lectures. They do PowerPoints or talk to us. Erm, some interactions but not on social media. I don't think they use it. Can't imagine lecturers using TikTok (laughing). That's quite funny to think about for X and X." (Participant 2)

The earlier scoping literature review highlighted the imperative for faculty staff to embrace the pedagogical need to incorporate SoMe into the curriculum. This may well be the required direction of travel, but the faculty would need to be proficient in its use to do so.

"…I think there is quite a big gap between how we use it and how older lecturers use it. There are some older students as well. I think they (lecturers) need to change quite a bit to keep up. But not all of them, just some." (Participant 6)

To analyse this category further, the sub-categories of 'Fake News and Finding Correct Information', 'Worrying About Getting It Wrong' and 'Too Much Information' will now be explored.

5.4.1 Fake News and Finding Correct Information

For the purposes of this study, I will use the definition of fake news as news on SoMe that is 'either wholly false or containing deliberately misleading elements incorporated within its content or context' (Bakir and McStay, 2017, p. 1). Many of the interview participants found the problem of fake news quite a concern. They were aware of specific 'fake news' campaigns, particularly around COVID-19. Concerns were raised about the process of how to identify what information was reliable and credible for applying SoMe to their professional learning. It appeared from Participant 2 that it impacted their confidence in using SoMe for anything other than personal use:

"I don't think the pandemic helped as we were told lots of fake news about Covid. I don't find it easy to know what is what, so sort of avoid lots of information, but that might be useful. Yes, it does worry me." (Participant 2).

Participant 8 and 10 also mentioned fake news connected with the pandemic and how they perceived it being everywhere and quite disturbing:

" covid fake stuff was everywhere and so it got hard to know what to believe. It has been really confusing about the vaccinations and placement so, yeah, how do we know it is real info." (Participant 8)

" I got quite upset and anxious during lockdown when lots of my friends….and also some of my family I think were getting too involved with sharing fake news. I wasn't sure but it mostly seemed fake and not really based on good evidence." (Participant 10)

Participant 1 felt that the lecturers were a big help in this area, as they trusted the information and SoMe links they shared:

"*…is much better when lecturer 'X' gave us the info, as felt like they had fact checked before. I have read some rubbish before so am very aware of fake news and that it does exist, unfortunately."*

5.4.2 Worry About Getting It Wrong and Engaging Correctly

In this sub-category, Participant 7 and Participant 5 talked about their fear of getting things wrong. They both used almost the same phrase *"I worry about getting it all wrong"* (7) and *"I could do more but worry about getting it wrong"* (3). They went on to say how SoMe outside of their personal sphere was more difficult to navigate. Below are excerpts that demonstrate this concern.

"*I think it affects my confidence really. I feel I am more on my own and don't have the confidence to just do more on social media than I am used to. I think it is just a confidence thing really cos it isn't any different, just a bit new."* (Participant 10)

"I would like to do more with social media but I'm nervous. I don't really know why… I think, um, I think it might be easy to get things a bit wrong… and that puts me off a bit, although I do like to see what 'X' suggests as they do use a lot of good examples." (Participant 3)

However, although Participant 9 held the same sentiments about getting things wrong themselves, they also agreed, along with Participant 3, with the sense that the lecturers were good at signposting to credible information:

"If I feel a bit anxious about looking for information, I do think that the lecturers, apart from one or two, are good at knowing their stuff and include social media for us to use. There have been some excellent resources this way" (Participant 9).

5.4.3 Too Much Information

In a bid to explain how it feels to have so much information, Participant 2 describes it as overwhelming:

"…it can be quite overwhelming at times. So much to look at. So much to research... it is, like a lot of stuff out there." (Participant 2)

Participants, although well versed in the use of SoMe, appear unprepared with the additional information overload arising from exploring their professional and technical context of DR.

“Oh my God. Yeah. I just feel a sinking feeling sometimes. Bit much. There is so much information. I started looking once for YouTube videos on facial bones and then there were so many links to other stuff. I sort of got a bit lost to be honest.” (Participant 3)

Although some participants found useful information in their professional learning space on SoMe, their sense of motivation was affected when the information available became a source of stress and demotivation.

“I would say that when I start to look at stuff on social media for the course, I start full of energy but get stuck sometimes. Too much info especially on some more regular topics.” (Participant 5)

In summary, the participants’’ confidence in using SoMe for augmenting their professional learning depended on the one hand in developing their confidence to widen their SoMe reach with a more DR profession focus, and on the other hand ensuring the academic faculty can use, and signpost to, suitable SoMe resources.

5.5 Third theoretical category: Importance of Communication Networks

“WhatsApp group so helpful when we started uni” (Participant 10)

In Chapter 1 I explained the place of communication as a central tenant of SoMe use. This might be in the form of words, pictures, videos, memes, hashtags and emojis. All of the interview participants mentioned communication throughout the interview process. Following analysis of the data and identifying the focused codes and theoretical categories, communication in its various forms became the constant theme that spanned the divide between the personal and professional use of SoMe. The connection with others, afforded by SoMe communication channels, seemed to have a huge value for the students. The participants reported that they used WhatsApp to communicate, discuss, set up study groups and share course information:

"We have set up WhatsApp groups in the cohort. This is very much invaluable for me. Sometimes we chat rubbish, but we do also talk a lot about useful stuff." (Participant 2)

SoMe technology has provided a source of communication that benefits those with social anxiety. Face-to-face conversations and interactions are a trigger for anxiety for some who tend to be 'shyer. Therefore, SoMe networks at university are a useful way to overcome this initial obstacle. Group chats and the sharing, of course-related resources and information can occur remotely and yet still be connected.

"I communicate best on my social media sites at Uni. Not so face to face. Can have a good conversation, but I can't always do this when I am with people. I am quite shy." (Participant 5)

Participants 4 and 8 mentioned some of their concerns with the volume of communication with their university peers, citing some areas of online conflict. The term 'netiquette' (short for 'net etiquette') has been coined to describe the rules of positive online behaviour. All students deserve to feel part of a safe and respectful online community and are also expected to contribute in the same manner. The HCPC expect this level of professional behaviour for all students and qualified practitioners that they regulate.

"The WhatsApp group is full on. It can be good, but not when some students don't respect a good way of talking with each other…" (Participant 8)
And:

"It can sometimes get a bit much with all the messages flying around. The other day there was a big dispute about the assignment, and it got a bit heated. I didn't join in at first, but felt I needed to say something as there were some things that were not right. I don't like to do this very often, but sometimes you just need to, sort of, intervene and say the right things." (Participant 4)

However, both these participants highlighted the value they placed on these social media communication channels. They described them as *"so important"* and *"invaluable".*

To help understand this category further, the sub-categories of ‘Ease of Use’, ‘Sharing Information’ and ‘Support’ will be discussed next.

5.5.1 Ease of Use

Being connected to SoMe platforms was seen as essential for students to stay connected to their networks for a variety of reasons. The ease in receiving and giving of information, and the immediate way of communicating with peers, friends and family, were seen as far superior than other forms of communication.

“…WhatsApp has been the best way to communicate. It’s easy, quick and useful so the best way to catch up with everything.” (Participant 7)

Ubiquitous connectivity is a defining hallmark of Gen Z. A student not owning a smartphone would be an exception rather than the rule. This has led to an instant messaging culture.

“Feels good to know that the others on my course can be contacted so easily. Someone always answers and usually straight away if I have a question…” (Participant 10)

Although WhatsApp was clearly a favourite platform of the participants for communication activities, Facebook was also highlighted during the interviews. Facebook, as a SoMe platform, facilitates the creation of *pages* and *groups*. Groups enable the creation of a community of users who share a common connection, such as a cohort at university. They can be used as a discussion space and a place to share relevant information. The settings for groups can be controlled by an administrator, allowing only those suitable to join. Participant 6 found the Facebook group an improved way to engage as opposed to the university Virtual Learning Environment (VLE). Issues of a technical nature regarding access to the VLE (known in this study setting as Moodle) were discussed during several interviews:

“…the university platforms are not that great. The Moodle is a bit old fashioned and not very logical. Our small tutorial group set up a Facebook group which made things a lot easier to navigate...” (Participant 6)

Again, the ease of the Facebook group is seen below:

"…we created a private group on Facebook for the group activity. This was in year 1 and 2. I found this very useful and easy for interacting and sending stuff to each other as it was a platform I was used to using more on a daily basis." (Participant 4)

5.5.2 Sharing Information

Alongside the ease of use for the various SoMe platforms that the Gen Z participants were clearly comfortable in using prior to attending university, the sharing of information was seen as a huge benefit to them.

The learning theory of Connectivism is discussed further in section 6.4. The extracts below demonstrate a link between the concept of knowledge flowing through various networks and nodes and the experience of the participants of this study, in keeping with the theory of Connectivism. The participants received information from peers, from different SoMe platforms and from searching via hashtags. They were successfully augmenting their professional learning, even though they were not explicitly aware of this new pedagogical approach to their studies.

"I think the information shared on Moodle is pretty good, but the things we share on social media are really super helpful, especially for checking on assignments… the other day, one of my friends put on WhatsApp some really useful information that I have used." (Participant 2)

And:

"Information sharing is a big benefit of social media for sure. I found this increased in my time at university, maybe because of the lockdown. I also went on Twitter which was pretty good at the time. I use it less now, but thinking I should use it again …I think there are some good sites for sharing info. I think the MedRad space is pretty cool with the research stuff. I haven't been on for a while though…" (Participant 1)

Participants 5 and 6 talked specifically about the sharing of information in relation to their placement experience. Participant 5 articulates that *"Without the WhatsApp group for the placement site, I would have felt a little lost."*

The WhatsApp SoMe platform was a quicker way to communicate, as seen below: Participant 6 said almost the same thing with,

"I looked at the WhatsApp group all the time before going on placement cos the information shared was really helpful, and I am not sure what I would have done without it." They went on to reflect, *"I guess I could have asked … but it is always much quicker to get information this way."*

Participants mentioned how they had found some hashtags useful for searching for information which they could then share. They mentioned how hashtags were now quite pervasive across many of the SoMe platforms and that, if used well, could be a rich source of information. Hashtags are words or mini phrases that categorise information content and allow subjects and topic areas to be searchable on Twitter, Facebook, Instagram, Pinterest, and other SoMe platforms. Hashtags are preceded by the # symbol. Participant 7 explained:

"I didn't know how to use hashtags for the course until I searched for some anatomy specific things and what I found was great. I shared this with my cohort… I used #brainanatomy and then #MRIbrain …"

A little further on in the conversation, Participant 7 returned to the subject of hashtags and felt that this was an area that was not well known as to how best to "search" and "discover" valuable sources of information:

"I didn't realise you could use hashtags for specific bits of info. I think if I knew that sooner, I would have searched more, because now I have started doing this I have discovered lots of good conversations and more study resources that I didn't know existed."

Participant 7 also connected with qualified radiography staff on placement and made the connection of a 'new node' of potential learning and sharing of information that would be available to them:

"I got to know some radiographers really well on my last placement and I think one of them was involved in an online journal club, which would be great to join."

The student participants in this doctoral study found that the sharing of information such as conversations on placement, against the backdrop of easy-to-use platforms (e.g. Whats App) a real benefit to their learning journey. There was a sense of frustration that clear information and search strategies specific to SoMe were not shared with them, and that, if this had been the case, their learning experience would have been enhanced. I found it equally frustrating as the researcher to be aware of a wealth of resources that the participants could (and arguably) should have been directed to that would have augmented their professional learning opportunities. As I went through this doctoral journey, I not only kept memos but also curated examples of SoMe examples of learning specific to diagnostic radiography. I have highlighted a few examples in Figure 25 below:

Figure 25 DR specific learning examples from Twitter

5.5.3 Support

Receiving timely support from peers on their course was a highly appreciated factor in the use of SoMe during the participants' studies. It appeared to give a heightened sense of security and confidence in the fact that someone would answer a question with some useful information. Participants 4 and 6 used the phrase *"reduces anxiety"* when referring to conversations on SoMe around the time of exams and assignment submissions:

"*The cohort WhatsApp group is most used near the deadlines. I know for me it reduces anxiety cos I know someone will have the answers to my questions. We are good at supporting each other…"* (Participant 4)

SoMe as a support mechanism can help to reduce anxiety:

"We always offer help and support where we can. It does reduce stress and anxiety near exams for sure..." (Participant 6)

Participant 8 talked about how they, and others, might email or talk to a lecturer about a specific issue and then the answers would be shared on WhatsApp or a Facebook group.

"If we get an answer from X or X, we would always share the answer more widely in our groups on Facebook or WhatsApp. I think we are good like that."

Although receiving support from the academic faculty was discussed and would have been seen as beneficial, there was quite considerable emphasis on supporting each other. The speed of reply was an important factor and was met from within their own cohort online communities using SoMe as the information delivery vehicle.

5.6 Core Category: Mind the Gap

The results presented in this chapter have led me to develop the core category and the gap that has emerged between the personal and professional usage of SoMe in Gen Z DR students studying at an inner London university. Although students have no problem using SoMe in their personal lives, they had trouble translating that use

to professional learning situations and spaces. In terms of communication with their course peers, a wealth of data emerged from the interviews that highlighted this as a positive aspect when using the SoMe platforms. However, applying this ability to communicate via these platforms, to a more in-depth and broader usage of the SoMe capabilities to strengthen their professional learning experience, was felt to be lacking.

The data analysis highlights the contrast in confidence between the personal and professional space and the fact that students do not appear able to navigate this gap. Their sense of ease when using SoMe platforms in a more professional capacity for learning appeared minimised and constricted:

"We had a lecture during induction about who to follow on Twitter related to radiography. I didn't really pay much attention, but now I wish I had but it was a bit rushed anyway I don't really understand how I can use this platform better, but I think it would help with, at least some connections with other radiographers… I think this would be a good way to learn more about the profession, but I haven't really explored how to do this and stuck to my comfort zone." (Participant 3)

The students' sense of frustration in knowing how to use SoMe to augment their professional learning was a recurrent theme. They knew their lives were intertwined with SoMe but had not quite worked out how to make the shift to improve the scope and quality of their learning.

Participant 8 explains this feeling well in the extract below:

"Social media is always on, if you know what I mean, but not sure it is being used the way I would like. Like I said earlier, I do use it a lot, but more for home life and friends. It would be pretty useful though to get engaged on a more professional level if that was possible earlier on in the course. Like, early lectures and stuff."
(Participant 8)

There was an indication that students wanted to know more about how to use SoMe to benefit their DR learning journey. Participant 4 highlighted how they had shifted their thinking and were now networking with qualified members of the profession:

"One of our cohort was really active about World Radiography Day and let us know a few things on WhatsApp. I don't think I would have known otherwise to look this up, but I used the hashtag and it was a good way to learn some things. I now follow a few qualified radiographers and a few from where I hope to get a job. Not sure I would have done this otherwise, so yes you have got me thinking about how I use social media and I haven't used it enough for my info about my profession. I think this is more possible." (Participant 4)

The majority of student perceptions regarding integrating the use of SoMe into the taught curriculum were positive. Although this study did not capture the view of the DR academic faculty, the data shows that there are mixed approaches to using SoMe in the teaching materials.

"I think the lecturers are great at explaining things, but if I am honest it can be a bit like just listen and learn rather than, umm, a better way of learning. I came across a few radiographers on Instagram and it was really helpful seeing what they were discussing, and maybe this would have helped with our wider, blended kind of learning with the additional resources." (Participant 10)

Participant 7 talked at length about what they felt they lacked in the professional learning space of SoMe and how they hoped to learn more. They felt the practice of their profession would be enhanced if they could remotely socialise more with those already practising it, in addition to their placement experience:

"The knowledge of like Twitter is still lacking for me. I think we could have been taught more in this area if it would lead to us being better connected and informed about diagnostic radiography. It is quite exciting to think we can learn more. I hope to look further into this, especially maybe radiographers on Twitter. I think it will be very different to how I usually use social media, but not a bad thing to learn more. I am very digital savvy so will pick up what I need to do, hopefully…" and *"I got to know some radiographers really well on my last placement and I think one of them was involved in an online journal club, which would be great to join. Do you do this? ...I will ask them more about it next time I see them, or maybe before…"* (Participant 7)

The core category of 'Mind the Gap' helps to understand the underlying desire from students to use SoMe in new ways to augment their professional learning, but who

are somewhat lacking in knowing where to begin. Participants in this study have not previously conceptualised SoMe as a vast ocean of easy-to-access suitable resources that can be used to improve their learning experience. They are keen to learn and explore the benefits and seek constructive support, signposting and opportunity to develop this potential further. It is also clear that the gap is not being bridged by the academic faculty in being able to harness the skills and aptitudes of students' using SoMe when they start their course of studies.

5.7 Summary of this Chapter

This chapter has presented the narratives from the participants interviewed as part of this study. The data clearly highlighted a gap between the personal use of SoMe versus the professional learning use of Gen Z DR students studying the BSc Diagnostic Radiography course at LSBU. It showed how the level of confidence was markedly different across the personal and professional space, hence the core category of 'Mind the Gap'. Data about 'confidence' on how SoMe was used become a key category to further explore the continuum of personal and professional usage. Further data about the importance of communication networks was assigned key category status, and the findings explored how this became a unifying factor across the identified gap.

The next chapter will discuss the findings. The theoretical concepts considered in the preliminary scoping literature review in section 2.13, pg.63 are further reviewed and synthesised with the new substantive theory.

Chapter 6

Discussion

6.1 Introduction

The previous chapter presented the analytic findings from the participant interviews about their perspectives of how they use social media (SoMe) to augment their professional learning journey. This data, alongside the first literature review, provided a framework for theoretical sensitivity within which to construct a substantive theory around the professional usage of SoMe in the learning journey of Gen Z DR students. Despite the theoretical perspective previously discussed being grounded in both the first literature review and participant interview data, it is not claimed that the findings are unique. Indeed, by conducting a second literature review, the theoretical concepts preceding this study can be further reviewed and synthesised with the new substantive theory.

The substantive theory **'Mind the Gap'** is a pragmatic explanatory theory, which, according to Glaser and Strauss (1978, p.42), 'fits the real world, works with predictions and explanations, is relevant to the people concerned and is really modifiable'. This statement still holds true in 2023. In working with the interpretivist approach, this conceptual theory represents the views of the Gen Z DR students, analysed alongside the researcher's interpretations. The theory is based in their real-world setting at university and should not only be relevant to the DR student group themselves but also modifiable across other allied health courses.

In this chapter, I will provide a coherent interpretation and synthesis of the data resulting in the new substantive theory, which has highlighted how Gen Z DR students use SoMe in their professional learning – or, more accurately, how much of a gap exists in how it is used between the personal and professional boundary, despite the fact that Gen Z students arrive at university with a whole raft of SoMe skills that that have embedded in their personal lives. I examine the literature afresh to support theoretical integration of the three conceptual categories as presented in Chapter 5 (confidence and ability to use SoMe proactively in the personal space/ confidence and ability to use SoMe proactively in the professional space/ importance

of communication networks), with the intention to ‘weave the fractured story back together’ (Glaser, 1992, p72). Additionally, Stern (1994, 2007) discussed the need to situate the emergent theory within the existing body of knowledge. Here, I use this advice to demonstrate the credibility of the research in this doctoral study and recognise its contribution to knowledge within the field of DR student education and pedagogy.

The overarching CGT has been called **‘Mind the Gap’,** the same term was used for the core category in Chapter 5 and Figure 23 on pg.104. I believe this description encompasses the overall findings into an easy-to-remember working title that highlights the difference between the personal and professional usage of SoMe. It is a clarion call to find a way to minimise the gap, so that a stronger alignment with professional learning using SoMe can be realised. LSBU need to enable more understanding in the future as to how SoMe can be used to its maximum advantage within student diagnostic radiographers’ professional learning journeys and align this with the skills the Gen Z students already possess The ‘Mind the Gap’ theory as applied to the experiences of Gen Z DR students, augmenting their professional learning via the use of SoMe, is a good reflective tool to further discuss the student experiences on this matter.

The data that I collected via semi-structured interviews and analysis reveals that students have a high level of confidence and skill in using SoMe within their personal lives, and also a high sense of insecurity and a lack of confidence in using SoMe to aid towards their professional learning journey. One of the key common positive factors across this divide was the ease and value of communication with other like-minded people using SoMe tools. It became apparent that there was a considerable gap between the two environments where SoMe is used by the Gen Z participants: the personal and professional. My interpretations were combined and weaved with the participants’ contributions in the emergent theory, which follows the CGT methodology (Charmaz, 2006). In my analysis of the interviews, I arrived at a critical point, as the researcher, in notably hearing the ability to answer the questions in the interview between the personal and professional use of SoMe. There was a tangible shift. The interview space moved from a relaxed, easy space for the participants to one that was more difficult to navigate. The SoMe platforms had not changed. Therefore, it left me asking what did?

In keeping with the CGT methodology, the scoping literature review in Chapter 2 acted as a mapping exercise, enabling a helpful review and exploration at broad themes already discussed within the available literature, whilst highlighting the gaps that also exist. Chapter 6, however, provides a more focused and in-depth exploration of theoretically sampled literature to locate the new theory amongst existing literature on how SoMe is understood around the themes of communication, confidence, and how healthcare students use it across the personal and professional divide.

The significance of the new theory will be presented within the context of the established evidence base, whilst highlighting the gap in knowledge around the research question and how it contributes to new knowledge in this field. I took Charmaz's advice and ensured that the purpose of such an exercise was not to update the initial literature review, but to take a deeper look at the theoretical body of evidence, whilst situating the insights from my study in this context. As Charmaz (2014) reminds her readers:

'…any research should tailor the final version of the literature review to fit the specific purpose and argument of his or her research report' (2014, p.308).

Olavur (2011) argues that, in a CGT research study, the literature can be used selectively based on the emergent concepts. In this chapter, I therefore aim to situate the emergent theory within the broader literature, compare and contrast the emergent theory with present work, and discuss similarities and differences.

In this chapter, I present a comprehensive discussion of the emergent substantive theory that has been co-constructed by the participants and myself, and the final engagement with the extant literature. Studies including other healthcare students, as opposed to diagnostic radiography exclusively, were included in this review, as the preliminary literature review identified that there was a clear gap of DR student-specific research.

A search was undertaken in electronic databases including CINAHL, Scopus, ScienceDirect, and MEDLINE. Google Scholar was also used, in keeping with the first literature review. A further hand search of the references included in the relevant literature was conducted. The themes from the findings were used as keywords to

identify any appropriate literature and theories. The potential links between the grounded theoretical concepts and the relevant extant literature are shown in Table 9.

Grounded theoretical category	**Indicative relationships with extant literature**
Confidence and ability to use SoMe proactively in the personal space (high)	**Technology acceptance model** (TAM) (Davis, 1989): *Analyse the effect of people's perceived ease of use and perceived usefulness on their attitude toward new technology adoption.* **Uses and Gratifications Theory** (UGT) (Blumler and Katz, 1974): *Explain why and how people actively seek out specific media to satisfy specific needs.*
Confidence and ability to use SoMe proactively in the professional space (low)	**Uncertainties about knowledge and skills**: Dreyfus and Dreyfus (1986): *The Dreyfus model is used to provide a means of assessing and supporting progress in the development of skills or competencies, and to provide a definition of acceptable level for the assessment of competence or capability.* **Connectivism**: Learning Theory or Pastime of the Self-Amused? (Siemens, 2006): *Instead of knowledge residing only in the mind of an individual, knowledge resides in a distributed manner across a network. A learning theory for the 21st century and closely linked with recent technological changes.*
Importance of Communication Networks	**Communities of Practice, Legitimate Peripheral Participation**: (Lave and Wenger 1991): *The heart of learning in a CoP is discourse and dialog to build*

	personal, individual understanding and shared, group understanding: '*Communities of practice are groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly'.*
Core Category: Mind the Gap	**Zone of Proximal Development** (ZPD) (Vygotsky, 1978): *ZPD highlights the difference (gap) between what a learner can do without help versus achieving with guidance/support from a skilled person.*

Table 9 Links between categories and related extant theory

6.2 Brief Overview of Communication Pre and Post Computer Mediated Communications (CMC)

Before the days of CMC, people communicated in a myriad of ways. These included oral stories, cave paintings, carrier pigeons, semaphore, parchment, radio and television, to name a few (Boakes and Gaertner, 1977; Rothenbuhler, 1996; Mullen, 2008). Although the various communication media have changed significantly over the centuries, the core tenants of communication have remained, namely to 'share', to 'make common' and increase shared knowledge, and understanding, between a sender and a receiver (Rosengren, 2006).

In 1994, I moved to Cameroon to establish a Radiology facility. I was accompanied by my husband and one-year-old daughter. All of my daughter's first steps, words and developments were recorded via letter and the occasional phone call, with an intermittent signal, to family and friends back at home. The internet was just beginning to take traction within society, with large desk-top computers and slow email exchanges. The latest figures, however, from January 2023, record 5.16 billion internet users worldwide, with 4.76 billion being SoMe users (Statista, 2023). Not only is the use of CMC virtually ubiquitous across the Gen Z population, but communication in many forms is also now instantaneous, unlike my experience in 1994 where the carefully crafted handwritten letters either took weeks to be delivered or never arrived at all. The same daughter has now moved to be a teacher in Thailand and our communications are easy and often. She communicates with us via

WhatsApp and Instagram almost on a daily basis. The world of communication has changed significantly.

CMC can be viewed through various lenses; however, for the purposes of this study, literature has been reviewed relating to CMC and the potential for:

- increased learning with a pedagogy that encourages an increase in student responsibility, autonomy and a reformatting of the same message in a way is delivered in a more contemporary style (Lane, 1994; Drum, 2015) and
- the ability to manage and share knowledge in the formation and function of online communities of practice, whereby talents, skills, best practice, ideas are exchanged and refined in a mor informal and spontaneous way. (Chen et al.,2014; Lee et al., 2014).

6.3 Confidence and ability to use social media proactively in the personal space as reflected in the extant literature.

As true digital natives, Gen Z, being born (1995) at the time when the World Wide Web was becoming more publicly available, have been raised with an exclusive technology focused environment. They also have little or no memory of a world before smartphones. Gen Z are, therefore, highly adapted to using technology and SoMe platforms and live comfortably within this digital world.

The Gen Z use of SoMe is widely acknowledged (Cathala, 2022). The impact on their lives demonstrates a range of varying characteristics that, although have shared elements with the Millennial generation, highlight some unique characteristics of their own (Bell, 2013; Shatto and Erwin, 2016). Gen Z are high consumers of technology and cravers of the digital world and move swiftly across many SoMe platforms to connect, communicate and collaborate. They multitask and use SoMe with natural confidence (Bell, 2013).

When I conceived this study, it was not my intention to explore outside of the Gen Z DR students' professional learning use of SoMe. However, the gap between the personal and professional space grew too large for me to ignore and did not explain how the skills that had already been cultivated in this generation were being shaped and honed to be put to a more professional application of the use of SoMe. The Technology Acceptance Model (TAM) helps explain how Gen Z have adopted this

technology (Davis, 1989), however, relatability of the TAM theory to SoMe has been disputed. Some arguments state that TAM does not take account of some of SoMe's salient features, such as how technology is used externally to an organisation and how usage can be influenced by the use of others (Rauniar et al., 2014). The mass usage of SoMe is a critical consideration for developing my study's **'Mind the Gap'** substantive theory, as the evident gap between personal and professional usage has been linked to the lack of demonstrable and consistent use by the DR faculty.

The high level of confidence exhibited from the participants when talking about their personal usage of SoMe formed the backdrop for the stark contrast of confidence levels in the SoMe professional learning space. This gap cannot be related to the technology itself, as the use of SoMe is widespread and an embedded part of everyday life. This was supported by the data collected in my study and mirrors the TAM premise in that the acceptance of technology can be explained by usefulness and ease of use (Davis, 1989). In looking at the acceptance of using WhatsApp, one of the SoMe platforms mentioned frequently within the participant data, Aharony (2015) reports that the students within their study (n=111) used WhatsApp mostly to seek social interactions, followed by sharing information, and then developing their professional life. The motivations for acceptance and use were seen to be similar to the wider use of the internet (Papacharissi and Rubin, 2000; Ko et al., 2005), engaging with online communities (Ridings and Gefen, 2004), and using other SoMe platforms (Papacharissi and Mendelson, 2011). All motivations related primarily back to usefulness and ease of use. The notable finding in my doctoral study, however, was the additional motivation to use WhatsApp for the purpose of professional advancement. Such evidence on the role of SoMe for augmenting professional learning can help further develop this grounded theory by identifying the various acceptance motivations, in order to reduce the confidence gap between the personal and professional usage of SoMe. The following memo in Figure 26, written after the analysis of the data, reflects on the emerging frustration I felt at the clear confidence gap in using SoMe for professional learning:

It is frustrating to hear how easy the students find the use of the technology. It is an every day essential and yet they seem a long way from using it another way in the professional space. I don't think this is through lack of ability but from lack of role modelling from their peers and tutors. It might not be appealing to some students but I get the sense it is more a lack of knowing how to go about it....

Figure 26 Memo from researcher's diary.

The widespread adoption and confidence in using SoMe in the participants' personal space highlights how these DR students have willingly made the SoMe technology a core part of their lives. This reflects the TAM theory of usage and positive acceptance attitudes towards the technology. To look at a further perspective from the extant literature, the uses and gratifications theory (UGT) helps explore the high level of confidence of SoMe use in the personal space. UGT is thought to have originated in the 1940s when communication scholars researched why differing media appealed to different people (Cantril, 1942; Lazarsfeld and Stanton, 1942, 1944, 1949). Later, in the 1970s, the theory was expanded to include not only the gratifications that users of the medium sought, but what they actually obtained from engagement. This began the maturity of the theory with further insights such as using mass media as a form of escape (Katz and Foulkes, 1962) and how the impact of use was just as important as why it was used (Klapper, 1960). With the arrival of the internet, UGT has seen somewhat of a revival and the unique attributes of internet use have been explored (Ruggerio, 2000; Harp and Yaschur, 2011; Cheung, Chiu, and Lee, 2011; Hsu, Tien, Lin, and Chang, 2015; Zolkepli and Kamarulzaman, 2015). Findings highlight how users of SoMe refer to information-seeking, self-discovery, personal entertainment and social enjoyment as common threads of uses and gratifications.

Abrahamson, as early as 1998, saw the 'personalisation' of the internet medium with it being a 'vehicle for the provision of very specific high-value information to very specific high-consumption audiences' (ibid, p. 15). This view would align with the potential for using SoMe for professional learning where niche and specialist areas of knowledge could be explored. Weaver (1993) and Dicken-Garcia (1998) envisaged common interest and special interest groups being a cohesive factor of usage. Participant 7 in section 5.6, pg.125, was moving towards this selective use of SoMe with their tribe of like-minded practitioners:

6.4 Second theoretical category: confidence and ability to use social media proactively in the professional space.

For the exploration of the grounded theory concept, SoMe usage and acceptance is not the barrier that students encounter when looking at the lower level of confidence in the professional space. The brief overview of TAM in section 6.3 supports the finding of high confidence of using SoMe in the personal space but does not explain

the low confidence of using the same SoMe technology in the professional space to augment professional learning.

In section 1.4, p. 19, I presented and discussed how the development of professional learning is an essential outcome of the undergraduate DR training programme. The professional learning journey helps prepare students to meet the HCPC standards of proficiency. An exploration of a professional skills acquisition model such as the one discussed by Dreyfus and Dreyfus (1986) might assist in understanding the confidence gap in developing new skills in the professional usage of SoMe by Gen Z DR students. The Dreyfus model has been reviewed through the lens of nursing (Benner, 1984), social work and management (Dall'Alba and Sandberg, 2006). It sets out five steps of skills acquisition: Novice, Advanced Beginner, Competent, Proficient and Expert. The model outlines how it is not just simply the learning of rules that leads people through the five steps to expert, but a development of contextual experience: 'The student needs not only the facts but also an understanding of the context in which that information makes sense' (Dreyfus and Dreyfus, 1986, p. 49).

Brown's paper (2000), drawn together from a transcript of a talk given at the Aspen Forum, alongside material from *The Social Life of Information* (Brown and Duguid, 2000) and Universities in the Digital Age (Brown and Duguid, 1996, pg.12), further emphasise how knowledge acquisition is 'inextricably situated in the physical and social context of its acquisition and use'.

The combination of both rules and context are applicable to the **'Mind the Gap'** theory, with DR students already knowing the rules of SoMe usage but lacking the contextual experience in the professional learning space. There is a willingness to learn how to build on the already acquired skills and adapt them to a new context yet there is a lack of skills teaching in this area (see section 5.5 pg. 119). This poses a conundrum in the 'novice to expert' model, as the relationship with the students' teaching faculty highlights the lack of 'expert' status in SoMe usage amongst some of the lecturers. Participant 6 in section 5.4, p. 107 reinforced this view, exposing the gap once more between the SoMe skills of Gen Z students and the teaching faculty.

In looking beyond the mere delivery of information and embracing the social context, background practices and history in which information resides, there has been a move towards a new learning theory for the digital age. As the grounded theory is

based on the perspectives of Gen Z, our true digital natives, it is not unexpected then to further explore their learning context within this digital age. Connectivism, as proposed by Siemens (2004), suggests that, in this digital age, learning occurs through networks and nodes. A network can be either humans and/or non-humans, with the nodes being individuals, groups, systems, fields, ideas, resources or communities.

He sets out the principles of connectivism, as seen in Figure 27 below:

Principles of connectivism:

- Learning and knowledge rests in diversity of opinions.
- Learning is a process of connecting specialized nodes or information sources.
- Learning may reside in non-human appliances.
- Capacity to know more is more critical than what is currently known
- Nurturing and maintaining connections is needed to facilitate continual learning.
- Ability to see connections between fields, ideas, and concepts is a core skill.
- Currency (accurate, up-to-date knowledge) is the intent of all connectivist learning activities.
- Decision-making is itself a learning process. Choosing what to learn and the meaning of incoming information is seen through the lens of a shifting reality. While there is a right answer now, it may be wrong tomorrow due to alterations in the information climate affecting the decision

Figure 27 Principles of Connectivism

(Siemens, 2004)

Proponents of this theory view it as legitimising the pedagogy of working with online platforms (Cormier, 2008). Additionally, Downes (2007) takes the viewpoint that learners can simply not learn in this networked world: *'the activities that learners undertake when they conduct practices, in order to learn, are like developing or growing their selves, together with the society, in certain (connected) ways*' (ibid, 2007, p.9).

Critics, however, see connectivism as an instructional theory, grounded in other valid learning theories, but giving instruction as to how learners can maximise the use of online resources (Driscoll, 2005; Bell, 2011).

Kropf (2013), after reviewing 13 studies, concludes that connectivism serves as both an instructional and learning theory. The sense of 'don't throw the baby out with the bathwater' resounds throughout the paper, with the call to see the logic of previous learning theories, whilst seeing connectivism as explaining how individuals learn in the 21st century digital age.

As described in section 5.4, pg.113, students experienced concerns in their levels of confidence around the topics of 'Fake News (Participant 1 and 2), concerns on getting things wrong (Participant 3, 7 and 10) and being overloaded with too much information (Participant 2, 3 and 5). My findings from analysis of the data identified that this lower level of confidence arises from a sense of being lost and insecure in the vast ocean of professionally related information available on SoMe and not knowing how best to navigate and process it. In response to fake news on social media Director-General Tedros Adhanom of the World Health Organization (WHO) said at the Munich Security Conference (2021) that *"We're not just fighting an epidemic; we're fighting an infodemic."* This sudden increased level of SoMe activity had the potential to overload and confuse SoMe users. Samson and Kostyszyn (2015) explore links with making careless decisions and a reduced lack of self-control associated with information overload. The participants in this study concur as described in section 5.4.3, pg.118.

When students were asked about how they used SoMe for their professional learning, the same technology as they used in their personal lives suddenly became a perceived barrier. The data suggests that, although they know how to connect across the networks and nodes, as outlined in Siemens' theory of Connectivism (2004), the principles of currency of the information available and choosing what to learn becomes an issue.

6.5 Third theoretical category: Importance of Communication Networks

One of the most important factors influencing the use of SoMe in both the personal and professional space was identified in the data in relation to communication. Communication became the constant theme that spanned the divide between the personal and professional use of SoMe. The connection with others and the ease of being able to connect held huge value for the students. Keeping within the context of the learning of healthcare students, the literature confirms that the use of SoMe as

educational tools have been found effective for improving communication and raising confidence levels (Clifton and Mann, 2011; Tuominen et al., 2014; Asiri and Househ, 2016). The ease and speed of communicating on SoMe is highlighted in section 5.5.1, pg. 121. Participant 5 and 6 in particular, felt that communication on SoMe was a real benefit to them.

When examining the educational context of the Gen Z DR students, the widespread use of SoMe, instant interconnectivity and communication with like-minded others is challenging the traditional experience of the learning experience (Pavlik, 2015). Communication is now multi-layered, interactive, with several and potentially hundreds of people at the same time and always switched on. Deaton (2015) observes how, with SoMe, platforms such as Facebook and Twitter are synonymous with daily social interaction, and for the 'first time in human history, all the world is truly a stage. Men, women, and children are players on that stage, and the borders of human interaction and learning have expanded greatly' (p. 1).

The participants in my study discussed a wide variety of communication types ranging from simple exchanges of information, such as date and time of lectures, to sharing course information, assessment details and learning resources, to using hashtags related to diagnostic radiography, and sharing findings with the cohort. Irrespective of the reason for the communication, the key aspect of collaboration and working together for a desired outcome was quite evident. Al-Rahmi et al's., (2014) study, analysing survey data from 741 postgraduate students at five Malaysian research universities about their experiences and impact of using SoMe on collaborative learning through constructivism theory, discusses how these collaborative SoMe learning environments support shared objectives and knowledge exchange among their participants. These communication networks, therefore, are for the purpose of a shared endeavour – in this case, learning how to become a diagnostic radiographer. They align with the concepts of Communities of Practice (CoP) first espoused by Lave and Wenger (1991). CoP can be defined when they contain three elements:

i. A mutual agreement where members establish group norms and build relationships with each other.
ii. A joint enterprise where the group determines its focus or 'domain'; and
iii. A shared repertoire of resources. (Synder and Wenger, 2010).

The use of SoMe reflected in the participant data reflects the CoP elements, although the setting in terms of SoMe is fully virtual, leading to Virtual Communities of Practice (VCoPs). The VCoP has been found to enhance the learning during the academic course of studies (Noohi et al., 2013; Kapoor et al., 2018; Zhang and Cui, 2018), and these findings align to the participants' experience of using SoMe related to communication. The data analysis shows, however, that there is still a hesitancy and lack of confidence to engage fully in VCoPs, to further embrace the professional learning potential of SoMe.

This hesitancy and lower level of confidence when using SoMe for augmenting the participants' professional learning can be understood further through Lave and Wenger's (1991) explanation of CoP as social entities that have a continuum of power. In relation to the communities formed by the students in the university setting, most students joined as equals and felt a sense of empowerment and confidence in this space. Participants commented on widespread help and support, with an ease of 'joining in' and sharing information amongst peers. This sense of security and confidence was not felt when stepping out of their comfort zones and communicating in other SoMe forums. This experience integrates well with the further work of Lave and Wenger (1991) on Legitimate Peripheral Participation (LPP). LLP sees the newcomer to a CoP as akin to an apprentice, with the need to gradually participate in the interactions of the group to acquire more knowledge and skill. The learning in a new VCoP will allow for ongoing development from novice to expert, where 'the mastery of knowledge and skill requires newcomers to move towards full participation in the sociocultural practices of a community' (Lave and Wenger,1991, p.29). The sense of the unknown in the 'Mind the Gap' grounded theory was exacerbated by participants' lack of clarity around professional boundaries on SoMe and being connected to a whole world of possibility in the professional learning space, without knowing where to start, and maybe more importantly, where to stop. Concerns from healthcare students around the use of SoMe professional capacity has been extensively researched (Jones et al., 2016; Naidoo et al., 2018; Price et al., 2019). These concerns were identified in a review of healthcare students by Ramage and Moorley (2019), as unprofessional behaviours using SoMe are cited as leading to the dismissal of students from their programme of studies, as a consequence of this misuse of SoMe. A separation between the 'personal' and 'professional' SoMe divide may seem to be a sensible approach to avoid such blurring of the boundaries; however, there is growing support for the positive impact of professional VCoPs with

#OTalk and #WeNurses Twitter chats, as examples (Department of Health, 2013). The editorial in the *British Journal of Occupational Therapy* (2016) directs a spotlight on the enormous potential of using SoMe for professional learning, in that it enables contact and communication with a raft of like-minded professional colleagues, policymakers, large organisations such as NHS Trusts, key leaders and researchers. They comment how academic life has been enhanced using Google Scholar, conference presentations on Slideshare and VCoP. Grajales et al., (2014) see the increasing use of Twitter during academic conferences and events by using a relevant hashtag, bringing together an additional commentary to enhance the learning. However, when looking through the experiences of the Gen Z participants in my study, Twitter was not the preferred SoMe platform, with Instagram taking a lead. Few studies have been published exploring the use of Instagram within the undergraduate healthcare curricula; however, Gulati et al., (2020) found the use of Instagram to create daily multiple-choice questions during the COVID-19 pandemic was helpful. Students were engaged and reported finding the content both useful and relevant for their learning.

6.6 Core Category and Grounded Theory: Mind the Gap

In this research, I sought to gain insight into the experiences of Gen Z DR students in using SoMe to augment their professional learning. The key category concepts highlight some shared experiences in using SoMe in both a personal and professional capacity, but with a complexity around levels of confidence demonstrated in the differing arenas of SoMe use. The data, supported by the existing related theories, suggests that the technology itself is well understood, but the way in which it can be used for professional learning is less clear and creates a low level of confidence despite a mastery of the SoMe tools themselves. Participants in my study were aware of these feelings, and several gave opinions as to what they needed in order to develop their abilities to use SoMe in a professional learning capacity. There was the theme of ‘getting it wrong’, ‘information overload’ and the lack of ability to discern ‘fake news’. The participant data reflected a need for a level of critical thinking to be present in their use of SoMe to facilitate a professional learning environment. The definition of critical thinking by Pascarella and Terenzini (1991) would apply to the concerns that the participants had in needing the ability to,

> …. ‘identify central issues and assumptions in an argument, recognise important relationships, make correct inferences from data, deduce conclusions from information or data provided, interpret whether conclusions are warranted on the basis of the data given, and evaluate evidence or authority’ (p. 118).

All participants recognised how important SoMe was to their lives in general and that they had a strong dependence on the technology, as supported by the research in this area (Donath and Boyd, 2004; Buffardi and Campbell, 2007). Although the data was not surprising in many ways, as we learn more about the impact of living in this digitally connected age, it was surprising how large the gap seemed to be between the two spheres of the students’ lives of the personal and professional. The more I considered this gap and the way in which the participants related how they felt about the role of using SoMe to augment their professional learning, the more there seemed a sense of standing on the precipice of a wealth of opportunity, with no-one really being able to show the way forward from within their circle of peers and/or faculty members. The participants in my study certainly had the capability but lacked the roadmap to get from confident user of SoMe more generally to confident user of SoMe for professional learning, with the level of critical thinking required to navigate the SoMe context. With Barnett’s (1997) re-conceptualisation of critical thinking, combining thinking skills with social action, the idea of a ‘critical being’ emerged. As the whole premise of SoMe is ‘social’, this concept of ‘critical being’ in a social and collaborative space integrates with the VCOP that Gen Z students are all part of, in one form or another. A key theoretical model devised by Vygotsky to explain this was the Zone of Proximal Development (ZPD).

In examining the body of evidence closely relating to this phenomenon, the theory of ZPD espoused by Vygotsky (1978) highlights the difference (gap) between what a learner can do without help versus achieving with guidance/support from a skilled or more capable person. The term ‘proximal’ refers to those skills that the learner is very ‘close’ to mastering, which reflects the position of this study’s participants. So close and yet not quite there. The proximal development zone is where instruction can yield the most results. With the task in hand being just out of the students’ reach, the maximum cognitive growth can occur when supported in this way. Wass et al., (2011) explore how Vygotsky never completely defined what constituted a ‘more capable peer’, but it is logical to conclude in the context of an HEI, on which this study is

based, this could include peers, lecturers, researchers, qualified healthcare professionals and also the professional and regulatory environment which encompasses this space.

However, with SoMe not being initially designed for learning purposes (McCarthy, 2015), the gap of instructional practice and a potential lack of willingness to develop this area of teaching practice from within the faculty is a limitation (Chang and Chuang, 2011; Cathala et al., 2021). Cathala et al.,'s (2021) study of UK and Caribbean student nurses found that approximately twice the number of students were using SoMe for educational purposes as opposed to the academic faculty members. Wider research shows that the use of SoMe for rich and meaningful learning purposes has been developed (Daniels and Billingsley, 2014; Graham, 2014; Cathala et al., 2021). This presents a challenge to both students and academic faculty staff to review these enhancements and tackle how to **'Mind the Gap'.** The grounded theoretical perspective proposes that Gen Z DR students are capable and willing to cross the divide from their personal usage of SoMe to the professional learning space but are seeking some support and guidance as to the right steps to take. The learning journey over the three years of the undergraduate degree demonstrated some growth in confidence in using SoMe in a more professional learning capacity, but the participant data still showed an overall lack of confidence, even in the final year.

6.7 Summary of Chapter

The findings of the extant literature further reviewed in this chapter concur with many of the findings in my study. The TAM theory (Davis, 1989) speaks of the participants' ease of use of SoMe in general and how, as Gen Z'ers, they have fully adopted the technology. Participants express how connected they feel to each other on their course and how the communication flows freely across various SoMe platforms, reflecting the theory of Connectivism (Siemens, 2004) and elements of the concepts of CoP and VCoP (Lave and Wenger, 1991). Students talked about using SoMe to direct their own learning, engage with course material and assessments, and join in several CoP. Within their personal usage of SoMe, the high levels of confidence in finding, creating and assimilating both social and learning aspects of navigating life came easily. The new professional learning landscape, however, presented challenges in being able to establish the same level of confidence to grow in their

mastery of SoMe use in this capacity. Both the opportunity to connect with like-minded others and to glean new knowledge seemed an overwhelming task, creating a sense of insecurity, anxiety and low levels of confidence.

Statements such as ‘Every two days now we create as much information as we did from the dawn of civilization up until 2003...’ (Siegler, 2010, para. 2) have created debate amongst scholars, not only regarding the enormity of the statement but the question of what constitutes information (Halsted, 2013; Carr and Hayes, 2015). It is not surprising, therefore, that participants in my study used phrases such as ‘overwhelming’ (Participant 2), ‘sinking feeling’ (Participant 3) and ‘getting stuck’ (Participant 5), when referring to how they used SoMe for their professional learning. They were aware of the need to assess the quality of the SoMe content available at their fingertips and were keen to explore further and find the best way of augmenting their professional learning journey to being qualified diagnostic radiographers. They needed support to **‘Mind the Gap’.**

To conclude this chapter, the words of the inventor of the internet, Tim Berners Lee, hold great promise for Gen Z students: ‘...if people put data onto the web—government data, scientific data, community data, whatever it is… it will be used by other people to do wonderful things, in ways that they never could have imagined’ (Berners Lee, 2010).

The next chapter will look at the limitations of the study alongside recommendations for practice and concluding reflections.

Chapter 7

Recommendations and Conclusion

The aim of this study was to explore how Gen Z DR students augment their professional learning using social media (SoMe) and how it is understood from their perspective using CGT, in order to develop a substantive theory. In Chapter 6, I have explained my substantive theory called ‘Mind the Gap’, which highlights how close the Gen Z students are to being able to use SoMe for their professional learning journey and yet are seemingly quite far from experiencing the same level of ease, confidence and competence when compared to their SoMe use in other areas of their lives. The research sought to hear the voice of the Gen Z DR students and their insights into the use of SoMe in their professional learning journey. It was shaped in part by my own extensive experience as a DR qualified practitioner and educator that although the use of SoMe in my professional space and various Virtual Communities of Practice was widespread and beneficial for a whole array of learning benefits, it seemed a poorly understood opportunity for the SoMe DR student generation themselves. Making meaning from both the researcher and participant perspective has been a vital ingredient in co-creating the resultant substantive theory. Theoretical explanations have been explored in Chapter 6 in concordance with the tenets of constructivist grounded theory (CGT) (Glaser, 1978, 1998).

In this concluding chapter, I make recommendations for future ways in which students might develop more confidence in using SoMe for their professional learning based on the findings of the contribution to new knowledge (section 7.1) and future recommendations (section 7.2). Section 7.3 looks at the limitations of my research study and section 7.4 highlights the future research work that could be pursued, with particular focus on the students’ experiences using SoMe beyond their personal usage. Section 7.5 centres on some of my reflections as a researcher and how I managed my experience as a novice in this doctoral space and journey. In section 7.6, I present the conclusion to this entire doctoral project.

7.1 Contribution to New Knowledge

My contribution to new knowledge and claim is situated in the research findings which demonstrated that Gen Z DR students exhibit high levels of confidence when

using SoMe in their personal lives but lack confidence when using it within their professional learning space, despite possessing extensive SoMe skills as true digital natives. This dissonance of confidence when using the same medium (SoMe platforms) creates a gap in how SoMe can be utilised to augment professional learning whilst on their course of study. In this doctoral research study, I have identified that the ease and speed of the use of SoMe is undisputed in the participants' view. The ability to communicate, collaborate and form a community are all key aspects of SoMe that the participants discuss as related to their own personal realities and skill set. The findings show that Gen Z DR students stand on the precipice of a new world of possibility in regard to augmenting their professional learning capacity and capability via SoMe platforms but lack the ability to translate their expertise utilised in their personal usage across to their professional learning usage. My study also identified that they are in need of credible mentors and resources to help them narrow the gap and to recognise the skills that they already possess to help facilitate this process. This unique finding for Gen Z DR students is not evident in any other literature or research available at the time when my study was undertaken. The focus has been on their skills and abilities in the professional space as opposed to the skills and abilities that they already possess when starting their undergraduate journey.

7.2 Recommendations

Social media is undoubtedly here to stay and, following the COVID-19 pandemic, the use of SoMe within HEIs has grown significantly (Tawafak et al., 2021). Gen Z students, who have only known a digitally focused world, use SoMe platforms daily to network, communicate, and collaborate. They cannot imagine a life without it and, therefore, enter their university life as experts in the technology within their known sphere of practice to date. They are not aware of how the ability to network, communicate and collaborate extends to their new professional learning pathway and the world of professional learning opportunities readily available to harness. There is a growing body of research that focuses on how SoMe can be used for learning and teaching within the curriculum (Roblyer, 2010; Price et al., 2018; Cathala et al.,2019). However, limited studies exist on exploring the experiences of healthcare students, in particular within the allied health professions, such as diagnostic radiography, on how they use SoMe within their professional learning spaces. I did not find any studies that explored the skills that Gen Z healthcare students already possess when using

SoMe, as the focus was geared towards professional rather than personal usage. The participants' experiences in my study of using SoMe are mostly positive and, with the technology already firmly embedded in their day-to-day functions and abilities, the next step to augmenting and enhancing their SoMe experience within a professionally focused space is certainly within reach.

I have considered three broad areas, represented as 'Mind the Gap' symbols, as the focus for the recommendations:

1. Introductions to a future world of possibility via induction, scaffolded across the three years of the undergraduate programme.
2. Implications for a SoMe teaching and learning strategy.
3. Wider policy remit for professional bodies and the HCPC regulator.

7.2.1 Induction

Introduce students in their induction period, to the wider possibilities of using SoMe, directed towards professional learning and utilising their current skills. Provide a taught, interactive session and further resources on their Virtual Learning Platform (VLE). The session should highlight the positive benefits of using SoMe, with the emphasis being on the skills they already possess to help start to bridge the gap and should be tailored to the year of study.

Historically, induction sessions on the use of SoMe have focused on the dangers and pitfalls but with a deliberate shift to a positive and evidence-based approach, students can be encouraged to further develop their skills of communication, networking, acceptability of SoMe use, content creation, information gathering and confidence to help augment their professional learning. As suggested by the findings of this study in section 5.5.1, the sense of ease of use should be extended to the introduction of the professional focused SoMe activities. The explanations of SoMe platforms, resources, hashtags and influential people to follow/engage with should be presented clearly and should be easy to find. Exploring the use of recent Gen Z

alumni to contribute to induction, lectures and resources to share their knowledge of using SoMe platforms for augmenting professional learning will also help to minimise the gap in understanding the use and applicability of SoMe from some of the faculty members. A refresher induction session should be introduced for all subsequent years during the course of study with a scaffolding approach to the signposted information suitable to their stage of study.

As this study focused on capturing the views of Gen Z students, it must be noted that, although the acceptance of technology and their high confidence in the use of SoMe in their everyday lives was wholly reflected in the participant sample, the incoming cohort of DR students will consist of a range of generations and a diversity of SoMe acceptance and use. Therefore, focusing on ease of use and access, also means working on the inclusivity of other DR students who may be less confident or have specific learning needs, giving everyone the opportunity to augment their professional learning journey using SoMe. The use of a Personal Development Plan was introduced in 2022 at London South Bank University, which aims to help support students who feel less confident about the use of technology (alongside other key areas of academic and student life) and should be used by personal tutors and other relevant support staff to help students maximise their learning success in areas where they feel less confident.

The theme of communication as seen in section 5.5, pg. 119, strongly connected both the personal and professional usage of SoMe with participants. The connection with others, afforded by SoMe communication channels, held great value for the participants and they felt that the immediate way of communicating with peers, friends and family was seen as far superior than other forms of communication. This instant form of information exchange has been recognised by several scholars as a means for encouraging academic gains and continuous education (Gagnon, 2015; Tuckett and Turner, 2016; Jones et al., 2016b; Price et al., 2018). As the students enter the new world of DR undergraduate study, the importance and value of SoMe communication and communication networks should be further encouraged during the induction phase. This may take numerous forms such as Whatsapp groups, Facebook groups, VLE message boards, online Padlets and more. The important factor is the ease of communication and connection.

All LSBU healthcare students during their induction period are required to sign a 'Directional Statement' which provides a clear behavioural framework to determine their professional conduct and academic responsibilities during their course of studies. The 2022 version of the statement highlights the need for students to uphold good conduct in all aspects of their public life including the use of social media. Along with the HCPC Guidance on Conduct and Ethics for Students (2016), which will be discussed further under recommendation 3, the message to students on the use of SoMe is portrayed from a negative perspective.

Although some data emerged from the participants about concerns they had with SoMe, such as excessive use and information overload, much of the feedback was positive and demonstrated a desire to use SoMe more in the professional space but just lacking the confidence to know how. Researchers have recognised the detrimental effect SoMe can have both personal and professional lives (Griffiths et al., 2013; Ryan et al., 2014; Ramage & Moorley, 2019) and this is an area not to be ignored. However, the correlation between positive communication, student well-being and learning gain has been highlighted by Cathala et al., (2022), when looking through a new lens of social participation and connectivism with undergraduate nursing students. Cathala's (2022) position is that SoMe can improve the effectiveness of the student nurses learning journey with a wide range of skills but that HEIs need to provide a framework of support and guidance. This is consistent with the participant accounts in this CGT study where the Gen Z DR students bring a range of skills that need to be nurtured and shaped to meet the new professional environment.

7.2.2 SoMe teaching and learning strategy

Include SoMe teaching materials and activities in relevant modules. Consider the assignment and whether an aspect of using SoMe can be incorporated in their design. Upskilling of faculty members in the use and value of SoMe. Encourage the involvement of Gen Z students and alumni in curriculum design and teaching.

The consideration of the core category and the substantive theory of the same name, **'Mind the Gap',** has led to a discussion on how participants were close to increasing their confidence and abilities in using SoMe to augment their professional learning, and yet there seemed to be a vital step missing in getting them closer to this goal. The data suggest that bridging this gap would be welcomed by students. The recommendations have, therefore, been developed on the premise that they would be accepted by students for their benefit and would enhance their experience of learning overall. Greenhow et al., (2019) discuss three affordances of SoMe for student learning: fostering *active learning*, enhancing students' *collaboration*, and increasing *community connections*. All three areas resonate with the participant data and how these benefits are already being realised in their personal space and are ready to be enhanced and developed in their professional learning arena.

The systematic review by Guckian et al., (2021) reviewed 112 studies from 26 countries looking at SoMe interventions in undergraduate medical education. Collaborative text-based discussions, SoMe journal clubs, interactive quizzes, VCoP (such as #WeChat) and visual content, along with instant messaging via Whatsapp, were seen as the most beneficial.

Siemens (2015) has commented in concordance with Eraut's (1994) five stages of professional knowledge and competence that the primary focus of learning has become career preparation, rather than moral or intellectual development. Whilst this may look to be a reasonable statement in the way in which the DR undergraduate learning journey is intrinsically linked with regulatory and professional body standards to prepare for a career as a registered diagnostic radiographer, these established notions of knowledge and learning development need further challenge in this new digital era.

The challenge and recommendation, therefore, remains for academics to align the curriculum to a new world of a technological driven society and incorporate SoMe tools and interventions from across a wider distributed network, to enhance the student professional learning potential. With this recommendation in mind, The Zone of Proximal Development (ZPD) should be further understood and recognised by faculty staff with no assumptions made that Gen Z students, although digitally capable, have the ability to apply their personal SoMe skills to the professional SoMe

space. Based on the data highlighting a lack of confidence in using SoMe for professional learning purposes, a shift in faculty thinking towards offering targeted support in this area should be of great benefit. This will require the teaching faculty to seek personal development for themselves in the use and application of SoMe as a pedagogical tool.

Valisiner (1997), in relation to ZPD, felt that instruction for the learner from a skilled or more capable person was not always necessary, and that the ZPD could be created through the cultural structuring of resources. Input and instruction from a Gen Z peer would certainly be more culturally relevant and, in section 5.5.2, pg. 122, was seen as an effective way to share information via SoMe. It has personally been rewarding to support a 2nd year DR student over these last few months on a project that will ultimately lead to some impressive SoMe resources that will be shared and utilised within the DR student community for many years to come.

7.2.3 Wider policy remit for professional bodies and the HCPC regulator

Based on the previous recommendations, there is a need for Gen Z DR students and academics to collaborate with the professional body and the HCPC regulator to update the SoMe guidance for students and align further to a positive, evidence-based stance for enhancing learning

The directional statement, mentioned in section 7.2.1 refers students to a number of policy and guidance documents, namely the HCPC Guidance on Conduct and Ethics for Students (2016), HCPC Guidance on the use of social media (2020) and The Society of Radiographers (SoR) Code of Professional Conduct (2013).

It has been encouraging to read recent updated guidance from the regulator and professional body with statements such as:

"Keep on posting! *We know that many registrants find using social media beneficial and do so without any issues. There's no reason why registrants shouldn't keep on using it with confidence."* (HCPC, 2020)

And a blog post on 'A student guide to Instagram' SoR (2021). Here two students highlight the positive opportunities directly linked to professional learning, for example:

"It opens up opportunities. There are lots of other great opportunities that have come directly from building a profile on Instagram, including speaking on webinar panels, starting a YouTube channel, and making and selling revision resources." (SoR, 2021)

HCPC recently updated their Standards of Proficiency, which come into force for HEI's in September 2023. One of the new standards is related to the use of digital technology and although does not reference SoMe directly, it strengthens the need to use a variety of mediums as per below:

- recognise that the concepts of confidentiality and informed consent extend to all mediums, including illustrative clinical records, such as photography, video and audio recordings and digital platforms
- use information, communication and digital technologies appropriate to their practice
- use digital record-keeping tools where required
- be able to change their practice as needed to take account of new developments, technologies and changing contexts

Some DR professional guidance and policy documents are beginning to recognise the value of SoMe to augment the student learning journey. However, there is still a need to incorporate a more positive message and centre the student voice. The only detail on SoMe within the current HCPC Guidance on Conduct and Ethics for Students (2016) states: 'You should use all forms of communication appropriately and responsibly, including social media and networking websites'.

This falls short of capturing the potential learning opportunity afforded by SoMe. The arrival of the internet and the subsequent ubiquitous use of SoMe platforms offers a new opportunity to shape professional learning that was not available even only a

generation ago. Who better to help shape this guidance than the Gen Z healthcare students themselves?

7.3 Strengths and Limitations of the Research

The strengths of this study in terms of methodological rigour and quality have been discussed in Section 3.6, p. 79-80. The strengths for this study are mainly the rich discussion held within the interviews, the constant comparative method that allowed for the identification and exploration between categories and the opportunity to use memo writing and reflexivity to bring the process together into devising a substantive theory.

The main limitations of the study were the one centre study, although LSBU is one of the larger DR courses in the UK and the relatively small, although adequate, sample size. This raises some limitations of applicability outside the university setting where the study took place and the profession to which it related. However, grand, theoretical claims have not been made, but rather a theoretical concept underpinned by the CGT approach. Indeed, CGT does not aim for generalisation, but aims for 'interpretative understanding and situated knowledge' (Charmaz, 2010, p. 409). However, it is anticipated that a rich and systematic description of the research setting and processes will have assisted the reader to evaluate the applicability of the findings to other contexts. A further limitation in relation to the interviews was the gap in being able to recruit participants due to the summer break, however once the new semester started, recruitment was successful.

The tensions and limitations concerning the timing of the literature review have been discussed in Chapter 2. A decision on when to undertake the literature review was based on several factors and is one that I stand by, despite it creating some level of limitation to the overall study. I felt it was important to have some prior knowledge of the research area of question, but it was a difficult task to keep an open mind. However, due to the value I based on doing this study to the best of my ability, I worked hard during the data analysis phase to keep my mind open and inquisitive. As explained by Charmez and Thornberg (2020), the constant comparative method of simultaneous data gathering and analysis helps the researcher to construct more nuanced questions during the interview phase. This certainly happened during my interview process and enabled me to raise my analytical thinking of what was being

said, what was being heard and, ultimately, what the data meant. Memo writing at this stage helped link the questions and thoughts together, sometimes making a connection and sometimes taking apart initial codes, taking them in a different direction.

Additionally, the fast-paced cycle of published literature in a fast-paced technologically advancing world has been a challenge. There is ongoing growth in the field of studying SoMe for learning; however, the paucity of information still remains in relation to the experience of Gen Z DR students.

7.4 Translation of findings & Future Studies

Future studies could address the limitation of a single setting as seen in this study by recruiting from across different universities, both in the UK and internationally, whilst still capturing the voice and experiences of Gen Z DR students.

A larger-scale study could also widen the inclusion criteria to other student-allied health professionals.

The grounded theory and the '**Mind the Gap'** model as shown in this study have implications for both student and staff members in relation to the teaching and learning strategy of the course team. Practical recommendations are discussed in section 7.2, with the intention of raising the students' confidence in using SoMe to augment their professional learning capacity and capability as they progress towards qualifying as a healthcare professional and the academic staff's quality of knowledge and experiences in relation to the use of new technologies. These findings and recommendations, if implemented within the university setting, will provide a strong platform from which to build the SoMe professional learning opportunities. HEI's could collaborate to host a SoMe conference for HCPC regulated courses to shift the focus to the positive learning gain to be realised from the embedding of SoMe into the professional learning journey.

7.5 Reflections on Researcher Journey

I started this Professional Doctorate in October 2018. I had an interest in using SoMe professionally and was intrigued to explore how students could use it within their

course of study to help augment their professional learning journey. Although I had no fixed research question, the topic of SoMe interested me greatly and I enjoyed the consideration of topic areas and research question formulation within the early months of the doctoral process, eventually homing in on the specific question, utilising CGT as my methodology of choice. This was not as easy as it may read and I had to ponder and wrestle with my ongoing questions and thoughts during my long commute, using this as part my doctoral study time. I made notes and had several meetings with supervisors and discussed this with other doctoral candidates to get to a place where I knew which direction I wanted my doctoral study to take.

With the unexpected turn of events brought about by the onset of COVID-19 in early 2021, the majority of my doctoral journey has been impacted by the huge surge of online activity. This afforded me personally further opportunities to use SoMe in ways that had not previously been anticipated, such as fully online conference attendance where hashtags and Twitter commentary were rich with information, knowledge sharing and networking. However, it was not my experience of SoMe that mattered, although, post pandemic, I became more convinced that it had a greater role to play in the undergraduate learning journey than I had originally thought.

As alluded to throughout this thesis, the pandemic brought a new level of challenge to life, both at home and certainly at work considering my role as Dean for the School of Community and Allied Health. Therefore, I undertook this doctorate with a level of dogged determination, resilience and creativity to navigate not only the normal doctoral challenges but a whole raft of additional stresses and pressures. I became Dean of the School of Allied and Community Health just prior to the pandemic breaking, and leading both staff and students during this time of radical disruption demanded a new level and different type of leadership. The use of SoMe played a key role in this endeavour and I certainly experienced a new spirit of collaboration, connectedness and community, much like the findings in Chapter 6.

The privilege in being able to undertake this doctorate has given me time to develop a deeper understanding of the research process and my own ontological and epistemological appreciation as a novice researcher. I have moved from a place of ‘questioning’ to a place of ‘questioning with a purpose’ to ensure I cover all angles and possibilities. The ability to speak with students and to hear their experiences and views has helped me develop a greater insight into the concept of ‘negotiated truth’

rather than ‘universal truth’, and to realise that meaning and interpretation of the truth can be wrestled with, shaped and refined until something quite fascinating emerges. I have had to be mindful of my biases and ‘power’ base throughout this journey, but it has truly been a pleasure to have time to be a student again and to learn from the participants, my supervisory team and the research community at large. I had to negotiate and always remember that I was a student in this process. For example, when I advertised for students, I asked colleagues to post on their virtual learning environment notice boards. This request was sent via an administrator. This was to minimise the power bias, as colleagues may have thought it was a request from the Dean and felt they had to oblige. The taught sessions of the professional doctorate helped me early on to explore methodologies, critical appraisal of the literature, and helped me develop the skills required to undertake a doctoral study. At times, I truly felt like I was standing on the shoulders of giants, which helped me to see further than I ever thought I could. From this journey, I have learnt that everyone has a story to tell, and I am grateful to all those that engaged with me and allowed me to tell their story in this thesis.

7.6 Conclusion

The rationale for this study arose from a personal interest in this area and the paucity of empirical work that reported the experiences of Gen Z DR students in using SoMe to augment their professional learning. Through the collection of participant accounts and the data analysis using CGT methodology, I have presented findings that identify new insights into Gen Z DR students’ experiences of using SoMe beyond their personal space and into their professional learning arena. The findings of this study reveal the participants’ feelings, particularly around their levels of confidence in using SoMe in this focused way, and how, although a welcome proposition to integrate SoMe into their professional learning toolkit, they are nervous and do not know where to start. Utilising a CGT approach enabled the research findings of my study to be grounded in student experience and enabled their voices to be heard. This facilitated a co-construction of knowledge with myself as the researcher. Following the literature review, it was found that there had been no previous studies looking at the experiences of Gen Z DR students in using SoMe for professional learning. Although DR is only one of the 14 Allied Health Professions registered with the HCPC, the total number of employed and self-employed medical radiographers in the UK in 2021 was reported to be approximately 35.4 thousand (Statista, 2022). Clearly, they are a

significant part of the healthcare workforce and deserved some focused attention. It has been my intention, therefore, to rectify this and explore the DR student voice.

We are certainly living in rapidly changing times, and it is clear that SoMe impacts many areas of life, such as social empowerment, mental health and human connection, to name a few. The impact and role of SoMe on professional learning needs to stay at the forefront of discovery. A greater understanding of a pedagogical approach that takes account of the experiences and feelings of Gen Z DR students can enable improved support and guidance. Further insights into DR and other AHP curricula designs, incorporating the positive benefits of SoMe, will be vital as Gen Z moves over to Generation Alpha (born 2010-2025). It is worth noting that some of the older Gen Alphas spent a significant amount of the school year learning remotely from the classroom during the COVID-19 pandemic. Technology is, therefore, seen as ubiquitous with education. The speed and scope of how SoMe has influenced and changed life is a critical factor for educators to keep considering. My own professional use of SoMe has not significantly changed over the last few years of this study, although I began to realise that, even with a good understanding of SoMe and its potential for professional learning use, I am not well equipped to help and support the Gen Z students to grasp its full potential. The generational gap is too large, so new ways of engaging our students is critical. Although Reeves and Oh's (2008) report Gen Z's first language is a technological one, it was important for me to hear in my study their voices away from the technology (albeit on Microsoft Teams) and in a safe interview setting, to really listen to their experiences and feelings in relation to the study questions and to recognise that this gap exists.

In conclusion, SoMe is here to stay, and this thesis has demonstrated that it needs to be embedded into the curriculum. It also demonstrated that educators have a role to play in recognising and using social media as an educational tool. It feels fitting to hear the participants' voice one final time in this thesis with a concluding quote:

"I don't think we have really thought about it much as a cohort, but maybe we can explore more how best we use social media. I want to be a good radiographer when I finish and think socials might help me here. I am not sure though but think it might be pretty good…" (Participant 7).

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APPENDICES

Appendix A: HCPC Standards of Education and Training

Level of qualification for entry to the Register

1.1 The Council normally expects that the threshold entry routes to the Register will be the following.

Bachelor degree with honours for:

– biomedical scientists (with the Certificate of Competence awarded by the Institute of Biomedical Science, or equivalent);

– chiropodists / podiatrists;

– dietitians;

– occupational therapists;

– orthoptists;

– paramedics;

– physiotherapists;

– prosthetists / orthotists;

– radiographers; and

– speech and language therapists.

Diploma of Higher Education for operating department practitioners.

Foundation degree for hearing aid dispensers.

Masters degree for:

– arts therapists;

– clinical scientists (with the Certificate of Attainment awarded by the Association of Clinical Scientists, or equivalent);

– forensic psychologists (with the award of the British Psychological Society qualification in forensic psychology, or equivalent);

– health psychologists (with the award of the British Psychological Society qualification in health psychology, or equivalent);

occupational psychologists (with the award of the British Psychological Society qualification in occupational psychology, or equivalent); and

– sport and exercise psychologists (with the award of the British Psychological Society qualification in sport and exercise psychology, or equivalent);

Professional doctorate for clinical psychologists.
Professional doctorate, or equivalent for:
– counselling psychologists; and
– educational psychologists.

Programme admissions

2.1 The admissions process must give both the applicant and the education provider the information they require to make an informed choice about whether to take up or make an offer of a place on a programme.
2.2 The selection and entry criteria must include appropriate academic and professional entry standards.
2.3 The admissions process must ensure that applicants have a good command of English.
2.4 The admissions process must assess the suitability of applicants, including criminal conviction checks.
2.5 The admissions process must ensure that applicants are aware of and comply with any health requirements.
2.6 There must be an appropriate and effective process for assessing applicants' prior learning and experience.
2.7 The education provider must ensure that there are equality and diversity policies in relation to applicants and that they are implemented and monitored.

Programme governance, management and leadership

3.1 The programme must be sustainable and fit for purpose.
3.2 The programme must be effectively managed.
3.3 The education provider must ensure that the person holding overall professional responsibility for the programme is appropriately qualified and experienced and, unless other arrangements are appropriate, on the relevant part of the Register.
3.4 The programme must have regular and effective monitoring and evaluation systems in place.
3.5 There must be regular and effective collaboration between the education provider and practice education providers.
3.6 There must be an effective process in place to ensure the availability and capacity of practice-based learning for all learners.
3.7 Service users and carers must be involved in the programme.
3.8 Learners must be involved in the programme.

3.9 There must be an adequate number of appropriately qualified and experienced staff in place to deliver an effective programme.
3.10 Subject areas must be delivered by educators with relevant specialist knowledge and expertise.
3.11 An effective programme must be in place to ensure the continuing professional and academic development of educators, appropriate to their role in the programme.
3.12 The resources to support learning in all settings must be effective and appropriate to the delivery of the programme, and must be accessible to all learners and educators.
3.13 There must be effective and accessible arrangements in place to support the wellbeing and learning needs of learners in all settings.
3.14 The programme must implement and monitor equality and diversity policies in relation to learners.
3.15 There must be a thorough and effective process in place for receiving and responding to learner complaints.
3.16 There must be thorough and effective processes in place for ensuring the ongoing suitability of learners' conduct, character and health.
3.17 There must be an effective process in place to support and enable learners to raise concerns about the safety and wellbeing of service users.
3.18 The education provider must ensure learners, educators and others are aware that only successful completion of an approved programme leads to eligibility for admission to the Register.

Programme design and delivery

4.1 The learning outcomes must ensure that learners meet the standards of proficiency for the relevant part of the Register.
4.2 The learning outcomes must ensure that learners understand and are able to meet the expectations of professional behaviour, including the standards of conduct, performance and ethics.
4.3 The programme must reflect the philosophy, core values, skills and knowledge base as articulated in any relevant curriculum guidance.
4.4 The curriculum must remain relevant to current practice.
4.5 Integration of theory and practice must be central to the programme.
4.6 The learning and teaching methods used must be appropriate to the effective delivery of the learning outcomes.

4.7 The delivery of the programme must support and develop autonomous and reflective thinking.
4.8 The delivery of the programme must support and develop evidence-based practice.
4.9 The programme must ensure that learners are able to learn with, and from, professionals and learners in other relevant professions.
4.10 The programme must include effective processes for obtaining appropriate consent from service users and learners.
4.11 The education provider must identify and communicate to learners the parts of the programme where attendance is mandatory, and must have associated monitoring processes in place.

Practice-based learning

5.1 Practice-based learning must be integral to the programme.
5.2 The structure, duration and range of practice-based learning must support the achievement of the learning outcomes and the standards of proficiency.
5.3 The education provider must maintain a thorough and effective system for approving and ensuring the quality of practice based learning.
5.4 Practice-based learning must take place in an environment that is safe and supportive for learners and service users.
5.5 There must be an adequate number of appropriately qualified and experienced staff involved in practice-based learning.
5.6 Practice educators must have relevant knowledge, skills and experience to support safe and effective learning and, unless other arrangements are appropriate, must be on the relevant part of the Register.
5.7 Practice educators must undertake regular training which is appropriate to their role, learners' needs and the delivery of the learning outcomes of the programme.
5.8 Learners and practice educators must have the information they need in a timely manner in order to be prepared for practice-based learning.

Assessment

6.1 The assessment strategy and design must ensure that those who successfully complete the programme meet the standards of proficiency for the relevant part of the Register.

6.2 Assessment throughout the programme must ensure that learners demonstrate they are able to meet the expectations of professional behaviour, including the standards of conduct, performance and ethics.

6.3 Assessments must provide an objective, fair and reliable measure of learners' progression and achievement.

6.4 Assessment policies must clearly specify requirements for progression and achievement within the programme.

6.5 The assessment methods used must be appropriate to, and effective at, measuring the learning outcomes.

6.6 There must be an effective process in place for learners to make academic appeals.

6.7 The education provider must ensure that at least one external examiner for the programme is appropriately qualified and experienced and, unless other arrangements are appropriate, on the relevant part of the Register.

Appendix B: Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups

No	Item	Guide questions/description
Domain 1: Research team and reflexivity		
Personal Characteristics		
1.	Interviewer/facilitator	Which author/s conducted the interview or focus group?
2.	Credentials	What were the researcher's credentials? *E.g. PhD, MD*
3.	Occupation	What was their occupation at the time of the study?
4.	Gender	Was the researcher male or female?
5.	Experience and training	What experience or training did the researcher have?
Relationship with participants		
6.	Relationship established	Was a relationship established prior to study commencement?
7.	Participant knowledge of the interviewer	What did the participants know about the researcher? e.g. *personal goals, reasons for doing the research*
8.	Interviewer characteristics	What characteristics were reported about the interviewer/facilitator? e.g. *Bias, assumptions, reasons and interests in the research topic*
Domain 2: study design		
Theoretical framework		
9.	Methodological orientation and Theory	What methodological orientation was stated to underpin the study? *e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis*
Participant selection		
10.	Sampling	How were participants selected? *e.g. purposive, convenience, consecutive, snowball*
11.	Method of approach	How were participants approached? e.g. *face-to-face, telephone, mail, email*
12.	Sample size	How many participants were in the study?
13.	Non-participation	How many people refused to participate or dropped out? Reasons?
Setting		
14.	Setting of data collection	Where was the data collected? e.g. *home, clinic, workplace*
15.	Presence of non-participants	Was anyone else present besides the participants and researchers?
16.	Description of sample	What are the important characteristics of the sample? *e.g. demographic data, date*
Data collection		
17.	Interview guide	Were questions, prompts, guides provided by the authors? Was it pilot tested?
18.	Repeat interviews	Were repeat interviews carried out? If yes, how many?
19.	Audio/visual recording	Did the research use audio or visual recording to collect the data?
20.	Field notes	Were field notes made during and/or after the interview or focus group?
21.	Duration	What was the duration of the interviews or focus group?
22.	Data saturation	Was data saturation discussed?
23.	Transcripts returned	Were transcripts returned to participants for comment and/or correction?
Domain 3: analysis and findingsz		
Data analysis		
24.	Number of data coders	How many data coders coded the data?
25.	Description of the coding tree	Did authors provide a description of the coding tree?
26.	Derivation of themes	Were themes identified in advance or derived from the data?
27.	Software	What software, if applicable, was used to manage the data?
28.	Participant checking	Did participants provide feedback on the findings?
Reporting		
29.	Quotations presented	Were participant quotations presented to illustrate the themes / findings? Was each quotation identified? e.g. *participant number*
30.	Data and findings consistent	Was there consistency between the data presented and the findings?
31.	Clarity of major themes	Were major themes clearly presented in the findings?
32.	Clarity of minor themes	Is there a description of diverse cases or discussion of minor themes?

Appendix C: Ethics Application

Ethics ETH1920-0108: Mrs Rachel Beth Picton (Low risk)

Date Academic Student ID Project

School Division

Ethics application

Project details

Research project title

12 Feb 2020

Mrs Rachel Beth Picton

2253088

Explore how social media is understood within the professional learning of undergraduate allied health students (diagnostic radiographers) in Generation Z

Health and Social Care

Adult Nursing and Midwifery

This is a draft version

An exploration of Generation Z student diagnostic radiographers' experience of using social media for professional learning.

Researcher(s)

Mrs Rachel Beth Picton

Theoretical Rationale

Radiography undergraduate training has not kept pace with the use of a new generation of social media technologies. The current literature is limited and, in the majority, takes the view of how there is potential of social media misuse rather than consideration of its positive application. To better learn how new technology could be integrated into the curriculum for professional learning, it is imperative to look at the perspectives of our incoming cohorts of students in Generation Z who are fully native in the new Web 2 world, as to how they describe the use of social media for professional learning. The views and practices of these students can provide important insights into the proactive role social media can play in the delivery of more effective healthcare education during an era in which social media usage is on the increase and plays a large role in their everyday lives. Generation Z students, are defined as those born between the mid-1990s and ending around 2012 (Seemiller & Grace, 2016; Shatto & Erwin, 2016; Turner, 2015; Twenge, 2017). They are also the increasing intake into higher education institutions from this point in time onwards. They have not experienced a life without social media and for some it has become their primary source of communication. Bowen (2013) outlines the startling fact that advances in technology have been moving forward faster in the last 20 years as opposed to the previous 200 years. As natives in this digital world, most radiography students are well versed in instant communication using WhatsApp or social networking sites such as Facebook and Twitter. They process information differently from the generations preceding them and it is in this context that Prensky (2011) purports that the assumptions that current teaching methods are effective can no longer be valid. Keeping abreast of current pedagogy, in regard to learning theories and techniques, is therefore important for educators. With the range of technologies

available, including the use of social media and the expectations of the Z generation, it has been widely recognised as essential that course design and teaching goes beyond the face-to-face didactic lecture (Ferreri & O'Connor, 2013, Ito, et al., 2013). A misalignment between an academic's approach to teaching and the preferences of the student in terms of learning can create barriers and obstacles to achieving the learning outcomes (Romanelli et al, 2009). In this technological and social media driven age it is important to review how the higher education setting is reflecting the learning styles of generation Z students in order to drive professional learning forward in the context of credible learning theories. With limited research on the connection between social media and learning and the ongoing need for learning theories to be developed and understood further, there remains an urgency to discover what theories underpin the rapidly evolving social media usage within the context of learning and teaching practices (Bell, 2011; Hew, 2011 and Mix 2010).

Procedure

The formulation and justification of the research question has been the first ethical question needing to be addressed to ensure there is alignment between the researcher's world view and the methodology and research methods to be employed Kivunja and Kuyini, 2017). Following a rigorous process during the first two years of the professional doctorate, the researcher has been able to discuss ideas with peers, senior academics and supervisors. An initial scoping review of the literature highlighted a gap in the knowledge and the research question, 'to explore Generation Z student diagnostic radiographers' experience of using social media for professional learning' has emerged.

Constructivist grounded theory (CGT) is the selected methodology for the study and reflects the overarching aims, objectives and ontological and epistemological

understandings as applied to this study. The attached diagram highlights the step by step process of the study which is expanded below in figure 1

¬ The selection of participants for this research will consist of a purposeful sample of diagnostic radiography pre-registration undergraduate students born between 1995 and 2012 (generation Z) who are studying at London South Bank University. It is anticipated to interview a minimum of 10 and maximum of 30 participants. Theoretical sampling will be utilised, focusing still on students in the target generation Z age range who fit the criteria of digital native. As the initial data is analysed, concepts and theoretical ideas will start to emerge, enabling a directing of the choice of further participants and focused semi structured interview questions.

Potential participants will be (i) contacted via Moodle with the relevant course directors sending out the pre-written invitation to the study. An 'opt-in' email address will be supplied (see gatekeeper email). (ii) Potential participants will then be sent an individual letter outlining the purposes of the study (see Participation Information Sheet). This will include a consent form (see Consent Form which once complete will be returned on or before the interview, electronically. Prior to interview all participants will be asked if they understand the consent form and if they have any questions they would like to ask. (iii) Once participants are established, according to the inclusion criteria, a suitable time and place for the interview, taking into consideration whether the participant will have preference for an interview face to face or by Zoom/MS Teams. (iv) Before any interview starts, the participant will be reminded of the purpose of the study and can ask any questions for clarity. I will inform the participant that they are not obliged to answer a particular question. I will also let them know that I may ask them to elaborate on an answer. At the start of the interview, I will ask participants to complete a biographical form to include:

Age
Ethnicity
Year of study
Type of social media used
Length of time using social media
Average time spent on social media per week for professional purposes Average time spent on social media per week for personal purposes

(v) The participant will be informed before we start that they can request a break or terminate the interview at any time with no detriment to themselves. The ongoing systematic development of the interview questions and guide will enable a sense of reciprocity between the interviewer and participant (Galletta 2013) but also allow space for expansion of the questions, dependant on the participant responses (Rubin & Rubin 2005, Polit & Beck 2010).

(vi) Once the interviews are completed a short debriefing session will take place with the participants (see debriefing document). The session will be an important step to remind the participant again of the study, including aims and objectives. Information about the researcher's name and contact details will be supplied so that any follow up questions or queries can be answered. The debrief session is also an opportune time to thank the participant for being involved and giving of their time and opinions/experiences in relation to the study.

Data from each interview will be coded as an ongoing process and compared to previous interviews using constant comparative analysis as an integral part of the constructivist grounded theory method. It is anticipated that there will be a move to theoretical sampling as the codes and categories develop. The researcher's memos will also form part of the coding process (Saldana, 2013) and will ultimately form part of the final theory. Line by line coding using NVivo will be undertaken. Once the initial key concepts emerge, the data will begin to relate to categories and then ultimately a core category. The core category will overarch the other categories with tangible links and connections, explaining how they all fit together (Birks and Mills, 2015).

Are there any beneficiaries to the proposed research project?

Yes

If yes, who are they and how will they benefit?

Participants may benefit from sharing their experiences through the interview process and may find this therapeutic

The Department may benefit as new knowledge on professional and academic leaning involving social media can help to develop the curriculum

Does any of your research fieldwork take place outside of the UK?

No

If yes, please state the location(s) of your fieldwork Region

Country

Does any of your research take place in the USA?

No

Research project start date

01 Sept 2021

Anticipated research project end date

31 Jul 2023

Ethical risk

Does the research project have funding?

No

Does this research project involve other organisations?

No

Does the research project involve people as participants or in any other way?

Yes

Does the research project involve vulnerable groups?

No

Does the research project involve sensitive topics?

No

Does the research project involve secure data, or publicly available data in which individuals can be potentially identified?

No

Does the research project involve any situations where the safety of the researcher may be in question?

No

Does the research project involve recruiting participants via the internet?

No

Does your research project involve access to, or use of, material which could be classified as security sensitive?

No

Does the scope of the research project involve additional insurances over and above the University's standards?

No

Does the research project involve deceased persons, body parts, or other human elements?

No

Ethical guidelines

All research conducted by LSBU staff and students should follow the LSBU Ethics Code of Practice. You should also follow the guidelines relevant for your discipline. Please indicate which discipline guidelines you will use below.

British Educational Research Association Revised Ethical Guidelines for Educational Research (2011)

Other

If you selected other, please enter details here.

Society of Radiographers: Code of Professional Conduct (2013) Social Media Guide to Ethics (University of Aberdeen,2016).

Is there any special training of investigators needed to complete this research project?

Yes

If yes, please provide details for the training and how it will be delivered.

Further training in the use of NVIVO will be required. A dedicated library session will be completed.

Human participants: Information and participation

Who will be recruited?

The criteria for inclusion are

- Student diagnostic radiographers at LSBU across all year groups
- Student from the generation Z category (born between 1995 and 2004).
- The exclusion criteria will be students who are not on a diagnostic radiography undergraduate course of study or who are outside of the age range to be defined as generation Z.
- Students undertaking a radiography course at any other University

How will recruitment take place?

Students will be invited to participate via an announcement on course Moodle sites and the LSBU DR Twitter site and invited to submit an expression of interest to the researcher's email address (see gatekeeper email). Prior to this, an overview of the study will be provided to course directors to give context and ensure a clear line of communication is established before the data collection phase begins.

Does the research project involve members of the public in a research capacity (participative research)?

No

How will you gain access to the research setting and research participants?

It is anticipated that recruitment to the study will start in the new academic year 2021 and will be from across all 3 year groups of the undergraduate BSc diagnostic radiography programmes. I am aware of the power balance due to my senior role therefore the course directors will be gatekeepers to the information that is released on Moodle and will also be informed of any other recruitment mechanisms such as twitter and posters. To reduce the power balance, I will inform participants I am a doctoral student and undertaking this research as a student. This can help to reduce the power balance I will reiterate they can end the interview if they wish at any time. I will always make it clear to both staff and participants that I am in a student capacity. CDs will be informed the study is part of a doctoral study and they can also contact my supervisors for information. I will answer any questions they may have and not seek to be treated differently to any other researcher student in the Institute. I will also use my student details in all communication which will demonstrate I am acting in a student capacity.

Will written consent be obtained?

Yes

If written consent will not be obtained please indicate why and how verbal consent will be obtained or what will be considered implied consent.

Please upload consent form and evidence of communication with participating organisations if the latter is required.

Could the research project involve the sharing of confidential information beyond the initial consent given?

No

Does the research project involve visual or vocal methods where identifiability may be a concern?

No

Does the research project involve deception?

No

Is the choice to participate likely to be a sensitive issue?

No

Does the research project involve situations which may induce stress, anxiety, humiliation or pain?

No

If yes, what safeguards will be put in place?

Please upload your participant information sheets / invitation letters.

Will incentives beyond reasonable compensation for time and travel being

used in the proposed research project be offered to participants?

No

If yes, please describe the incentives and outline any strategies to mitigate ethical issues relating to the their use.

Human participants: Method

Does your research contain any possible risk to participants?

No

If yes, please indicate which of the following risks may be entailed by your research project.

If other has been selected above, please indicate what this risk consists of.

How will these risks be mitigated?

Does the research project involve intrusive interventions or data collection?

No

Will participants be debriefed?

Yes

If yes, how will participants be debriefed?

Participants will be fully debriefed at the end of each interview to reiterate the nature of the study and the reasons why it is being undertaken.

They will also be asked if the have any further questions about the research and whether they would like to address any feelings or emotions that might have been

experienced during the interview. They will be reassured about confidentiality and anonymity and signposted to student wellbeing services if appropriate. The participants will also be given the opportunity to register their interest if they wish to be informed about the future developments of the research.

If no, why is debriefing not required?

Please upload any debrief sheets.

Data collection and sharing

Does the research project involve access to records of personal or sensitive information concerning identifiable individuals?

No

Which of the following data types will you be using?

Secondary/Archival data Interviews/Focus groups

For each data collection type please indicate how data will be collected and from what sources.

In depth semi-structured interviews will be the main data collection method (see Interview Schedule). In depth interviewing, to align with the grounded theory method, will be directed but at the same time emergent and flexible in approach. It is anticipated that the interviews will last between 45 minutes to 1 hour. Purposive sampling will be used to ensure the interviews are held with generation Z students. Some data for example discussion forums from social media sites such as Twitter may be used for contextual purposes.

What steps will be made to ensure the data collected will be anonymous or made anonymous?

With the written permission of the participants, interviews will be digitally recorded. This will be transcribed verbatim to produce written data for thematic analysis and anonymised using pseudonyms, any distinguishing mark(s) that may identify participants will be removed. Audio data will be removed from the recording device as soon as possible and the transcription process will take place in a private space.

The data will be stored on the computer of the researcher in password-protected files to which only the researcher has access and will only be shared with supervisors. Any handwritten/annotated notes will be kept in a locked filing cabinet within the researcher's office. The participants will be allocated a pseudonym throughout the lifecycle of the study and within the completed thesis so that any personal data cannot be linked to the participants themselves. This allocation of 'coding' will only be known to the researcher.

Will data be stored electronically?

Yes

If yes, what steps will be taken to secure the data?

The audio data from the interviews will only be stored until the transcription has taken place. They will then be destroyed. The recording device will be kept in a securely locked location during the data collection phase.

If no, where will the data be stored?

When will the data be destroyed?

The audio data from the interviews will only be stored until the transcription has taken place. They will then be destroyed. All the transcribed data will be destroyed after five years from the initial date of collection.

Although all forms of data analysis cannot be foreseen prior to data collection, please indicate what form of analysis is currently planned.

The data will be analysed using the grounded theory method. Each interview will be transcribed and checked against the audio file for accuracy. Data from each interview will be coded and compared to previous interviews using the constant comparative analysis method as an integral part of the constructivist grounded theory method. It is anticipated that there will be a move to theoretical sampling as the codes and categories develop. The researcher's memos will also form part of the coding process (Saldana, 2013) and will ultimately form part of the final theory. Line by line coding using NVivo will be undertaken. Once the initial key concepts emerge, the data will begin to relate to categories and then ultimately a core category. The core category will overarch the other categories with tangible links and connections, explaining how they all fit together (Birks and Mills, 2015)

Disclosure and Barring Service

Does the investigator or anyone else connected to the research project require a DBS check?

No

If no, please indicate why.

DBS as an academic is already in place.

If yes, please attach a copy of the certificate.

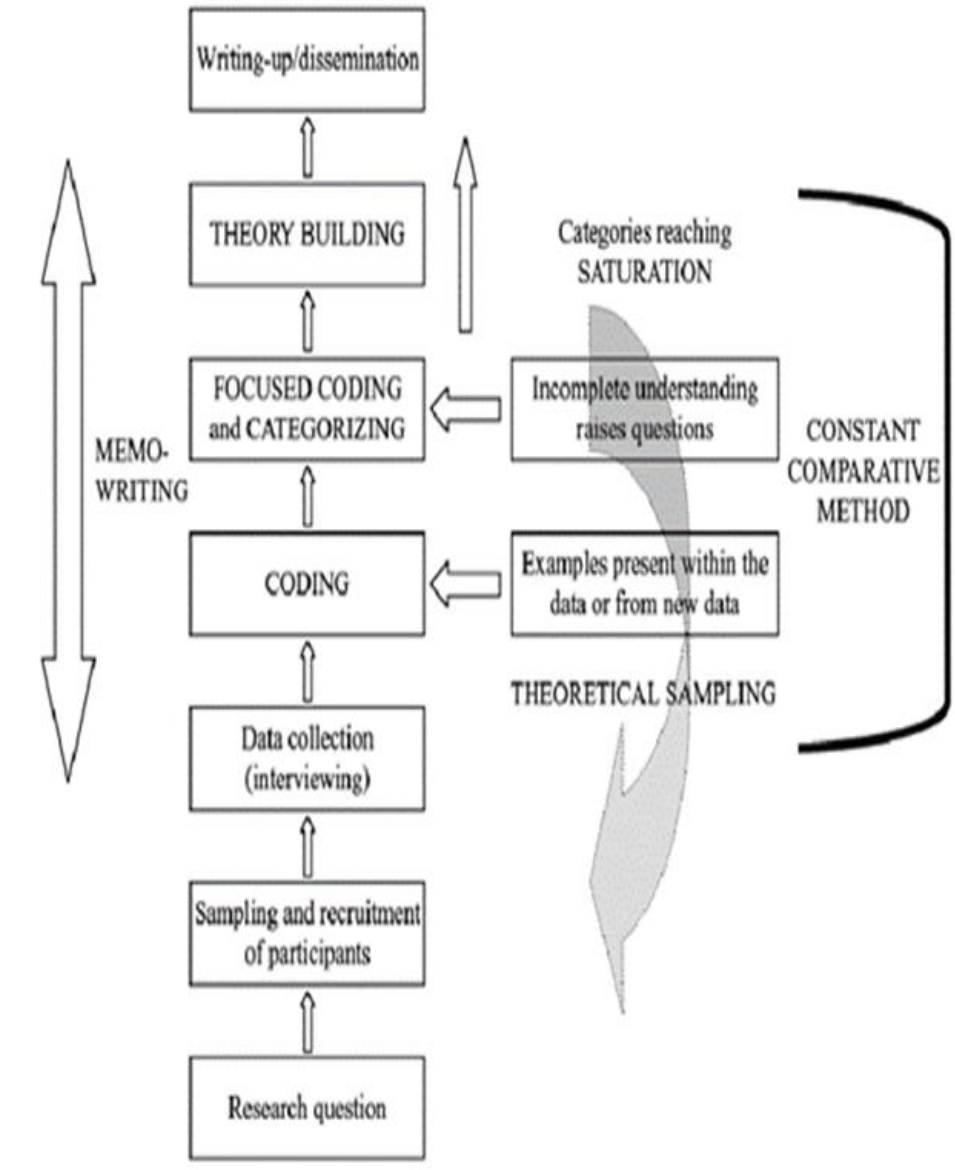
Has a health and safety risk assessment been carried out and, for applicants with supervisors, has the assessment been approved by a supervisory team?

No

Attached files

Diagram Key Features of the CGT Methodology.docx Consent form May 21.docx

PIS final May 21.docx



Key Features of the CGT Methodology (Charmez, 2006)

Appendix D: Participant Information Sheet

Project title: An exploration of Generation Z student diagnostic radiographers' experience of using social media for professional learning

You are being invited to take part in a one to one interview. Before you decide whether or not to take part, it is important for you to understand why the study is being done and what it will involve. Please take time to read the following information carefully. The purpose of the study: The overall aim of the thesis is to explore how social media is understood within the professional learning of generation Z (1995 – 2003) undergraduate diagnostic radiography students from their perspective, in order to develop a theoretical framework to facilitate understanding and future curriculum development.

Why have I been asked to participate

You have been asked to participate in this interview because you are a radiography student studying a course at London South Bank University and also part of Generation Z (your DOB will be between 1995 and 2003). Generation Z is a term that is used to identify your generation as those who have been born into an era where you have been exposed to digital technology since an early age and are most likely to be very comfortable with the Internet and social media sites. You are part of a higher education setting where learning styles and approaches need to be reviewed in the light of changing technologies and student preferences. This research aims to potentially contribute to the development of curriculum delivery in the future.

The voluntary nature of participation

It is up to you to decide whether to take part. If you do decide to take part, you will be given this information sheet to keep and be asked to sign a consent form. If you decide to take part, you are still free to withdraw at any time and without giving a reason. However, once you have undertaken the interview, the data (words you have spoken) can only be withdrawn up to the point of data analysis which is usually about two weeks after the interview has taken place. The data will be anonymised at

this stage and therefore, not identifiable for withdrawing from the research study. If you wish to withdraw you may simply contact the researcher on the contact details given and state that you are withdrawing.

What will happen if I take part and opting in

If you decide to participate in the interviews, you will be asked to sign a consent form. The interview will be led by the researcher and you will be given the choice as to whether you prefer a face to face or Microsoft teams or zoom interview. If face to face, the interview will be hosted within a suitable room and at a suitable time, within the LSBU campus site. If the interview is held online, the time will be agreed and a private interview link set up and sent to you in advance. The interview will last approximately 1 hour. During the interview we will ask you questions about your use of social media and any experiences you have had with learning for your profession within healthcare. The interview will be audio recorded and transcribed. If at any point you wish to take a break, then this can be accommodated. We will conduct a de-briefing session after the interview to cover any questions or areas of concern.

Possible disadvantages/risks to participation

There are no disadvantages or risk of participating in this interview. However, you should be aware that if you disclose any information that does not align with HCPC standards for students we will have a duty of care to report this through the student Fitness to practice route here at LSBU.

Possible benefits to participation

There are no direct or immediate benefits to yourself in being involved in this interview, however your participation will potentially contribute to designing the delivery of the curriculum to fit with the new digital literacies required of health professionals and open up new avenues of professional learning methods.

Outline data collection and confidentiality

All the information collected about you and other participants will be kept strictly confidential (subject to legal limitations). Data generated by the study will be retained in accordance with the University's Code of Practice.

Non-anonymised data (personal data) data will be stored for exactly as long as it is needed in compliance with the General Data Protection Regulations as part of UK Data Protection Act 2018. This data will then be destroyed. Research data will be kept for a period of 5 years after the completion of the project and then destroyed. No information regarding your participation in the study will be shared outside the research team.

In the write up of the study all data will be completely anonymised. No names or any identifiable information will be included.

Interviews will be digitally recorded, with the written permission of the participant. The electronic files will be stored on the LSBU server, accessible only by the researcher. Any handwritten notes will be kept in a locked filing cabinet within the researcher's office.

What will happen to the results of the project on completion

The results will be written up as a thesis and distributed through the professional doctorate panels.

Who is organising and funding the research

Not applicable – part of the doctoral study.

Who has reviewed the study

The research has been reviewed by the Institute of Health and Social Care Ethics Panel at London South Bank University. The thesis has also been reviewed by the supervisor of the study,

Who to contact:

Researcher details: Rachel Picton e:pictonr@lsbu.ac.uk t:07766763706

If you have any **concerns** about the way the study is conducted please contact the Chair of the Institute of Health and Social Care Ethics Panel: hscsep@lsbu.ac.uk

Thank you for taking the time to read this information and for considering taking part in this study. Non participation will not affect your position on the course. If during the course of the study, you become distressed or have unresolved feelings/emotions, you can contact studentlife@lsbu.ac.uk for support and guidance

Appendix E: Consent Form

Full title of Project:

An exploration of Generation Z student radiographers' experience of using social media for professional learning.

Researcher: **Rachel Picton**

Taking part	Please initial in each box
I confirm that I have read and understood the information sheet and/or the facilitator has explained the above project. I have had the opportunity to ask questions.	
I understand that my participation is voluntary and that I am free to withdraw at any time, up to data analysis without providing a reason.	
I agree to take part in the above project.	
I agree to keep all discussions confidential.	

Use of my information	Please initial in each box
I understand my personal details such as phone number and address will not be revealed to people outside the project.	
I understand that my data/words may be quoted in publications, reports, posters, web pages, and other outputs.	
I agree to the interview being audio recorded.	
I agree to the use of anonymised quotes in publications.	

Name of Participant Date

Name of Researcher Date

Appendix F: Participant Debrief Sheet

Debriefing Form for Participation in a Research Study

Thank you for your participation in this research study. Your participation is greatly appreciated.

Purpose of the Study:

The purpose of this study is to explore Generation Z student radiographers' experience of using social media for professional learning.

The study is guided by the following objectives:

- To explore how undergraduate diagnostic radiography (DR) students report their use of social media (SoMe) in terms of professional learning
- To understand the DR students' perceptions of using social media for professional learning
- To unravel how undergraduate DR students', navigate social media sites to identify areas of learning that meet their perceived need

To understand what undergraduate DR students', perceive as the barriers and facilitators to engaging with social media effectively as a means of professional learning within their course of study.

Some of the questions and the resultant discussion may have stirred some emotions or feelings that you wish to discuss and we can take the time to do so, if appropriate. However, as the sole researcher, I will not provide psychological support following the interview but I will advise that you may wish to contact your GP or the LSBU student support services if you feel that you require psychological support as result of taking part in this study.

Confidentiality:

You may decide that you do not want your data used in this research. If you would like your data removed from the study and permanently deleted, please indicate

If Applicable: Please do not disclose research procedures and/or hypotheses to anyone who might participate in this study in the future as this could affect the results of the study.

Final Report:

If you would like to receive a summary of the findings when it is completed, please feel free to contact me: pictonr@lsbu.ac.uk

Useful Contact Information:

If you have any questions or concerns regarding this study, its purpose or procedures, or if you have a research-related problem, please feel free to contact the researcher: pictonr@lsbu.ac.uk or the director of the study Dr Calvin Moorley: moorleyc@lsbu.ac.uk

*****Please keep a copy of this form for your future reference. Once again, thank you for your participation in this study!*****

Appendix G: Interview Template

Schedule: Semi-structured Interview Questions

Warm up section
Q1. Thank you for agreeing to participate and returning the consent forms. Can you tell me what year of the course you are in?
Probe (i) if year 1 Ok I hope you will enjoy it, what type of technology did they use in your last educational establishment? Do you use social media? Probe (ii) if 2nd or 3rd year, well done on getting this far on the course. How has it been for you so far? Do you use social media?
Main interview – establishing technology and social media usage
Q2. Can you describe the things you enjoy doing with technology and in particular social media.
Probe (i): Could you outline the importance of social media in connection with your social life? Probe (ii) Do you use SNSs as the primary communication tool for connections with friends and university peers/colleagues? Probe (iii) What items and devices would you say you use the most frequently and is there anyone of them in particular that you could not live without'? Probe (iv) How much time on average do you spend online each week? Is there anything that concerns you about being online?
Q3. Can you share with me the ways you have used social media sites for your professional and academic learning.
Probe (i) Can you outline a typical week? Probe (ii) What sites do you use and what is their main focus? Probe (iii) Do you have a system for logging any online learning you might do? Probe (iv) Do you have any examples of asking colleagues for any tips to help you work online and source knowledge? Probe (v) What kind of online resources have you found that have helped you with your studies? How did you find them? Probe (vi) Anything else technological that you find helpful

Q4. Let's think about you qualifying as a radiographer do you think social media will be part of this part of your professional?
Probe (i) Do you think you will need to adapt the way you use social media and if so, what changes might you make?
Main interview – Using technology for professional & academic purposes
Q5. Can you think of a time when you had to find answers to a situation/ question from University very quickly. Did you do a quick search and if so, where? Did you do any follow up research or just rely on initial findings?
Probe (i) Did you use the first answer you came across? Probe (ii) Can you describe the situation? Probe (iii) What sources did you use and why? Were they helpful? Probe (iv) How did you assess the quality of the information?
Q6. Have there been times when you were advised to use a library or virtual learning environment and used other source(s) instead? If yes, what were they?
Q7. What would you say is your ideal way of getting professional and academic information?
Probe (i) Is there anything that helps or hinders you accessing this kind of information from social media sites?
Cool down and ending interview
Q8. Has COVID-19 pandemic had an impact on how and why you use social media?
Probe (i) Has any of this been related to your course or studies?
We are now at the end of the interview, and I would like to thank you for giving me your time. Before we close is there anything you would like to tell me about your experience? Are there any questions I can answer for you?
End interview move to debrief