Participation in Practice: How Medical Students Learn and Form Their Professional Identity During Clinical Placements Through the Lens of Community Of Practice Theory

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Dedication

To Lorna.

Abstract

The importance of effective medical education cannot be overstated considering a planned doubling of medical students by 2031-32, increasingly complex health issues and an NHS facing unprecedented change. This thesis explores the dynamic, relational nature of medical students' participation, learning and professional identity formation during clinical placements. The current literature emphasises the central importance of active participation for student learning and professional identity formation, and the usefulness of Etienne Wenger's (1998) social theory of learning (also referred to as community of practice theory) for understanding this phenomena. Studies using this theory often provide a helpful yet partial theoretical perspective. Hence, this research utilises the panoply of Wenger's theoretical constructs in a single study and seeks to answer a pressing question: How do medical students learn and develop their professional identity during clinical placements through the lens of community of practice theory?

The qualitative methodology involves an analysis of weekly audio diaries and interview data from six medical students. Findings uncover fundamental influencing factors and demonstrate the centrality of active participation, the social and cultural clinical environments, the sustained development of relationships, students' access to the shared repertoire and practice for the development of their learning and professional identity. The implications of this study extend beyond clinical placements because understanding the relationship between participation, learning and professional identity formation is essential for key stakeholders, including the NHS, the General Medical Council, medical schools and students themselves.

This thesis contributes to our evolving comprehension of the dynamic interplay between participation, learning and identity. It underscores the importance of active participation strategies and improves our understanding of community of practice theory in the context of medical education. Moving forwards, this research serves as a foundation for future research and real-world enhancements to student learning and professional identity formation in clinical environments.

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List of abbreviations

CoP	Community of practice
NHS	National Health Service
PIF	Professional identity formation
UK	United Kingdom

Declaration

I, Andrew Stork, confirm that the Thesis is my own work. I am aware of the University's Guidance on the Use of Unfair Means (www.sheffield.ac.uk/ssid/unfair-means). This work has not previously been presented for an award at this, or any other, university.

Chapter 1: Introduction

1.1 Introducing the research, the research aims and questions

For over a century, the field of medical education has utilised participation in practice within clinical settings to facilitate student learning (Dornan *et al.*, 2014). Historically, a key focus has also been on cognitive processes (Swanwick, 2005) and the value of 'teaching' for enhancing student learning (Strand *et al.*, 2015). However, current literature strongly emphasises the fundamental importance of participation in the practice of sociocultural clinical environments to facilitate both student learning (Dornan *et al.*, 2014; Hindi, Willis and Schafheutle, 2022) and their professional identity formation (PIF) (Orsmond, McMillan and Zvauva, 2022; Taylor, Anderson and Gay, 2023) as future doctors, and the need for further research in this important field (Dornan *et al.*, 2014). This thesis responds to this need by exploring the dynamic, relational nature of medical students' participation in practice, their learning and PIF during clinical placements through the lens of community of practice theory (Wenger, 1998).

The research aims guiding this inquiry are designed to:

- understand *how* medical students learn and form their professional identity during clinical placements;
- use this knowledge to offer learning and educational practice suggestions primarily for medical students and educators;
- improve our understanding of community of practice (CoP) theory (Wenger, 1998) in the context of medical education.

To address these aims, the study is framed through the following research questions.

Main research question: How do medical students learn and form their professional identity during clinical placements through the lens of community of practice theory?

Theoretically informed sub-questions (via CoP theory - Wenger, 1998):

Research question 1:	How does participation in social communities of clinical practice support medical students' learning?
Research question 2:	How does participation influence the formation of professional identity within these communities?

An established and prominent theory in medical education for helping understand learning and identity formation through participation is Etienne Wenger's community of practice (CoP) theory, and his seminal book: *Communities of Practice: Learning, Meaning and Identity* published in 1998. From a theoretical perspective, studies using this theory often provide a helpful yet partial picture of the dynamic, relational nature of this participation and how this influences both medical student learning and PIF. Against a backdrop of a projected doubling of medical students by 2031-32, a healthcare system facing unprecedented change and increasingly complex health issues, the fundamental importance of clinical placements that provide both a positive, effective learning experience and are efficiently organised, cannot be overstated. This timely study employs the panoply of Wenger's CoP theory (1998) (notable exceptions acknowledged in Section 4.5.2, Chapter 4, Methodology and methods) to create a broad picture of the phenomena within a single study, filling a critical gap in our understanding of *how* medical students learn and form their professional identity as future doctors during clinical placement. This qualitative study involved an analysis of anonymised longitudinal (audio diaries) and cross-sectional (semi-structured interviews) data collected from six undergraduate medical students reflecting upon their learning and PIF while undertaking clinical placements as part of their medical degree at a university in the north of England, United Kingdom (UK).

1.2 The importance of this research

1.2.1 Medical education context

This research takes place in a time of increasingly complex health issues, scientific and technological advancements, a growing and ageing population, a healthcare system that is facing unprecedented change (Connor, 2019), challenging resource circumstances (Gawne,

Fish and Machin, 2020) and increasing demand on services (NHS England, 2023). With the National Health Service (NHS) being the "biggest employer in Europe and the world's largest employer of highly skilled professionals" (NHS, no date), the fundamental importance of effective medical education of future doctors cannot be overstated, for both the NHS (Spilg, Siebert and Martin, 2012) and the future of healthcare (Alsio *et al.*, 2019). A key issue the service faces is that the number of people being trained has not kept pace with demand and, if no action is taken, the NHS faces a predicted staffing shortfall of between 260,000 to 360,000 across numerous roles by 2036-37 (NHS England, 2023). The UK also has below the global average of practicing doctors in relation to population size compared with other Organisation for Economic Co-operation and Development (OECD) countries (NHS England, 2023). To address the shortfall in doctors, the UK government states in their NHS Long Term Workforce Plan that they will invest over £2.4 billion to double medical student places from 7,500 to 15,000 places by 2031-32 (NHS England, 2023). More broadly than just medical education, the NHS plans to provide 22%, up from 7% in 2023, of all training for clinical staff via an apprenticeship route by 2031-32 (NHS England, 2023). In addition, the 10 Year Health Plan for England emphasises the importance of effective clinical placement learning and the need for students to possess the necessary tacit knowledge enabling them to be fully prepared for work, and not just the requisite formal knowledge and competencies (NHS England, 2025). Collectively, these factors underscore the importance of effective medical student learning via participation in practice during clinical placements and the value of this research to support these developments.

Students rotating through clinical placements has been the mainstay of medical education for a century (Dornan *et al.*, 2014) and the crucial importance of learning in clinical settings is recognised globally (Liljedahl *et al.*, 2019). A review of relevant literature (see the literature review in Chapter 3 and the literature search and analysis strategy in Appendix 1) emphasises the fundamental importance of medical students' participation in practice for the development of their learning and PIF. However, evidence about *how* this participation facilitates student learning is inadequate resulting in it being referred to as a 'black box' (Dornan *et al.*, 2014) which requires more research (Barrett, Trumble and McColl, 2017). In addition, workplace learning scholars estimate that practitioners "acquire over 80% of their knowledge "on the job"" (Dornan *et al.*, 2019, p. 1098) underscoring the essential

importance of medical students learning effectively through participation in practice during clinical placements.

Taken together, these significant factors highlight the critical importance of ensuring that clinical placements are both efficiently organised and provide a positive, effective learning experience, emphasising the timeliness of this study. By investigating medical student learning and PIF during clinical placements, this research seeks to close the gaps in the existing literature by improving our understanding of the 'how'. This is achieved through examining the fundamental elements and interrelated nature of aspects of medical student participation, learning and PIF which, when combined with the synthesis of existing evidence, provides a broad picture of key considerations for helping make clinical placements an effective learning experience. However, there are concerns that significant increases in student numbers may exacerbate existing challenges with clinical placement capacity (Medical Schools Council, no date) underscoring the need for a well-planned and organised approach which recognises the practical realities of the clinical workplace. An efficient strategy for clinical placement design stems from adopting an evidence-based approach to decisions of where to direct staff time, financial and training resources which can be achieved through focussing on the key factors influencing student learning and PIF. This study identifies these key factors which could contribute towards addressing perennial resourcing constraints.

1.2.2 Theoretical importance

The delivery of healthcare typically takes place within a CoP (Durning and Artino, 2011; Cantillon *et al.*, 2016; Amery and Griffin, 2020) and communities of practice are the primary locus for student learning whilst undertaking clinical placements (Jaye, Egan and Smith-Han, 2010). Clinical placements can be thought of as time spent within a CoP (Morris, 2012) and students also perceive them this way (Amery and Griffin, 2020). Chapter 2 (Theoretical framework) highlights that CoP theory (Wenger, 1998) is a key theoretical framework that has been applied in medical education to explain how students learn and form their professional identity whilst undertaking clinical placements. Therefore, this study utilises Etienne Wenger's CoP theory published in his seminal book: *Communities of Practice: Learning, Meaning and Identity* in 1998 as its sole theoretical framework. The theory is

extensively cited (Burgess and Nestel, 2014; Consalvo, Schallert and Elias, 2015; Smith, Hayes and Shea, 2017) and reputed to be the most widely cited social theory (Farnsworth, Kleanthous and Wenger-Trayner, 2016). However, CoP theory is complex, rich and can be challenging to comprehend with few studies investigating all aspects of the theory comprehensively (Smith, Hayes and Shea, 2017) leading to a helpful yet typically partial theoretical picture of how medical students learn and form their professional identity during clinical placements. Indeed, limited studies investigate the conceptual constructs of the theory (Terry *et al.*, 2020). Further research should utilise the theory to improve our understanding of how students learn during clinical placements (McKenzie, Burgess and Mellis, 2020; Taylor, Anderson and Gay, 2023) and how communities of practice influence student learning (Abigail, 2016; Kirtchuk and Markless, 2023). To resolve the aforementioned needs, this research is important because it employs the majority of Wenger's CoP theory (1998) within a single study to tackle the previously noted knowledge gap, and to examine the utility of CoP theory for understanding medical student learning and PIF in the clinical context. This research design results in a broad picture of the phenomena but also provides an important roadmap and range of tools for future research into both medical and health professions education. The research design may also be useful for other fields, disciplines and sectors if, for example, the panoply of Wenger's CoP theory (1998) has not been applied to develop a comprehensive, theoretical view of learning and identity formation.

1.2.3 Methodological importance

Workplace learning research would benefit from data collection methods which provide for concurrent viewpoints on learning and help overcome issues with participant recollection (Dornan, 2012), which is an issue faced by those undertaking interviews (Crozier and Cassell, 2016). The collection of longitudinal data through audio diaries and cross-sectional data through semi-structured interviews during this study addressed these issues and led to the collection of a rich data set. Hence, the data collection tools, such as the audio diary prompts (Appendix 3) and interview schedule (Appendix 7) which are mapped to CoP theory (Wenger, 1998), provide novel data collection tools which could be used or adapted by

future researchers within medical, health professions education or other disciplines due to the broad applicability of CoP theory (Wenger, 1998).

1.2.4 Personal importance

I have a long-standing interest in seeking to unlock human and organisational potential, as well as understanding how teams, relationships and conversations influence this. The former is influenced through formative experiences involving meeting Albert Humphrey, who is historically credited as being part of a team that created the seminal SWOT analysis framework (Strengths, Weaknesses, Opportunities and Threats) and subsequently helping refine organisational development tools relating to this. The latter is, in part, influenced by my career in education and co-authored books on personal tutoring and academic advising. During my doctorate, I have become increasingly conversant with CoP theory and literature relating to medical student learning and PIF in clinical settings, and this research runs in parallel with my current role as a non-clinical academic in medical education, supporting the educational practice of doctors and enhancing the learning and PIF of medical students. My interest in this research and the theory is driven by my understanding of the literature and the challenges facing medical students and clinical educators. My belief is that we are yet to fully unlock the significant potential of CoP theory (Wenger, 1998) for enhancing the effectiveness of student learning and PIF in clinical settings and, as a result, the successful provision of patient care, which is an important personal motivator.

1.3 Thesis structure

Chapter 1 (Introduction) begins with an overview of the research: the research aims, questions and importance. The chapter concludes with this overview of the thesis structure.

Chapter 2 (Theoretical framework) analyses literature relevant to sociocultural learning theory and CoP theory (Wenger, 1998), and situates this within the field of medical education. It also includes an explanation of some of the study's key terms, definitions and concepts employed. The chapter's final section provides a detailed overview of the key tenets of CoP theory (Wenger, 1998) which underpins this study's research design, including the data collection and analysis. It is hoped that this final section in particular provides an

accessible insight for both practitioners and researchers to consider applying the majority of Wenger's CoP theory (1998) within medical and health professions research, as well as potentially wider in other sectors and disciplines, to help advance our understanding of learning and identity formation.

Chapter 3 (Literature review) synthesises literature relevant to medical student participation, learning and identity formation while undertaking clinical placements. This review highlights the fundamental nature of medical student participation in practice to support the development of their learning and PIF.

Chapter 4 (Methodology and methods) explores the methodology and methods utilised for this study. The chapter begins with an overview of my ontological, epistemological and researcher positionality, before discussing the research location, sampling strategy, data collection and analysis strategies employed. The chapter concludes with a discussion of ethical considerations and the trustworthiness of the study.

Chapter 5 (Findings) presents the study's findings following the analysis of the participants' audio diary recordings and interviews under two main analytical themes from CoP theory (Wenger, 1998), namely practice and identity. The data confirms existing knowledge by demonstrating that medical student participation in practice during clinical placements supports their learning and PIF.

Chapter 6 (Discussion) presents an evidence-based, theoretically informed picture of medical student learning and PIF. The majority of the chapter mirrors the same structure as Chapter 5 (Findings), with the most novel findings being explored in greater depth in relation to the existing literature explored in Chapter 3 (Literature review).

Chapter 7 (Conclusion) begins with an overview of the key findings relating to all research questions. It then reflects on the challenges of engaging with CoP theory (Wenger, 1998) and its future before discussing the research's contributions to the field and limitations. The chapter concludes with a discussion of implications for educational practice and recommendations for future research.

In the next chapter (Chapter 2, Theoretical framework), I will analyse literature relating to sociocultural learning theory and CoP theory (Wenger, 1998) and present my interpretation of the key tenets of CoP theory.

Chapter 2: Theoretical framework

2.1 Introduction

This chapter analyses literature relevant to the theoretical framework for this study. The chapter begins with an overview of sociocultural learning theory and its relevance for medical education, then focuses specifically on a social theory of learning (community of practice theory), what it is, its usefulness and application within medical education, and further research requirements. The chapter's final section focuses exclusively on Etienne Wenger's seminal book, *Communities of Practice: Learning, Meaning and Identity* (1998) and provides an overview of the theory's key tenets and underpinning assumptions relevant for this study.

2.1.1 Literature search and analysis strategy

The search and analysis strategy for this theoretical framework chapter (Chapter 2) and the literature review (Chapter 3) are detailed in Appendix 1.

2.2 Sociocultural learning theory

A sociocultural view of the clinical workplace situates learning as occurring within the interactions and interrelationships between distinct social and physical contexts, between people (for example, medical students, patients, doctors) and between people and artefacts (for example, patient notes, blood pressure monitor, otoscopes) (van der Zwet *et al.*, 2014). The majority of a doctor's activities are social practices which are shaped by working with a wide range of people (Cooke, Irby and O'Brien, 2010) and using tools and language to perform specialised practices, indicating their expertise (Kahlke, Bates and Nimmon, 2019). Hence, medical student learning during clinical placement is bound to their lived experience of both the physical and social environment (Burgess and Mellis, 2015a). Academics have highlighted the untapped potential from social science theoretical frameworks for medical education (Hirshfield, 2022). Ultimately, considering medical student learning through sociocultural theories will hopefully lead to more effective learning experiences, better

trained doctors and the provision of effective healthcare to benefit society (Thomas *et al*., 2025).

Historically, medical education has had a strong focus on cognitive approaches to informal learning (Swanwick, 2005); however, this perspective alone is not sufficient to explain how medical students learn during clinical placement (Swanwick, 2005; Billett and Choy, 2013). There is a need to consider how a person contributes and develops through participation in social practice and within a social context (Swanwick, 2005) because this type of learning is situated within the individual's social environment and not solely within the self (Yardley, Teunissen and Dornan, 2012). Learning and context cannot be dissociated because the social nature of the medical context is important for learning (Yardley, Teunissen and Dornan, 2012), supporting the value of sociocultural learning theories within medical education. The perception of learning as being supported through participation in practice was novel when first introduced (Buckley *et al.*, 2019) and sociocultural learning theories should be viewed as complementary to more individualistic learning theories, such as cognitivism, rather than in competition (Eraut, 2007). Eraut's (2007) view is similar to Sfard's (1998) who explains that too great an emphasis on either learning by acquisition (for example, cognitivism) or learning by participation (for example, CoP theory - Wenger, 1998), at the expense of the other, can lead to undesirable consequences for both practice and theory, and that we should learn to live with both metaphors of learning.

Sociocultural learning theories place social interactions and the setting at the heart of research (Kell, 2014). Indeed, social practice should be a key locus of research (Arnseth, 2008) and there is a need for more social science and relationship-based research in medical education to understand the nature of medicine's social context (Brown and Horsburgh, 2022). This is a central focus for this research. These theories do not separate social participation in practice and learning but emphasise their inherent interrelatedness (Qureshi, 2021), and the positive influence on learning from participating in real-world workplace practices (Cooke, Irby and O'Brien, 2010). The theories help explain the complex issues related to learning and clinical practice (Clement *et al.*, 2016) and aid our understanding of participation in the clinical workplace (Hodson, 2020). Sociocultural learning theories have become increasingly prominent in medical education (Yardley, Teunissen and Dornan, 2012) and their importance is growing in health professions

education (Nisbet, Lincoln and Dunn, 2013). A comprehensive literature review identified an interest in utilising these perspectives in research to further understand medical student learning in the clinical environment (Barrett, Trumble and McColl, 2017). However, limited attention has been paid to the social nature of learning in the clinical environment and this is important due to the sociocultural nature of workplaces (Billett and Choy, 2013) and to understand more about the clinical setting (Liljedahl, 2018). Further research should investigate the interactions and relationships between students and their supervisors from this theoretical perspective to more fully understand how to support the learning process (van der Zwet *et al.*, 2011). In addition, more examples and training are required to support medical educators in appreciating the relevance of these theories to their practice (Mukhalalati *et al.*, 2022). To address these research needs, this thesis seeks to expand our understanding of a sociocultural learning theory entitled a social theory of learning (Wenger, 1998), the sociocultural nature of medical student learning and professional identity formation (PIF), as well as educators' practice via the perspectives of medical students participating in practice during clinical placements.

2.2.1 Alternative theoretical frameworks considered

I researched and considered a range of learning theories before selecting CoP theory (Wenger, 1998) as the sole theoretical framework for this deductive, theory-driven study. In particular, two other established theories were considered for investigating the phenomena, including Cultural-Historical Activity Theory (CHAT) (Engeström, 1999) and Social Learning Theory (Bandura, 1977). Whilst all three theories recognise the social nature of learning in contrast with it being primarily an individual pursuit, they each emphasise the importance of different aspects of learning.

2.2.1.1 CHAT Theory - Engeström (1999)

This section compares CoP (Wenger, 1998) and CHAT theory (Engeström, 1999) to justify the selection of CoP as the main theoretical framework for this study. The comparison begins with a brief overview of CHAT theory's historical development then focuses on three key dimensions: unit of analysis, conceptualisation of learning and treatment of identity

formation. Examining these dimensions helps explain why Wenger's CoP theory (1998) was considered the most appropriate framework for exploring the relationship between medical students' participation in clinical practice, learning and PIF during clinical placements.

CHAT theory's development stems from early Soviet psychology in the 1920s and 1930s (Nussbaumer, 2012). Lev Vygotsky (1886-1934) originally developed the perspective that human cognition is both socially and culturally mediated through language, tools and interaction (Cong-Lem, 2022). Following this, Alexei Leotiev, Vygotsky's colleague, developed this work, shifting attention from individual action to collective activity systems (Engeström, 2001). Engeström (1999) developed this further, introducing his activity system model and the concept of expansive learning, with a particular focus on studying organisational change (Cong-Lem, 2022). Hence, while Engeström's (1999) publication is relatively recent, CHAT represents a much longer theoretical development.

CHAT and CoP theory differ at the level at which learning is analysed. CHAT theory operates mostly at the collective and systemic level of human activity (Engeström, 2001). Therefore, rather than focusing only on the individual, their behaviours or cognition, Engeström (1999) conceptualised activity systems as involving relationships between, for example, the subject, the object or goal of the activity, tools, social rules, communities and division of labour. The theory operates across multiple interconnected levels, such as the individual, social and historical-cultural level. However, its main analytical focus is primarily on the activity system as a whole, rather than individuals. Within the context of this study, CHAT theory could provide useful insight into the clinical environment, its structure, practices and professional hierarchies. However, Wenger's CoP theory (1998) focuses more specifically on learning and identity formation through participation in practice. Since this study explores how medical students learn through participation in clinical practice and how these experiences influence their PIF, CoP theory aligns more closely with the research aims. In particular, CoP provided a useful theoretical framework for investigating how students engaged with CoP members, participated in shared clinical practices, how they built professional relationships, how language and tools influenced their learning, and how their professional identity as future doctors forms through these activities. Although CHAT theory could have provided valuable insights into the organisational structures, professional hierarchies and systemic tensions which shape clinical learning environments, these were

not the primary focus of the study. The main focus is understanding how medical students learn through participation in clinical practice and how these experiences contribute to PIF. Therefore, CoP theory (Wenger, 1998) provided a more useful analytical framework for addressing the research questions.

A further distinction between CHAT and CoP theory is how learning is conceptualised and the extent to which identity formation is treated as a central component of the learning process. CoP theory (Wenger, 1998) emphasises the value of social participation in a community's practice to support both learning and, importantly, identity formation in relation to these communities. CHAT theory (Engeström, 1999) analyses learning as a collective, object-oriented activity mediated by tools. However, I selected CoP theory in contrast with CHAT theory primarily because Wenger's (1998) theory places greater emphasis on how a person's identity forms via participation in a community's practice and its inherent link with learning, which is not a central concern of CHAT theory (Engeström, 1999). Identity formation is key for this study's context, which is medical student learning during clinical placements, because becoming a doctor involves developing a professional identity and not simply just learning and becoming competent (Moll-Jongerius *et al.*, 2023). Indeed, forming a professional identity is explained as the ultimate aim of medical education (Cooke, Irby and O'Brien, 2010) and supporting this process is still a key priority up to the present time (Quaintance *et al.*, 2025).

Although both Engeström's CHAT theory (1999) and Wenger's CoP theory (1998) view learning as socially situated, they also differ in emphasis and scope. For example, CHAT theory is situated more within a historical-materialist tradition, conceptualising learning as the transformation of collective activity shaped by tools, rules and structures, and has a strong focus on systemic contradictions and organisational change. In contrast, Wenger's theory is grounded more in a social-constructivist approach, conceptualising learning as a process of becoming more of a competent and fully participating member within a CoP, with emphasis on the negotiation of meaning through participation and reification within shared, social practice. Overall, although both CHAT (Engeström, 1999) and CoP (Wenger, 1998) conceptualise learning as socially situated, they provide different explanations of how learning occurs and what should be analysed. CHAT theory provides a useful framework for examining activity systems and organisation change, whereas CoP theory focuses on

participation and identity formation within a specific type of community - a community of practice. This study seeks to understand how medical students learn through participation in clinical practice and how these experiences shape their PIF; therefore, CoP theory provides the most appropriate conceptual and analytical framework. Furthermore, the medical profession itself has been conceptualised as a CoP (Sawatsky, Huffman and Hafferty, 2020; Wright *et al.*, 2022) and clinical placements are the main setting in which students engage in these communities (Jaye, Egan and Smith-Han, 2010). CoP theory was therefore selected as the main theoretical framework for this study.

2.2.1.2 Social Learning Theory - Bandura (1977)

This section compares CoP (Wenger, 1998) and Social Learning Theory (Bandura, 1977) to further justify the selection of CoP as the main theoretical framework for this study. The comparison provides a brief overview of Social Learning Theory's historical development before focusing on three key dimensions: unit of analysis, conceptualisation of learning and treatment of identity formation. Examining these dimensions helps explain why Wenger's CoP theory (1998) was considered the most appropriate framework for exploring medical students' learning and PIF during clinical placements.

Albert Bandura, who was renowned as an influential psychologist (de la Fuente, Kauffman and Boruchovitch, 2023), developed his social learning theory during the 1960s and 1970s primarily in North America. Bandura's infamous Bobo dolls experiment (Bandura, Ross and Ross, 1961) began the development of his influential research into observational learning, which demonstrated that children can acquire behaviours through observation and imitation. Influenced by the work of Skinner's behaviourism theory, Bandura argued that learning happens not only in response to reinforcement but also through observation, imitation and modelling (Goldenberg and Lowe, 2018). A key premise of the theory is that learning is a cognitive process that is inseparable from the context in which it takes place (de la Fuente, Kauffman and Boruchovitch, 2023). His work emphasises cognitive processes such as attention and memory, particularly through processes such as observational learning (Goldenberg and Lowe, 2018). Bandura's Social Learning Theory emerged from cognitive-behavioural psychology with a focus on individual learning processes. The primary

unit of analysis is the individual learner and the cognitive processes through which learning occurs. In contrast, Wenger's theory (1998) focuses more on the relationship between individuals and the communities in which they participate, conceptualising learning as increasing participation in shared practice rather than, for example, the acquisition of behaviours.

Although Bandura's theory (1977) predates Wenger's (1998), whether Bandura's is a direct precursor is not straightforward. For example, both theories emphasise the social nature of learning and reject purely individualistic accounts, with Bandura's concept of observational learning resembling Wenger's view that newcomers learn through engagement with more experienced members of a CoP. However, Bandura's theory focuses on individual cognitive processes such as imitation and self-efficacy, in contrast, Wenger emphasises participation, identity development and socially situated practice. The theories also develop from different theoretical traditions, with Bandura rooted in psychology and Wenger in social constructivism. Consequently, whilst Bandura's work supported the development and importance of social interaction in learning, Wenger's theory represents a broader shift towards appreciating learning as participation in shared, social practice. Since this study seeks to understand medical students' participation within the practice of clinical communities rather than solely cognitive processes in observational learning, CoP theory (Wenger, 1998) provides a more relevant theoretical framework for this study.

Bandura's Social Learning Theory (1977) explains how people learn primarily through observation and imitation. A key reason that I selected CoP theory (Wenger, 1998) in contrast to Bandura's theory is because Wenger emphasises the components of mutual engagement and mutuality of engagement, and how this shared, negotiated social process supports both learning and, again, identity formation. These aspects are not a key component of Bandura's theory which focuses on the more individual process of modelling behaviours observed in others. The social process of relationship building in the clinical environment is important because it supports medical students' learning (Dornan *et al.*, 2014) and their preparedness for work (Roberts *et al.*, 2017). Moreover, the development of relationships with CoP members (Tobbell and Roberts, 2023) and patients (Fredholm *et al.*, 2019) supports a student's PIF. Consequently, whilst Social Learning Theory (Bandura, 1977) provides a useful explanation of how students learn from observing role models, CoP theory

(Wenger, 1998) offers a more specific and deeper account of how learning and PIF occurs through social participation within clinical practice, which aligns more closely with the aims of this study.

The learning processes and theoretical constructs of, for example, observation and imitation, are not theorised by Wenger (1998) in the same way that Bandura (1977) does. In Wenger's theory (1998), role modelling is not a core construct or concept. However, many of the learning and identity formation processes Wenger describes inherently involve interaction with more experienced members of the CoP, which may function as forms of role modelling, for example, mutual engagement and mutuality of engagement; joint enterprise and accountability to an enterprise; a shared repertoire and negotiability of a repertoire. Therefore, observation and imitation which are inherent in role modelling could be perceived as inherent components within Wenger's theory, suggesting a potential overlap with Bandura's. In both theories, people learn through interaction with typically more experienced practitioners; however, the theories differ in emphasis. For example, Bandura conceptualises observation and imitation as central cognitive processes of learning whereas Wenger situated these types of activities within broader social participation in practice and identity formation. In Wenger's theory (1998), learners do not simply reproduce observed behaviours, they gradually develop competency and identity through participation within a CoP.

Overall, although Social Learning Theory (Bandura, 1977) and CoP theory (Wenger, 1998) recognise the importance of social interaction in learning, they differ in their focus and scope. Social Learning Theory provides a valuable framework for understanding how people acquire behaviours, skills and attitudes through observation, imitation and role modelling. In contrast, CoP theory conceptualises learning and identity formation as greater participation over time within a social community and places greater emphasis on becoming more of a full member of the CoP. As this study seeks to understand how medical students learn through participation in clinical practice and how these experiences shape their PIF, CoP theory (Wenger, 1998) provides a more relevant conceptual and analytical framework. Consequently, while Social Learning Theory (Bandura, 1977) could explain important elements of observational learning and role modelling, CoP theory (Wenger, 1998) is better

suited to explain the broader social and identity formation processes which are central to the study.

2.3 A social theory of learning (Community of practice theory)

The reality of being a human means that we are continually engaged in the pursuit of a range of enterprises together (Wenger, 1998). Through these mutual interactions, the subsequent development of relationships, and the refinement of these joint enterprises over time, we learn (Wenger, 1998). This shared learning produces practices which reflect our social relationships and our mutual engagement in pursuit of our joint enterprises. This creates a type of community, hence the name, a community of practice (CoP) (Wenger, 1998). The medical education literature contains numerous, similar explanations of this phenomenon. For example, a CoP is a group of individuals whose regular interactions focused on a shared purpose lead to the development of their collective knowledge (Herzog *et al.*, 2023). Also, communities of practice are formed when people whose purpose is to become skilled and competent in a particular field, and are willing to share their collective knowledge and engage in activities together (Cruess *et al.*, 2015). A more recent definition of a CoP from Wenger, Trayner and de Laat (2011) is as a:

> "learning partnership among people who find it useful to learn from and with each other about a particular domain. They use each other's experience of practice as a learning resource. And they join forces in making sense of and addressing challenges they face individually or collectively." (p. 12).

The term 'a social theory of learning' is also known by other names within literature and day-to-day practice such as 'legitimate peripheral participation theory', 'situated learning theory' or 'community of practice theory'. In this study, the theory will be referred to as community of practice (CoP) theory, which is common within the medical education literature.

Wenger (1998) explains that communities of practice are part of our daily lives, we all belong to them and, as a result, they are pervasive and familiar. They are not a short-lived educational trend or pedagogical tool to be administered (Wenger, 1998), they are "about learning as a living experience of negotiating meaning" (Wenger, 1998, p. 229). Therefore,

learning is an integral part of our lives and not a separate activity, and communities of practice are a key locus for both the acquisition and creation of knowledge (Wenger, 1998). The field of medicine is perceived to be a CoP (Sawatsky, Huffman and Hafferty, 2020; Wright *et al.*, 2022) and the delivery of healthcare normally happens within it (Durning and Artino, 2011; Cantillon *et al.*, 2016; Amery and Griffin, 2020). This is supported by the view of Cruess, Cruess and Steinert (2018, p. 185): "Medicine is, and has always been, a community of practice". Communities of practice are the primary locus for student learning on clinical placement (Jaye, Egan and Smith-Han, 2010), they support the formation of professional identity (Terry *et al.*, 2020) and have been described as a "living curriculum" for those learning via an apprenticeship (Wenger-Trayner and Wenger-Trayner, 2015, para 12). They are key to health professions education but more evidence is needed to understand how they work in these contexts (Jenkins *et al.*, 2024). Clinical placements for students can be thought of as time spent within a CoP (Morris, 2012) and, importantly, students also perceive them this way (Amery and Griffin, 2020). This illustrates the fundamental importance of understanding the sociocultural nature of communities of practice in healthcare, how they influence medical student learning and PIF, together with a detailed understanding of CoP theory (Wenger, 1998), which is a central aim of this thesis.

In a deeply connected, complex and fast changing world, concerns about learning are important (Wenger, 1998). However, there needs to be a greater focus on the conception of learning, rather than learning itself (Wenger, 1998). Learning is typically assumed to be a result of teaching, that it has a clear beginning and end, and is an individual pursuit which invokes thoughts of teachers, classrooms and textbooks (Wenger, 1998). However, "Learning happens, design or no design" (Wenger, 1998, p. 225). Teaching does not necessarily lead to learning, but "it creates a context in which learning takes place, as do other contexts" (Wenger, 1998, p. 226). Therefore, "Learning is an emergent, ongoing process, which may use teaching as one of its many structuring resources" (Wenger, 1998, p. 267). CoP theory assumes that "learning is, in its essence, a fundamentally social phenomenon, reflecting our own deeply social nature as human beings capable of knowing" (p. 3). This social theory of learning focuses on explaining how learning is a process of people being active social participants, engaging in and contributing to "the *practices* of social communities and constructing *identities* in relation to these communities" (Wenger,

1998, p. 4). This perception of learning in social terms may be perceived as common sense but it is often overlooked by institutions (Wenger, 1998). CoP theory explains learning as being a process of social participation utilising a knowledge which is developed collectively, happening within naturally formed communities (Kirtchuk and Markless, 2023). The theory emphasises the relational aspects of learning in contrast to the individualistic approaches of traditional theories, for example, cognitivist theories of learning (Handley *et al.*, 2006). It also emphasises the value of social participation for learning (Smith, Hayes and Shea, 2017) and the situated nature of learning (Durning and Artino, 2011); in other words, the importance of authentic, real-world contexts and activities. The theory is a prominent and influential social learning theory, which is extensively cited (Burgess and Nestel, 2014; Consalvo, Schallert and Elias, 2015; Smith, Hayes and Shea, 2017) and is reputed to be the most widely cited social theory (Farnsworth, Kleanthous and Wenger-Trayner, 2016).

2.3.1 A brief history on the origins of the theory

Jean Lave and Etienne Wenger both worked at the Institute for Research on Learning in California (USA) in the late 1980, where their shared interests in social theories of learning led to a collaboration between the two (Lave and Wenger, 1991). Prior to this, Jean Lave was known for her ethnographic research and the core concept in her 1991 book with Wenger, legitimate peripheral participation, stemmed from her study into craft apprenticeships among Vai and Gola tailors in Liberia (Lave and Wenger, 1991). Wenger's early work was as a language teacher, then he undertook a PhD in artificial intelligence before beginning work with Jean Lave (Wenger-Trayner, no date). Drawing upon ethnographic studies of apprenticeship learning, Jean Lave and Etienne Wenger's collaboration led to the publishing of their book *Situated Learning: Legitimate Peripheral Participation* in 1991, which presents a social and practice-based account of learning, and challenges traditional cognitive and individualistic models. In this book, they argue that learning is fundamentally a process of participation within a social and cultural context. A key concept within the book is legitimate peripheral participation, which explains how newcomers become part of the community over time through a trajectory of increasing participation in the practice which helps them develop competence and skills (Lave and

Wenger, 1991). The learning that occurs influences identity formation through becoming a certain type of person related to this community (Lave and Wenger, 1991).

In his 1998 book, Etienne Wenger does not reject the foundational concepts from his earlier publication with Jean Lave but the analytical focus moves away from apprenticeship and key ideas such as legitimate peripheral participation and situated learning. In the 1998 book, Wenger retains core ideas, such as that participation in practice is central to learning, knowledge is situated within practice, that learning is fundamentally social, and social communities are key sites of this learning. However, he refocuses his theoretical development more towards creating a broader social theory of learning, significantly enhancing the integral component of identity formation, how people develop this via participation in practice and alongside their learning. Wenger explains that the concept of identity did not receive significant analysis in the 1991 book with Jean Lave but in his 1998 book, he has given this "center stage" (p. 12). Wenger also explains that his 1998 book "owes Jean its very existence" (Wenger, 1998, p. xiii) and that his collaboration with Jean Lave was foundational in inspiring his 1998 publication. For the 1998 text, Wenger undertook field work with a healthcare claims processing company which helped frame his theoretical development ideas. In the book, Wenger (1998) introduces a range of new concepts and sophistication to the relationship between them, for example, he brings in new concepts such as engagement, imagination and alignment (modes of belonging and part of identity formation). He also explains in detail the relationship between new concepts, particularly dualities, such as the processes of participation and reification leading to the negotiation of meaning, and between identification and negotiability (part of identity formation). Therefore, changes between the 1991 publication with Jean Lave and Wenger's 1998 publication are most accurately described as theoretical development and expansion but not a rejection of their foundational insights.

2.3.2 Theoretical positioning and landscape

Wenger argues that his 1998 theory is most appropriately situated in the social theory field, which was enhanced through the work of Antony Giddens but has its modern roots stemming back to the work of Karl Marx and Emile Durkheim (Wenger, 1998). Wenger

situates his social theory of learning (1998) in relation to a broad landscape of other learning theories, such as, behaviourist, cognitive, constructivist, social learning, activity, socialisation and organisational, which he recognises as each being useful for different purposes. Through this framing process and the 1998 book, Wenger explains what is unique but also similar about his theory in relation to others. For example, Albert Bandura (1977) argues in his social learning theory that people learn new behaviours and emotional responses through observing and imitating others, and learning is shaped by modelling and cognitive mediation. Wenger (1998) argues that Bandura's (1977) social learning theory incorporates social interactions but principally from a psychological perspective by investigating the cognitive processes through which observation influences learning. In contrast, Wenger's (1998) work emphasises collective meaning-making and shared practice within a community of practice. In relation to theories of identity, Wenger (1998) explains that identity has received significant attention in social sciences and from a psychological perspective, but his conception of identity within social theory was most influenced by linguists, such as Penelope Eckert (1989) and Charlotte Linde (1993). Penelope Eckert (1989) investigated how high school social groups use language to form an identity and enforce social divisions, and language, for example, the negotiability of a repertoire, is a key construct within CoP theory (Wenger, 1998). Eckert (1989) argues that language is not solely reflective of social structure but it actively constructs a social identity and group membership via everyday practice and interactions. Furthermore, Wenger's (1998) conception of identity was also strongly influenced by the work of linguist Charlotte Linde (1993) where she examined how people construct identity through telling life stories. Linde (1993) argues that personal narratives create social legitimacy by linking past events into socially shared storylines. Wenger's theory (1998) relates to Linde's work (1993) because it underscores how membership of social groups produces an identity within these communities.

2.3.3 Theory development timeline and terminology used

Etienne Wenger has continued to develop the theory up until the present day and an appreciation of its developmental timeline is important to understand which specific theoretical constructs this study utilises (Section 4.5 in Chapter 4, Methodology and

Methods, provides an explanation of the concepts used for data analysis and the ones not used with a rationale for their exclusion). As briefly explained in Section 2.3.1, the theory's development primarily began with Jean Lave and Etienne Wenger's early research into apprenticeship learning and their 1991 publication, which argued that learning is about increasing participation in a CoP through legitimate peripheral participation, in contrast to a purely cognitivist approach concerned with receiving and storing information (Smith, Hayes and Shea, 2017). Legitimate peripheral participation is the process through which "newcomers become part of a community of practice" (Lave and Wenger, 1991, p. 29) and typically entails an inbound trajectory into the CoP supported by active participation (Lave and Wenger, 1991). This conception of learning assumes that knowledge is not simply transmitted from one person to another, for example, from a teacher to a student, but that expertise is situated within the CoP and learning happens through a trajectory towards becoming more of a full member of that community (Dornan *et al.*, 2007). Therefore, learning is a process of increasingly active participation in the sociocultural practice of a CoP (Lave and Wenger, 1991).

Subsequently, Etienne Wenger continued to advance the theory and published his seminal book: *Communities of Practice: Learning, Meaning and Identity* in 1998, which explains how learning is a process of people being active social participants, engaging in and contributing to "the *practices* of social communities and constructing *identities* in relation to these communities" (p. 4). Wenger's publications after 1998 focus more on landscapes of practice and the boundaries between complex systems of communities of practice (Wenger-Trayner *et al.*, 2014). This study utilises CoP (Wenger, 1998) as its theoretical framework; however, I acknowledge that the terms used in the 1998 publication will have evolved since Jean Lave and Etienne Wenger's earlier work and their 1991 publication. It is important to acknowledge the language and conceptual meanings of the words used within this study to avoid any misinterpretation. Even though Etienne Wenger's publications after 1998 will have been informed by his earlier work, I have intentionally not used language or concepts from Wenger's work after 1998 because the focus of this study is on the medical student participating, learning and forming a professional identity *within* a CoP during clinical placement, not *between* and therefore, notions such as 'landscapes of practice' were

deemed less relevant for the scope of this study because the insights would likely be less relevant to answer the research questions.

Wenger's 1998 theory includes a range of unique nomenclature for multiple constructs which do not frequently appear in daily vernacular. Therefore, to aid the reader, this chapter explains the meaning of the terms used in this study, together with aspects of their interrelatedness with other constructs from the theory. It is worth noting that the concept of identity and PIF is also explored extensively within this study and I acknowledge that this concept is also discussed at length elsewhere with many significant viewpoints and substantial evidence. It is important to state that for this theory-driven, deductive research design, I have solely used Wenger's conception of identity in his 1998 publication; therefore, other conceptions of identity, while potentially noteworthy, are not relevant for this study. Again, Chapter 2 (Theoretical framework) explains Wenger's conception of identity and how it forms.

2.3.4 CoP theory's key assumptions and components

The theory (Wenger, 1998) has four key underpinning assumptions:

- that humans are social organisms;
- knowledge corresponds with having competence to pursue an enterprise;
- knowing corresponds with our active participation in the pursuit of enterprises and engagement with the world, and;
- that meaning is "our ability to experience the world and our engagement with it as meaningful" and "is ultimately what learning is to produce" (Wenger, 1998, p. 4).

CoP theory combines components to characterise learning and knowing as a process of participation. These interconnected and mutually defining components are as follows.

- Meaning (Learning as experience): "a way of talking about our (changing) ability – individually and collectively – to experience our life and the world as meaningful".
- Practice (Learning as doing): "a way of talking about the shared historical and social resources, frameworks, and perspectives that can sustain mutual engagement in action".

- Community (Learning as belonging): “a way of talking about the social configurations in which our enterprises are defined as worth pursuing and our participation is recognised as competence”.
- Identity (Learning as becoming): “a way of talking about how learning changes who we are and creates personal histories of becoming in the context of our communities” (Wenger, 1998, p. 5).

Together, these illustrate the fundamental aspects of CoP theory and the next section explains the value of the theory for medical education research.

2.3.5 Importance of CoP theory in medical education research

Historically, learning through increasing participation in the context of where healthcare takes place has been the primary method for training doctors, supporting the value of CoP theory for medical education research (Spilg, Siebert and Martin, 2012). CoP theory reflects medical practice and learning because it frames students as members of social groups, in contrast to simply being an individual and acting individually (Hay *et al.*, 2013; Steven *et al.*, 2014). The theory’s focus on social interactions, relationships and dialogue is an important process for learning tacit knowledge (Spilg, Siebert and Martin, 2012; Noar *et al.*, 2023). Tacit knowledge is substantially situated within medicine’s culture (Cruess, Cruess and Steinert, 2018) and is constantly used in the delivery of healthcare (Noar *et al.*, 2023). The theory is key to understand how medical students learn within clinical contexts (Morris and Eppich, 2021; Hindi, Willis and Schafheutle, 2022; Elnikety and Badr, 2023; Kirtchuk and Markless, 2023) and how they form their professional identity (Cruess *et al.*, 2015; Adema *et al.*, 2019; Connor, 2019; Mukhalalati *et al.*, 2022). Multiple researchers and writers have used the theory to help explain learning in the clinical workplace context (O’Brien and Battista, 2020). Indeed, Cruess, Cruess and Steinert (2018) assert that CoP theory could be medical education’s foundational theory, where other theories are added to create a more comprehensive theoretical framework. Despite this, historically, medical education literature has had a strong focus towards competency-based learning, drawing significantly upon cognitivist and behaviourist learning theories (Spilg, Siebert and Martin, 2012). Wenger (1998) recognises the multiple theories of learning and that not all learning is

ideally undertaken through interaction; however, he contends that even learning alone enables us to participate in communities and experience the world anew, therefore, learning is "*fundamentally experiential and fundamentally social*" (Wenger, 1998, p. 227).

CoP theory has the potential to:

- help students recognise and utilise opportunities to learn in the workplace (Egan and Jaye, 2009);
- improve student learning, to support their PIF and their collaboration in the clinical environment (Mukhalalati *et al.*, 2022);
- optimise learning environments in clinical settings (Thomas *et al*., 2025);
- uncover how people learn within social contexts (Smith, Hayes and Shea, 2017);
- influence improvements in healthcare (Chandler and Fry, 2009).

However, there is limited research which investigates the conceptual elements of CoP theory (Terry *et al.*, 2020) and few studies investigate all aspects of CoP theory comprehensively, with most focusing on a few key aspects (Smith, Hayes and Shea, 2017). Indeed, the benefits of communities of practice (James-McAlpine, Larkins and Nagle, 2023) and CoP theory (Smith, Hayes and Shea, 2017) are still yet to be realised.

Despite its widespread influence, Wenger's CoP theory (1998) has been subject to several notable criticisms. A prominent criticism relates to the ambiguity of some of the core constructs (Storberg-Walker, 2008), such as community, practice and learning (Cox, 2005). Although Wenger (1998) did not characterise the theory as ambiguous, the scope of the theoretical constructs appears intentional. For example, by describing the concept of communities of practice as a "point of entry into a broader conceptual framework" (Wenger, 1998, p. 5), Wenger positions learning and identity formation as dynamic, socially negotiated processes emerging from participation in practice. Furthermore, his conceptualisation of communities of practice as both an analytical construct and a lived, social phenomenon indicates his attempt to resist a rigid definition. Whilst this theoretical flexibility enhances its applicability to a range of social situations, critics argue this weakens the precision of analysis and its applicability in empirical research (Storberg-Walker, 2008). Wenger (1998) explains that mutual engagement, joint enterprise and a shared repertoire are three dimensions of practice that form a CoP; however, Cox (2005) argues that a

number of the theory's key concepts are not sufficiently distinct, meaning that a large proportion of social interactions could be considered a CoP. Wenger (1998) does attempt to use these three constructs as a way to provide conceptual clarity and distinguish communities of practice from, for example, networks and teams. Cox (2005) explains that the adaptability of the theory and its constructs, which has also contributed to the popularity of the theory, also represent one of its key analytical weaknesses because explanations of the construct's boundaries become difficult to specify. Similarly, Storberg-Walker (2008) contends that the theory lacks clear analytical boundaries, potentially restricting its application in empirical research, and it may function most effectively as an interpretive framework, rather than a rigorously testable theory that explains how learning and identity form. From a methodological standpoint, researchers have been criticised for applying the theory's concepts superficially. For example, Smith, Hayes and Shea (2017) reviewed online and blended learning research using the theory and found that numerous studies identified groups as communities of practice simply because participants interacted online, indicating its inconsistent application. Detailed in Table 4.1 (Chapter 4, Methodology and methods), this study attempts to overcome the limitations of conceptual ambiguity through an extensive, iterative process of theoretical familiarisation. The central aspects of each construct were summarised and translated into questions that reflected key tenets of the theory. These questions were subsequently refined through pilot testing with a medical student and academic staff, alongside further engagement with the theory.

Critics further contend that Wenger romanticises the concept of community and insufficiently addresses power, conflict and exclusion. Communities of practice are typically explained as sites of collaboration and belonging; however, Contu and Willmott (2003) argue that this viewpoint privileges shared values, consensus and harmony, whilst not addressing issues of unequal power relations. In addition, Fox (2000) contends that Wenger may be overstating social cohesion by portraying organisations as coherent communities despite the fragmented and conflictual nature of contemporary workplaces. I recognise and explore the theoretical limitation of power dynamics within the theory in Section 7.3 (Chapter 7, Conclusion) because as Vanstone and Grierson (2022) explain, a consideration of how power influences knowledge and behaviour is particularly relevant in the hierarchical structure of medicine. Wenger addresses the issue of power in the 1998 book, explaining

that he does not deny its importance but deliberately places greater emphasis on issues of power relating to learning and identity, and not on issues of competing interests. Wenger does, in part, place more emphasis in later work exploring learning in landscapes of practice (Wenger-Trayner *et al.*, 2014), where concepts such as brokering and boundary processes, which recognise expertise and authority across communities receive more attention. However, the issue of power is still not significantly addressed or developed in Wenger's later work, potentially requiring alternative theoretical perspectives to understand this phenomenon. Potential alternative perspectives are explored in Section 7.6.4 (Chapter 7, Conclusion).

CoP theory is complex, rich and can be challenging to comprehend (Smith, Hayes and Shea, 2017), which aligns with my view, particularly due to unique conceptual names and the complex interrelatedness between theoretical constructs. However, I hope that the interpretation of the theory in this chapter, the data collection tools (Appendix 3 and 7) and recommendations for future research (Section 7.7, Chapter 7, Conclusion) provide a platform for future studies which employs the full range of CoP theory's (Wenger, 1998) theoretical constructs to provide a comprehensive, theoretical picture of the phenomena across multiple fields, disciplines and contexts. Further research should utilise CoP theory to aid our understanding of how students learn during clinical placements (McKenzie, Burgess and Mellis, 2020; Taylor, Anderson and Gay, 2023), how it influences medical student learning (Abigail, 2016; Kirtchuk and Markless, 2023), how to develop effective communities of practice (Mukhalalati *et al.*, 2022) and determine what the outcomes from student engagement in healthcare communities of practice are (Terry *et al.*, 2020), all of which this study explores and seeks to address.

2.4 Etienne Wenger's (1998) explanation of a social theory of learning (Community of practice theory)

This section provides an overview of a social theory of learning. The following two subsections (2.4.1 and 2.4.2) either paraphrase or directly quote solely from Etienne Wenger's seminal book: *Communities of Practice: Learning, Meaning and Identity* (1998). To aid flow and intelligibility, the name 'Wenger' and the year '1998', have not been included;

however, page numbers have been included for direct quotations. Medical education examples have also been included to help contextualise aspects of the theory.

To create this theoretical explanation, I followed the process described in Table 2.1.

Table 2.1 - The stages followed for creating the explanation of community of practice theory (Wenger, 1998)

Stage	**Process**
1	Repeated readings of Wenger's (1998) text, making detailed notes on each chapter and concept.
2	I utilised these notes to decide on the fundamental aspects for each concept and summarised this into sections of writing. This process was repeated for me to build confidence with interpreting the theory correctly.
3	Stages 1 and 2 were repeated until I was confident with interpreting the theory correctly.

The following overview of CoP theory (Wenger, 1998) is divided into two main sections, namely 'practice' and 'identity'. Even though they are discussed in two separate sections, the theory argues for a fundamentally dual relationship between them. The sections explain the theory's key tenets and underpinning assumptions that are utilised in this study. It is not practicable or relevant in this study to convey all the theory's concepts and features, nor their depth, breadth and scope of applicability.

2.4.1 Practice (Learning as doing)

This section focuses on the concept of practice and illustrates a range of characterisations of communities of practice. The ideas are illustrated through conceptions relating to meaning, community, learning and boundary.

A practice is "doing in a historical and social context that gives structure and meaning to what we do. In this sense, practice is always social practice" (p. 47). The practice includes

both explicit relations (for example, language, documents, tools, images and defined roles) and tacit relations (for example, body language cues and unspoken but similar and shared underlying perspectives, sensitivities and assumptions) which demonstrate being part of a CoP and are important to the success of the enterprise. A practice is also how "we can experience the world and our engagement with it as meaningful" (p. 51). The next section explains how meaning is created through participation and reification.

2.4.1.1 Meaning

The concept of meaning is not simply related to a dictionary definition or philosophical understanding. Meaning is found through the negotiation of meaning, which "is the level of discourse at which the concept of practice should be understood" (p. 72). The negotiation of meaning involves the interaction between two constituent processes, namely: participation and reification.

Participation refers to both the active taking part and the social relations and connections with other CoP members which, in turn, reflects the taking part. It is both social and personal, and involves thinking, talking, doing and feeling, as a whole person, physically and emotionally. Participation involves a mutual ability to negotiate meaning with other CoP members, for example, through conversation and shared activities. Ultimately, participation encapsulates the social experience of living in the world and being an active member of a CoP. Even undertaking a seemingly individual act includes some form of social participation. For example, when a student is making decisions on their own by drafting a patient consultation note to be reviewed, the supervisor, patient and other CoP members are influencing this individual action through their past experiences and they are also influenced by these actions.

The dual process to participation is reification, which is how we project ourselves onto the world, it is the "process of giving form to our experience by producing objects that congeal this experience into "thingness"" (p. 58). All communities of practice, through their experiences and practices, create tangible and intangible abstractions such as terms, tools, symbols, concepts and stories which reify a part of the practice into a form. Reifications can be both the product and process, for example, a patient consultation note (product) and the

writing, interpreting and reviewing of a consultation note (process). These reifications subsequently provide a focus around which CoP members can negotiate meaning through participation.

Together, participation and reification form a duality, they are both distinct and complementary. They form a single conceptual unit, with two mutually constitutive parts that require and enable one another. Participation is required to create, interpret and use reification, therefore, there can be no reification without participation. They are both seamlessly woven into our practices and ensure that there is meaning over time. The medical student who joins the CoP as a member represents a unique, historical process through their participation. In other words, they participate in a complex context involving a wide range of factors such as, the organisation of the NHS, the training the other healthcare practitioners have undertaken, the way the week is going in that clinical area, who is around, what patients are admitted and from where; therefore, the contexts that shape a student's participation reach far beyond in time and space. The patient consultation notes that medical students draft, interpret and receive feedback on, as a reification of practice, also represent a unique, historical process. In other words, these consultation notes contain a long history. They will have been created and refined by practitioners. Then approved by specialists and professional service staff before being distributed to frontline staff. They may contain pre-existing historical information collected from patients. The convergence of both the processes of participation and reification are fundamental to the composition of communities of practice and their interplay provides for the negotiation of meaning.

Engagement within social practice is a key starting point to aid our understanding of negotiating meaning. As an example, a medical student's social participation in practice during a clinical placement involves shared experiences between CoP members. These experiences involve continuous interactions (called 'negotiation' within CoP theory) and are intended to illustrate the give-and-take between members and the gradual achievement of activities. Participation involves engaging with and, at times, using language, objects, tools and processes that are reified. Together, the duality of participation and reification enable students to experience this world and negotiate their own meaning, and the nature of the practice.

2.4.1.2 Community

The name, a community of practice, does two things: it describes a particular type of community and provides a more distinct and well-defined perspective of practice. The local areas in which we live might be called communities but it is doubtful that they will have practice associated with them. Also, playing a guitar is typically called practise, however, this may not have a distinct community associated with it. A CoP therefore describes a particular *type* of community. The term CoP "is not a synonym for group, team or network" (p. 74). Being a member of a CoP is not necessarily about, for example, having a title, being part of an organisation, belonging to a social category, saying you are loyal or having a personal relationship with people. Nor are proximity and geographical location always sufficient to form a CoP.

The following three dimensions describe the relationship through "which practice is a source of coherence of a community" (p. 72):

- mutual engagement;
- a joint enterprise;
- a shared repertoire.

Mutual engagement is where people engage in actions and activities, and as a result negotiate meaning with each other. These sustained, concentrated relations are structured around what the people are there to do and emerge from engagement in practice. Therefore, a CoP "can become a very tight node of interpersonal relationships" (p. 76). For people to mutually engage, it is important that they are included in 'what matters', for example, being able to converse with other CoP members, being in attendance and up-to-date with current patients' health status, and even knowing the latest ward gossip. To sustain relations of mutual engagement over time requires upkeep and maintenance. There is also no requirement for individual members to know everything, neither does being a member of a CoP result in this. In fact, CoP members may have diverse, similar and intersecting areas of competence. Therefore, it is typically more valuable to understand how to co-operate and reciprocate.

A joint enterprise is “the result of a collective process of negotiation that reflects the full complexity of mutual engagement” (p. 77). It is defined through CoP members’ pursuit of it and their negotiated response to it. It is not just an explicit shared aim, it is also the mutual accountability between CoP members, which forms part of their practice. A negotiated response does not mean complete agreement on what the joint enterprise is and what the associated practice should be, and meaningful disagreements can actually be a productive part of the enterprise. Individual CoP member situations and responses to the enterprise may vary; however, their understanding and the effect it has on their lives does not need to be the same. CoP members create an individual practice to address the enterprise; therefore, “their practice as it unfolds belongs to their community in a fundamental sense” (p. 80). However, CoP members must together find a local joint response to the situation and, even though communities of practice are influenced by outside considerations, their response is never fully determined by outside directives or any individual member.

Over time and through a collective effort towards the joint enterprise, shared resources are produced for negotiating meaning which include both reificative and participative features. These resources describe a shared repertoire which acquire a unified coherence through being part of the community’s practice. The shared repertoire is typically developed over time, has been employed and used on numerous occasions, is familiar to CoP members and is helpful for developing future practice. Some examples of the shared repertoire may include, for example, concepts, genres, actions, symbols, stories, gestures, tools, routines, words and ways of doing things. The shared repertoire of the community is used to negotiate meaning and, therefore, “it is shared in a dynamic and interactive sense” (p. 84).

2.4.1.3 Learning

It takes time for a community to develop a practice; however, it is not simply a matter of a specific length of time. More accurately, it is about maintaining enough mutual engagement focused collectively on an enterprise to share some important learning. Therefore, practice can be conceived of as shared histories of learning, which are a combination of both participation and reification over time. In this sense, what people learn *is* their practice. However, not everything a person engages in is learning, and this would trivialise the concept. Important learning influences the dimensions of practice. For example, for

communities this involves “Evolving forms of mutual engagement”, “Understanding and tuning their enterprise” and “Developing their repertoire, styles, and discourses” (p. 95). This type of significant learning changes our capacity to participate in practice, the tools to participate effectively and our understanding of why we participate. This learning influences our ability to negotiate meaning and form an identity, it is not simply a cognitive process or the acquisition of skills, habits and memories.

When medical students or newcomers generally enter a CoP, competence is shared with them through the same way in which a CoP develops. For example, members interact, undertake activities together, negotiate meaning anew and learn from each other. In other words, they socially participate in the practice. Even though medical students start on the periphery of a healthcare CoP, it is important that they are provided with legitimate access to the practices of the CoP and are supported to participate. From this perspective, practice and learning are not *things* which can be transactionally shared or distributed. Practice and learning are ongoing, interactional, dynamic and evolving social processes, which are both personal and collective experiences, and which medical students help perpetuate.

2.4.1.4 Boundary

A CoP should not be perceived in isolation because the members and their practice are not just theirs alone. Their shared histories of learning do not just exist internally within the CoP, “they are histories of articulation with the rest of the world” (p. 103). Participation in a CoP over time creates social discontinuities - also referred to as boundaries - between those who have and have not participated. The learning involved in moving between communities of practice reveals these boundaries because it can involve a significant transformation to engage in the practices of a new CoP. The boundaries of a CoP can be reified through markers of membership, for example, the way people dress, the tools and language they use, their titles and qualifications. For example, for medical students, these may include having access to and your name included within electronic systems, or wearing a stethoscope, lanyard or the typical dress of a doctor. Boundaries delineate between being inside and outside the CoP, such as being a member and non-member; however, these markers only act as boundaries if they affect participation.

2.4.2 Identity (Learning as becoming)

This section moves the focus from practice towards identity. The ideas are illustrated through conceptions relating to identity in practice, participation and non-participation, modes of belonging, identification and negotiability.

Learning is an experience of identity and an ongoing process of becoming because it changes "who we are and what we can do" (p. 215). The component of identity is integral to the theory and is inseparable from other components, such as meaning, practice and community. The concept of identity focuses "onto the person, but from a social perspective" (p. 145). Therefore, the viewpoint is a combination of historical, cultural, societal, institutional but with an individual human's face. Hence, the unit of analysis for identity is neither the person nor the community but the interplay between them and the "process of their mutual constitution" (p. 146). This perspective incorporates the lived experience of the individual while acknowledging its social context and nature. This focus on the dual nature of identity, rather than, for example, a narrow classification of identity types, is important because the shaping of identity is at the same time both a uniquely individual experience and part of a social collective.

2.4.2.1 Identity in practice

Alongside the development of practice, a CoP is formed. CoP members engage with each other, recognise each other as participants and negotiate "ways of being a person in that context" (p. 149). From this perspective, the formation of a CoP is also identity negotiation between members.

The fundamental relationship between practice and identity is illustrated through the parallels in Figure 2.1 (p. 150), which "presents identity and practice as mirror images of each other" (p. 149) and "a perspective on identity that inherits the texture of practice" (p. 162).

Figure 2.1 Parallels between practice and identity

practice as…	**identity as…**

● negotiation of meaning (in terms of participation and reification) ● community ● shared history of learning ● boundary and landscape ● constellations	● negotiated experience of self (in terms of participation and reification) ● membership ● learning trajectory ● nexus of multimembership ● belonging defined globally but experienced locally

Identity is constructed socially through a "social discourse of the self and of social categories" (p. 151). For example, 'doing the role' of a medical student, engaging with the experiences of participation in healthcare practice and for CoP members to recognise them, reifies them as participants. Therefore, identity construction is an ongoing, complex overlaying of a multitude of experiences of both participation and reificative projections, such as our relations with others and how our actions affect the world. These together, through the negotiation of meaning, construct who we are and form our identity. Identity is not merely to be associated with the suggestions from personality traits, self-image concepts, identity categories, roles or labels. This is because identity is not simply who we think we are, or who others think we are, although this is part of who we are. Identity is an experience of participation and reification, which is constantly worked out socially, through our lived experience of becoming, every day.

As membership of a CoP is formed through our experience of participation and reification, identity becomes "an experience and a display of competence that requires neither an explicit self-image nor self-identification" (p. 152) with a CoP. Therefore, our CoP membership "translates into an identity as a form of competence" (p. 153) and highlights what is familiar and what is not. Our competence means that we use the resources the CoP requires for its practice, and these dimensions of competence become dimensions of identity: "Mutuality of engagement", "Accountability to an enterprise" and "Negotiability of a repertoire" (pp. 152-153). Therefore, for example, through our involvement in the development of mutual relations within the CoP, we become who we are. Identity is also

formed through taking responsibility for pro-actively participating in the activities of the CoP and the pursuit of the joint enterprise. Personal experiences of the practice of a CoP over time and of using and negotiating the repertoire of the CoP, help form our identity. Indeed, non-membership also shapes our identities through a lack of competence and familiarity with the three dimensions of identity.

Identity does not already exist and we cannot turn it on or off. Identity is also neither an object nor is it acquired. Identity is temporary, is always undergoing constant negotiation through our engagement in practice and is a "constant becoming" (p. 154). Identity can be understood as a trajectory, which includes both the past and future, included within the process of working out the present. The word 'trajectory' does not infer a set route or destination but a constant motion, which "has a coherence through time that connects the past, the present, and the future" (p. 154). This constant motion reflects that identity is constructed socially, is complex and temporal; therefore, it does not relate to a linear progression of time. Our identities form these trajectories both within and across communities of practice. There are a range of possible trajectories, such as 'peripheral', 'inbound', 'insider', 'boundary' and 'outbound'. Medical students will normally start on the periphery of a CoP and peripheral trajectories typically do not lead to full participation (usually through necessity or choice) but sufficient access to this CoP contributes to their identity. Through time spent within a CoP, medical students may progress on an inbound trajectory, which is where they join the CoP typically on the periphery but with the potential opportunity to become more full members involved in the practice. The learning from practice enables medical students to understand what matters and counts and what does not, which contributes to their identity. The efforts of existing members through their engagement in practice help form possible trajectories for medical students, which provides suggestions of an identity. Identity is also a nexus of our membership of multiple personal life and work-related communities of practice. Therefore, identity involves a form or reconciliation of our multi-membership into a union of co-existing connections.

2.4.2.2 Participation and non-participation

Our identity is formed in multiple ways, for example, through what we choose to know more about, who we engage with, what we care about, where we choose to direct our

trajectories, what we use and how we use it, and what is familiar. Conversely, our identity is also equally influenced through what we ignore, who we choose not to build relations with, what does not concern us, where we choose to steer our trajectories away from, what we do not use and what is unfamiliar. Therefore, a coherent identity is always being a mixture of both in and out of communities of practice. The interaction between participation and non-participation creates forms of non-participation, namely: 'peripherality' and 'marginality'. Peripherality is participation where the medical student could remain on a peripheral trajectory within the CoP, such as sustained observation and shadowing; however, their participation *may* lead towards becoming more of a full member. Marginality is defined by a restricted form of participation, which prevents certain aspects of participation and the medical student from moving toward becoming a full member, for example, having their ideas ignored or actively blocking their access to authentic experiences and relations. These may lead the person to move towards a marginal position within the CoP or even becoming a non-member.

2.4.2.3 Modes of belonging

The process of identity formation and learning is supported through consideration of three modes of belonging: 'engagement', 'imagination' and 'alignment', which function most effectively in conjunction with each other. Engagement is a mode of belonging and source of identity that entails "active involvement in mutual processes of negotiation of meaning" (p. 173), in other words, the interaction between participation and reification, as well as participation in trajectory formation and the histories of practice. In practice, this requires students' authentic access to both participation and reification. The work of engagement includes, for example, helping to define the joint enterprise, undertaking meaningful shared activities and accumulating shared experiences, developing mutual relationships through interactions, and evolving the shared repertoire.

Imagination is a mode of belonging and source of identity that entails "creating images of the world and seeing connections through time and space by extrapolating from our own experience" (p. 173). Imagination is not restricted to mutual engagement and is not daydreaming of a fanciful future reality as a doctor. Imagination is "producing new "images" and of generating new relations through time and space that become constitutive of the

self" (p. 177). Imagination is therefore a creative process of perceiving our engagement through time, from the past to the possible future. The work of imagination includes, for example, creating a trajectory which equates to a future extended identity, sharing stories, building links with relevant people who are external to the CoP and "using history to see the present as only one of many possibilities and the future as a number of possibilities" (p. 185).

Alignment is a mode of belonging and source of identity that entails "coordinating our energy and activities in order to fit within broader structures and contribute to broader enterprises" (p. 174). Similar to imagination, alignment is not restricted to mutual engagement. Alignment requires an ability to provide coherence to actions and viewpoints so that progress is made towards a shared goal. The work of alignment includes, for example, "negotiating perspectives, finding common ground", "convincing, inspiring, uniting", offering a perspective such as a viewpoint on a patient's management plan and "defining broad visions and aspirations, proposing stories of identity" (pp. 186-187).

2.4.2.4 Identification and negotiability

Our identity is shaped as much by our ability to craft the meanings that define our communities of practice, than our participation and non-participation within them. For example, "our identities form in this kind of tension between our investment in various forms of belonging and our ability to negotiate the meanings that matter in those contexts" (p. 188). Identities therefore form through a dual process of identification and negotiability, which are both equally fundamental to the process of identity formation.

Identification relates to the extent of a person's emotional investment (positive and negative emotions) through the three modes of belonging (engagement, imagination and alignment) in being a member of a CoP and, conversely, the degree to which others recognise them as being a member of the CoP. The process of identification can be both participative and reificative. For example, for participative, a medical student can identify themselves *with* a healthcare delivery practice or *with* a group of people providing healthcare. For reificative, a student can identify *as* a medical student, or *as* a doctor in training, or *as* a not yet qualified doctor, or *as* a future doctor. Identification "refers to the

constitutive character of our communities and our forms of membership (and non-membership) for our identities" (p. 192). In other words, it is not simply how people relate to each other but how participants relate to all aspects of their social existence, for example, the joint enterprises, the activities and actions, the artefacts, the social groups and so on.

The processes of identification are defined by our membership of communities of practice and help to define which meanings are important to us whereas the processes of negotiability are defined by social structures and our respective positions within them. Negotiability "determines the degree to which we have control over the meaning in which we are invested" (p. 188) and "refers to the ability, facility, and legitimacy to contribute to, take responsibility for, and shape the meanings that matter" (p. 197). There are two concepts which determine the negotiability of meanings, namely: economies of meaning and ownership of meaning. For example, the meanings that a healthcare CoP produces about healthcare and providing healthcare do not simply belong to that CoP, they also belong to a much broader economy of meaning. This economy of meaning is where a wide range of meanings related to healthcare and providing healthcare are created in numerous locations which all compete for what the meaning of healthcare and providing healthcare is or should be. However, the ownership of meaning relates to the individual ability of the participant, such as a medical student, to take responsibility for the local meanings of healthcare and caregiving within their communities of practice.

Identification can be portrayed and understood with associated concepts such as "inclusion and exclusion", "solidarity", "allegiance", "trust", "defining boundaries", "commitment", "forgiveness" (p. 210) and so forth. Whereas negotiability can be portrayed and understood with associated concepts such as "inviting contributions" and "listening to other perspectives", "seeking control", "confrontation" and "argumentation", "challenging boundaries", "making organisational policies and processes more transparent", "voting", "defining individual rights" (p. 210) and so on. There is an inherent complex and ongoing tension between the two parts of identification and negotiability which form "into the social fabric of our identities" (p. 208). To have identification without negotiability can lead to potential marginality, powerlessness and vulnerableness. To have negotiability without identification can lead to emptiness, pessimism, senseless power and influence.

This section (Section 2.4) has provided an overview and interpretation of the key tenets of CoP theory (Wenger, 1998) which underpin this study's research design.

2.5 Conclusion

This chapter demonstrates that clinical workplaces are fundamentally social contexts and medicine is recognised as a CoP by both practitioners and students. Learning through participation within clinical environments is, historically, the foundation of medical education. However, historically, medical education has placed a strong emphasis on the individual cognitive aspects of learning which are not wholly sufficient to fully explain *how* students learn or form their professional identity as future doctors. More recently, the importance and prominence of sociocultural learning theories has grown in medical education. Therefore, utilising sociocultural learning theories is important to investigate the social nature of these environments, and the influence of dynamic social interactions and authentic experiences. CoP theory is a rich, complex framework that is useful for understanding learning and identity formation in the clinical workplace. It is particularly helpful in investigating the participatory elements of learning within social groups which reflects healthcare practice. Further research is required to investigate the panoply of CoP theoretical constructs (Wenger, 1998) and develop a detailed understanding of how students learn and form their identity in the clinical workplace, which this thesis directly addresses.

In Chapter 3, I will present a synthesis of literature relevant to medical student participation and learning while undertaking clinical placements.

Chapter 3: Literature review

3.1 Introduction

This chapter analyses literature relevant to medical student participation, learning and professional identity formation (PIF) while undertaking clinical placements. It begins with a brief overview of the current healthcare and medical education context before focusing on workplace learning in the clinical environment. Then, student participation in practice, professional identity formation, the characteristics of effective medical students and clinical educators are discussed. The chapter concludes with a summary of further research requirements.

3.1.1 Literature search and analysis strategy

The search and analysis strategy for this literature review (Chapter 3) and the theoretical framework chapter (Chapter 2) are detailed in Appendix 1.

3.2 Healthcare and medical education context

This section illustrates the current UK healthcare and medical education context by considering the need for effective medical education, the nature of clinical placements and their importance for medical student learning, including challenges with delivery.

3.2.1 Current healthcare context

The National Health Service (NHS) aims to have healthcare professionals with the right knowledge, skills, values and behaviours to deliver high-quality health and care to the public (NHS England, no date). To achieve this, the NHS Long Term Workforce Plan underscores the importance of having the highest quality education and training (NHS England, 2023). The scale of the NHS as the "biggest employer in Europe and the world's largest employer of highly skilled professionals" (NHS, no date) illustrates the far-reaching impact doctors have on the health of the UK. This NHS workforce is growing and there is increasing pressure on staff, therefore, the importance of effective medical education cannot be overstated

(General Medical Council, 2020a). Furthermore, supporting the learning of future doctors is vital for both the NHS (Spilg, Siebert and Martin, 2012) and the future of healthcare (Alsio *et al.*, 2019).

The NHS faces continual pressure to provide a safe, positive and welcoming environment for all medical students while delivering effective and safe patient care, all in the context of challenging resource circumstances (Gawne, Fish and Machin, 2020). The current healthcare context is experiencing unprecedented change which health professionals are expected to respond to, such as increasingly complex health issues, scientific and technological advancements, alongside dealing with a growing and ageing population (Connor, 2019). Changing demographics in the UK, such as a 55% increase in those over 85 years old and growing levels of frailty and multimorbidity are also leading to an increase in demand on NHS services (NHS England, 2023). However, the number of people trained has not kept pace with this demand and, if no action is taken, there is a predicted staffing shortfall of between 260,000-360,000 by 2036-37 (NHS England, 2023). The UK government plans to invest over £2.4 billion to deliver a 27% increase in training places by 2028-29 and double medical student places from 7,500 to 15,000 places by 2031-32 (NHS England, 2023). The former Prime Minister, Rishi Sunak, stated that the plan would "deliver the biggest ever expansion in the number of doctors and nurses that we train" (BBC, 2023). The government also aims to raise NHS staffing capacity by increasing training places for physician associates, midwives, nursing associates, pharmacists, psychologists and dental therapists (BBC, 2023). This brief overview demonstrates the multi-factorial nature of healthcare provision, the increasingly dynamic environment in which healthcare takes place and, importantly, the centrality of effective medical education to meet not only today's needs but the future ones as well.

3.2.2 Current medical education context

The NHS has a stated aim of providing "… 22% of all training for clinical staff through apprenticeship routes by 2031/32, up from just 7% today" (NHS England, 2023). This highlights not the importance of learning via work in the clinical setting but also the current need for a greater understanding of communities of practice in healthcare, with this

phenomenon being described as a “living curriculum” for people who are learning through an apprentice model (Wenger-Trayner and Wenger-Trayner, 2015, para 12). Historically, learning through practice has been the basis for learning medicine (Billett and Sweet, 2018) and the importance of learning through work is a universally accepted notion in medical education (Liljedahl *et al.*, 2019). Medical students rotating through clinical placement has been the mainstay of medical education for a century; however, there is limited knowledge on *how* the learning happens (Dornan *et al.*, 2014). In response, the central aim of this thesis is to discover more about this ‘how’. Political debate indicates the requirement for a greater importance to be placed on supporting student learning through facilitating their participation in practice on clinical placements; however, policy is yet to fully reflect this (Spilg, Siebert and Martin, 2012). Increasing student numbers is also placing pressure on securing clinical placements (Nyoni, Dyk and Botma, 2021) and particularly students within the later years of the course perceive a negative experience on their learning from a large number of students on placement (Hess, Miles and Bowker, 2022). Clinical placement learning is both a dynamic and complex socialisation process intended to bring medical students into the culture and profession (Mann, 2011); however, how best to facilitate this type of learning is a key question for health professionals and requires further research (Dornan, Scherpbier, Boshuizen, 2009; Greaslish and Ranse, 2009). This need for greater understanding is underscored through General Medical Council guidance which stipulates that contributing to teaching is a professional obligation for *all* doctors and is expressed in their Hippocratic Oath (Mulholland, McNaughten and Bourke, 2022). Section 7.6 in Chapter 7 (Conclusion) provides an overview of implications for educational practice to support this need. This section of literature highlights the historical importance of learning through practice but also the increasing recognition of the future importance of healthcare professionals and students learning within and through real work, as well as the need for more research in this field.

3.2.3 Fundamental nature of clinical placement learning and associated challenges

Student learning during clinical placements and within clinical settings is a central component of all undergraduate health programmes (O’Brien, McNeil and Dawson, 2019), particularly the later years of the course in medicine (Smith *et al.*, 2013). Clinical placements

are planned blocks of time where medical students go to real healthcare settings for educational purposes to interact with a diverse range of patients and are designed to equip students with the requisite knowledge, skills and behaviours of a newly qualified doctor (General Medical Council, 2023). An archetypal undergraduate medical curriculum involves students undertaking a range of clinical placements once the theoretical, scientific and practical foundations have been laid (Dornan *et al.*, 2014). These placements normally involve time spent in hospital clinical units or the community (Dornan *et al.*, 2014), and they form a significant proportion of students' medical education (Tai *et al.*, 2017). Undertaking clinical placements utilises different skills to learning within a classroom (Tai *et al.*, 2017) because students are applying their knowledge in authentic, dynamic professional environments that will be useful for their work as a future doctor (Stalmeijer *et al.*, 2009). Through these clinical placements:

> "Students develop a sense of themselves as (future) doctors, become able to provide compassionate patient care, learn to work in different contexts of care, and have the breadth and depth of experience that makes them proficient in the tasks of newly qualified doctors." (Dornan *et al.*, 2014, p.733).

General Medical Council policy explicitly emphasises the importance of clinical placements and learning in the workplace (Yardley *et al.*, 2013). Moreover, medical professional and regulatory bodies are exponents of both early and ongoing clinical learning experiences for medical students (Chen *et al.*, 2014). However, the quality of student learning during clinical placements also has numerous challenges (Mennin, 2021), for example:

- a lack of clarity regarding educational roles (Kehoe and Illing, 2017);
- that teaching and supervision have less prestige and pay than other career tracks (Sethi *et al.*, 2017);
- limited dedicated teaching time for clinical educators (General Medical Council, 2017);
- difficulties with balancing clinical work and educational responsibilities (Sethi *et al.*, 2017).

To develop competent future doctors, these insights draw attention to the fundamental and integral nature of clinical learning within undergraduate medicine programmes but also key issues faced with its effective delivery in practice.

3.3 Workplace learning in clinical environments

This section illustrates the importance of workplace learning within clinical environments by considering definitions, types of knowledge developed, the perennial balance between service provision and education, the value of participating in practice and within authentic clinical experiences, the importance of social interactions, professional identity formation and factors which facilitate and inhibit learning.

3.3.1 The concept of workplace learning in a clinical environment and its importance

Learning happens as a result of being an active, thinking human and throughout history, most professions have been learnt through participating in work practices, which includes being given informal advice but rarely structured teaching (Billett, 2016). However, in the present day, an awareness of learning through participation in work activities is often overlooked because the concept of 'learning' is most closely associated with formal 'teaching', even though social participation provides the majority of a person's learning (Eraut, 2007). Based on his own research and that of others, Teunissen (2015, p. 844) points out that he regularly sees that "learning is an inevitable result of acting, and that maintaining or improving performance requires learning". Therefore, social participation in practice and learning are both part of the same process (Teunissen, 2015). This viewpoint also aligns with Etienne Wenger's (1998) view and CoP theory.

The concept of workplace learning refers to learning within a setting that is principally focused on practice, which is 'work' (Liljedahl, 2018). When medical students engage with learning through work and are able to build relationships in the clinical environment, this then supports their preparedness *for* work (Roberts *et al.*, 2017). Workplace learning literature is increasingly focusing on and emphasises the concept of learning as participation, in comparison with learning as acquisition, for example, via teaching and learning *about* work (Strand *et al.*, 2015). Early career professional learning through work typically involves an accumulation of a wide array of experiences which are not consciously processed (Eraut, 2007), and which help develop tacit knowledge (Billett and Choy, 2013). This type of knowledge is difficult to measure as specific competencies but it can have a

significant influence on a person's values and behaviours (Teunissen, 2015). People are also often unaware of how it influences them (Eraut, 2007). Indeed, effective workplace learning is influenced through the richness of the activities and interactions students participate in, including their level of engagement (Chen *et al.*, 2014). Through this social participation, students interpret their experiences and construct knowledge from it (Watling *et al.*, 2012). Therefore, learning and clinical competence are honed through participating in familiar but also a range of novel experiences (Billett, 2016). This literature points to the importance of workplace participation experiences for enhancing learning, particularly when directly compared with individuals acquiring knowledge from teaching. This importance aligns closely with a key tenet and philosophical assumption of Wenger's (1998) CoP theory.

3.3.2 The nature of the clinical workplace environment

The workplace is a key site for medical student learning and "Workplace learning is as old as medicine itself." (Dornan, 2012, p. 15), highlighting their fundamentally inseparable nature. The clinical workplace environment can also be perceived as a community of practice (CoP) (Chen *et al.*, 2014; Hägg-Martinell *et al.*, 2014; Kell, 2014). These communities of practice can be complex, rich, dynamic environments (McKenzie, Burgess and Mellis, 2020), which can provide valuable learning opportunities (Gonzalo *et al*., 2017). They can also help develop a student's competency and are an "inescapably important place in medical education" (Dornan *et al.*, 2019, p. 1098). Clinical placements form part of medical student studies (Sellberg, Palmgren and Möller, 2021). They allow for formal learning from classroom-based experiences to be applied in an authentic clinical context, helping to bridge the gap between theory and practice, develop practical skills and progress on the trajectory towards becoming a member of the profession's CoP (O'Brien, McNeil and Dawson, 2019). These environments are characterised by participation in practice which enable guided learning from work activities and within a workplace curriculum (Morris and Eppich, 2021). The process of learning in the clinical workplace can be opportunistic, chaotic and scary (Cantillon *et al.*, 2016). However, it is fundamental to health professions education (Stoffels *et al.*, 2019; Nyoni, Dyk and Botma, 2021) and for students to experience this complexity (Illing *et al.*, 2013). The clinical workplace provides unique social and physical environments as well as authentic patient interactions and activities which afford student learning

opportunities that cannot be realistically replicated elsewhere (Billett, 2016). These settings are where the future doctors learn, begin to form their professional identity and become familiar with patient care which shapes their practice (Gill, Whitehead and Wondimagegn, 2020).

Clinical workplace settings are primarily focused on healthcare provision with the secondary function being a learning environment for students (Eppich *et al*., 2016; Manninen, 2016). Clinical practice typically strives to achieve a balance between these two factors (Sellberg, Palmgren and Möller, 2021). This can sometimes lead to learning opportunities being overlooked by clinical educators (Manninen, 2016). For medical students, it is valuable for these workplaces to be perceived as learning environments (Smith *et al.*, 2013). However, an intentional approach is required to ensure that they provide this (Dornan, 2012). Students perceive the characteristics of a beneficial learning environment "as one where management, planning and organising are aligned and support learning" (Hägg-Martinell *et al.*, 2014, p. 15). The General Medical Council, which regulates medical education, states that students require supportive clinical placement experiences (General Medical Council, 2018) and reports from students indicate that they describe their learning environment as generally supportive (General Medical Council, 2021b) and provides high quality supervision and training (General Medical Council, 2017, 2018, 2019, 2020b, 2021b). Collectively, the evidence reviewed here establishes the reality that students will participate within multiple communities of practice during clinical placements. Whilst these experiences are dynamic and potentially intimidating, they provide unique and essential experiences which are fundamental to their future work as a doctor.

3.3.3 Transitions into the clinical environment

For students, transferring learning from university to the clinical workplace is difficult without the first-hand experience of doing or seeing 'it' within a relevant context (Billett and Choy, 2013). An example of this is how students should interact with patients (Burgess and Mellis, 2015a). Learning in the clinical environment is perceived as a difficult transition following learning within the university (Kehoe and Illing, 2017). This transition requires students to orientate themselves to a patient-centred environment (Walters and Brooks,

2016). The transition can also increase stress and anxiety that inhibit learning (Atherley *et al.*, 2016). Clinical placements can also increase feelings of vulnerability (Adema *et al.*, 2019) and students attempt to navigate these complex environments without significant knowledge or experience with workplace learning (Liljedahl *et al.*, 2019). The environment's complex, sometimes unstructured nature can also lead students to overlook useful learning opportunities (Olmos-Vega *et al.*, 2019). However, a learning environment which promotes being involved in the 'saying' and 'doing' of clinical work helps to enable student participation and feelings of being a legitimate member of the CoP (Kjær, Strand and Christensen, 2022). In reality, it is unlikely that there will always be a positive and welcoming learning environment on all clinical placements due to the continual NHS resourcing and workplace pressures (O'Brien, McNeil and Dawson, 2019). Experiencing limited hospitality can lead to students feeling marginalised (Eggleton *et al*., 2019). Also, students can experience a lack of friendliness, trust, empathy, humiliation and even mistreatment (O'Brien, McNeil and Dawson, 2019). Furthermore, when an appreciation of the value of education is not present in this environment, this can leave students feeling abandoned, but when it is present, this can improve their motivation (Dornan, 2012). This body of work underscores the important point that medical students are entering an environment which includes real patients and one where they are expected to learn in settings where the focus is on the provision of healthcare and not solely their education. This focus is likely in stark contrast to their previous experiences within schools and university. Therefore, a deeper understanding about *how* students learn and form their professional identity in these environments is of critical importance to multiple stakeholders, including the students themselves, which this thesis seeks to explore.

3.3.4 Factors enhancing and inhibiting student learning

The new knowledge and skills students learn in the clinical environment are more relevant to their future practice with patients (Dornan *et al.*, 2014) and help develop their competency (Kandiah, 2017). Student understanding is also more developed due to the relevance of the clinical context (Burgess and Mellis, 2015a) and they perceive early exposure to clinical environments as an opportunity to familiarise and become accustomed to their future work settings (Dornan *et al.*, 2014). Medical students must learn about

diseases and their management but there are a multitude of other areas to learn about the profession, for example, the language used, existing hierarchies and how power is distributed, behavioural, relationship and dress norms (Cruess *et al.*, 2015). They must also develop professional values, as well as an understanding of patient perspectives (Yardley *et al.*, 2013). In addition, the social interactions students experience are fundamental to the functioning of the clinical setting but are also integral to student learning (King *et al.*, 2019) and their PIF (Adema *et al.*, 2019). This learning through work also aids a student's professional socialisation (Dornan *et al.*, 2014) which is a process where an individual adopts the norms and values of a particular group thereby learning to function within it and leading to an altered sense of self (Cruess *et al.*, 2014).

Examples of factors which enhance student learning during clinical placement are:

- being welcomed into and being able to contribute to its activities (Kandiah, 2017);
- active participation in the practice (Tanna, Fyfe and Kumar, 2020);
- interactions with patients (Hindi, Willis and Schafheutle, 2022);
- discussions with their supervisors about patient care (Hägg-Martinell *et al.*, 2017);
- their motivation (Timothy, Manie and Pienaar, 2024);
- the learning opportunities inherent within the clinical environment (McKenzie, Burgess and Mellis, 2020).

In contrast, examples of factors and challenges that inhibit student learning during clinical placement are:

- feeling like a guest (Liljedahl, 2018) rather than a legitimate member of the CoP (Hill, Gayle and Egan, 2011);
- spending time trying to understand their role (Kelleher *et al.*, 2024);
- experiencing more of a passive observer role (Horsburgh and Ippolito, 2018);
- an absence of scaffolded responsibility and appropriate support (Chen *et al.*, 2014);
- limited time to build relationships with CoP members and work alongside role models (Horsburgh and Ippolito, 2018).

3.4 The importance of participation in practice for the development of medical students' learning and professional identity

This section illustrates the importance of student participation in practice through considering affective, pedagogic and organisational support, and professional identity formation. The following introductory section explains what participation in practice is and its importance for student learning and PIF.

3.4.1 Participation in practice

3.4.1.1 The concept of participation in practice

Active participation in authentic activities within clinical environments, which are focused on real patient care are beneficial to the development of a medical student's learning (Hindi, Willis and Schafheutle, 2022) and PIF (Lin and Basaviah, 2021). This viewpoint is a consensus within the literature. However, *how* this learning happens is less certain and understood (Dornan *et al.*, 2014).

For medical students undertaking clinical placements "The phrase 'supported participation in practice' best describes the educational process" (Dornan *et al.*, 2014, p. 722). Ledger and Kilminster (2015) explain that all aspects of social participation during clinical placement can offer learning opportunities because learning takes place both within and via practice. Medical students require these real experiences with practice and patients to be ready for the actual work of a doctor (Dornan *et al.*, 2019), underlining the essential link between participation in practice and developing the ability to perform competently in the clinical workplace. This type of learning has been described as happening:

> "within relationships between students, patients, and doctors, supported by informal, individual, contextualised, and affective elements of the learned curriculum, alongside formal, standardised elements of the taught and assessed curriculum" (Dornan *et al.*, 2014, p. 722).

Participation in practice emphasises the social processes between different people and not the individual medical students, clinical supervisors, patients or other members of the CoP

(Steven *et al.*, 2014), which underlines the importance of the sociocultural nature of the clinical environment and sociocultural learning theories, such as CoP theory (Wenger, 1998). This participation can be perceived as a "co-trajectory or co-journey involving others along the way" (Lardier *et al.*, 2024, p. 1). From both a CoP theory (Wenger, 1998) and medical education perspective, it is not immediately evident whether patients would also be included as a CoP member. Utilising Wenger's definition of a CoP post-1998:

> "learning partnership among people who find it useful to learn from and with each other about a particular domain. They use each other's experience of practice as a learning resource. And they join forces in making sense of and addressing challenges they face individually or collectively." (Wenger, Trayner and de Laat, 2011, p. 12).

It seems likely that patients could be deemed a CoP member if they actively and in an ongoing manner participate, learn from (for example, their healthcare practitioners) and also contribute to the shared knowledge of that group about, for example, their health condition. Therefore, decisions on who is deemed a CoP member would need to be considered on a case-by-case basis, according to Wenger's explanation of what constitutes a CoP.

Participation requires students to learn a wide variety of situated professional practices and communication skills in communal social structures (Cantillon *et al.*, 2016). This social nature of healthcare is underscored through more modern trends recognising the value of learning as participation (Eppich *et al.*, 2016) rather than simply as the acquisition of knowledge (Steven *et al.*, 2014). In contrast however, the historically deep-rooted focus for doctors on learning by acquisition, rather than supported participation, may be the reason that educators still concentrate more on a teaching curriculum rather than a work-based learning curriculum (Strand *et al.*, 2015). Whereas, key proponents of the centrality of supporting participation in practice, such as Tim Dornan (Dornan *et al.*, 2007; Dornan *et al.*, 2014), emphasise sociocultural perspectives and the importance of participation in authentic clinical activities, interactions with doctors and patients, and apprenticeship-style roles to support learning and PIF. This apparent tension in the literature relating to the value placed on different conceptualisations of learning underscore the need for greater insight into how medical students learn and form their professional identity in clinical environments, which is the central focus of this research.

The social participation of medical students within the practice of the clinical community enables them to become part of this CoP (Taylor, Anderson and Gay, 2023). Student participation in practice is typically legitimate and peripheral (Kelleher *et al.*, 2024) and it should also be both "'gradual and progressive'" (Tanna, Fyfe and Kumar, 2020, p. 305). These incremental experiences are still fundamental to a student's development (Adema *et al.*, 2019). Progress towards full participation in a CoP is a function of both the CoP and student preparedness (Hill, Gayle and Egan, 2011). For example, for students to progress towards becoming full members, opportunities and responsibility must be offered by the CoP and seized by the student (Yardley *et al.*, 2013), demonstrating the important medical student characteristic of proactivity, which is explored further in Section 3.5 of this chapter. A student's experience on clinical placement is supported by them being integrated into and helping them feel part of the CoP, being clear on what activities they will engage with and when, observing them undertaking clinical activities and providing feedback, as well as being clear on who they should speak with if they need support (General Medical Council, 2023). The authentic nature of participating and feeling legitimate is key to student learning on placement (Dornan *et al.*, 2019) in contrast with, for example, a pretence of being *told* that they are a legitimate member (Jaye, Egan and Smith-Han, 2010). Students also perceive the label of 'just a medical student' as a barrier to participating meaningfully in the activities of the CoP (Tanna, Fyfe and Kumar, 2020).

The literature analysed within this review exhibits a consistent methodological pattern that offers both strengths and limitations. Studies tend to adopt a qualitative approach and use thematic analysis for data analysis. These studies typically use established learning theories to help interpret the data, which provides a rich empirical and theoretical picture of learning. The implication is that these studies appear strong at explaining how learning happens. However, there is a pattern of relatively small sample sizes (for example, between ten to 20 participants) and studies which are localised to one institution or clinical programme, which increases the risk of institutional and cultural bias. It was not within the remit of this study and its resources to increase the sample size, to collect data over a longer period of time (for example, for an entire year of placements or a single, longer placement) or to collect data from multiple NHS trusts or educational institutions. These limitations

form the basis for recommendations for future educational research (see section 7.7.2 in Chapter 7, Conclusion).

A second limitation identified within the analysed literature is the scarcity of systematic reviews of the evidence-base, with Dornan *et al.*'s (2014) being an example of a particularly relevant and comprehensive analysis of how and what medical students learn in clinical settings. This field would benefit from an increase in systematic literature reviews to bring together evidence from the numerous individual, relatively small-scale and localised studies to help produce a more coherent view on what is known about medical student learning and identity formation within clinical placements. In addition, this would also help identify patterns, inconsistencies and gaps in knowledge, supporting the identification of relevant future research. Furthermore, a third pattern in the evidence-base is that there is limited use of longitudinal research to understand how, for example, learning and identity evolves over time. Many studies rely on data collection methods, such as interviews. These retrospective viewpoints increase reporting risk bias through a potential issue with learning and identity formation being described differently to how it occurred. This methodological weakness informed this study's use of both longitudinal and cross-sectional data collection methods.

The literature presented in this section demonstrates the importance of students participating in practice within the sociocultural clinical environment, in addition to illustrating the dynamic, relational nature of the setting and the value of students being made to feel a legitimate member of the CoP. Furthermore, the review has critically examined key conceptual and methodological issues within the literature which underline the need for further research into this important area.

3.4.1.2 The importance of participation in practice

Participation in practice during clinical placement helps medical students to, for example:

- apply their formal learning (Horsburgh and Ippolito, 2018);
- develop their retention and recall of information (Burgess and Mellis, 2015a);

- develop a greater appreciation of the nature of real clinical practice (Dornan, Scherpbier, Boshuizen, 2009);
- learn tacit knowledge required for workplace performance (Illing *et al.*, 2013);
- learn new skills (Kandiah, 2017), for example, communication skills (Hindi, Willis and Schafheutle, 2022);
- develop capability (Dornan *et al.*, 2019) which helps students perform in complex, dynamic situations (White, 2010);
- learn new professional behaviours, values and attitudes (Hill, Gayle and Egan, 2011);
- improve their confidence (Thyness, Steinsbekk and Grimstad, 2022), motivation (Tanna, Fyfe and Kumar, 2020) and emotional well-being (Hägg-Martinell *et al.*, 2014);
- identify further learning opportunities (Nolan and Owen, 2021);
- become progressively independent through developing social and emotional skills (King *et al.*, 2019);
- develop insights into future career paths and preferences (Parker, Hudson and Wilkinson, 2014);
- become lifelong learners (Tanna, Fyfe and Kumar, 2020).

Medical students learning during clinical placements can also have wider beneficial impacts such as a positive influence on the learning of CoP members and improvements in the culture of the CoP (Alsio *et al.*, 2019). Also, CoP members can experience an improved feeling of satisfaction from supporting student learning (Grealish, Bail and Ranse, 2010). This accumulated research clearly demonstrates the wide ranging influence that effective participation in practice can have on medical student learning.

Affective, pedagogic and organisational support, and professional identity formation

Medical students typically learn on clinical placements when they experience positive interactions with CoP members (affective support), guidance from more experienced practitioners and chances to observe and interact with role models (pedagogic support), as well as opportunities to contribute to authentic clinical activities focused on real patient care (organisational support) (Dornan *et al.*, 2014). The following three sections relating to

supporting student learning in the clinical workplace are organised under the headings from the Dornan *et al*. (2014) article. There is not a neat conceptual demarcation for all concepts to accurately fit under each heading (affective, pedagogic or organisational support) because sometimes there is overlap, commonality or logical relations between them. However, to aid comprehension, they have been placed under a relevant heading.

3.4.2 Affective support

Affective support comes from doctors and other members of the CoP which influence a student's mood, emotions and state of mind (Dornan *et al*., 2014). Medical student learning is illustrated by the importance of social interactions and building relationships with CoP members, as well as the value of students feeling legitimate and being supported with legitimate peripheral participation.

3.4.2.1 The importance of social interactions and building relationships

Feelings of uncertainty are normal for students when they begin to navigate a new clinical environment on placement, at the same time as learning new skills and being socialised into the norms of that discipline (Kelleher *et al.*, 2024). Brown and Horsburgh (2022) underscore the centrality of relational approaches in medical education. Developing these relationships between students, CoP members and patients is an important influence on students' learning (Peter, Engel-Hills and Naidoo, 2024) and their experience of placement (Adema *et al.*, 2019). These interactions can further support students' legitimate peripheral participation and PIF (Thomas *et al*., 2025). In particular, the student-supervisor relationship has an important influence on student learning and the achievement of learning outcomes (Sellberg, Palmgren and Möller, 2021). Students typically welcome spending one-to-one time with their clinical supervisor to discuss their learning, progress and to receive feedback (Newbronner *et al.*, 2017). Their learning is also supported through regular, positive social interaction between themselves and the supervisor (van der Zwet *et al.*, 2014). These interactions are enhanced when both the supervisor and student display a genuine interest in getting to know each other which helps students to participate and offer their knowledge to the CoP (Thrysoe *et al.*, 2010). The development of a positive relationship between the

student and supervisor can also help students to feel more psychologically safe (Thyness, Steinsbekk and Grimstad, 2022), enable them to become progressively independent and autonomous, and to assume greater responsibility (Kirtchuk and Markless, 2023). In addition, these relationships are a key factor leading students to evaluate a clinical placement as a success (O'Brien, McNeil and Dawson, 2019). As trust increases between the clinical supervisor and student, this then leads to further co-participation together (Taylor, Anderson and Gay, 2023).

Students view their clinical supervisor as a gatekeeper to their social participation within a CoP (Liljedahl *et al.*, 2015). In addition, common factors which influence the degree of student participation are the clinical supervisor's motivation, time for student-supervisor interaction, suitable scaffolded learning opportunities and the student's agency to participate (Taylor, Anderson and Gay, 2023). It is important that the clinical supervisor promotes student proactivity and their social participation with both the CoP activities and its members, and not just a focus on learning the required clinical skills (Roberts *et al.*, 2017). A structured approach from the clinical supervisor and providing appropriate responsibility for patient care can positively influence a student's motivation. However, in contrast, a lack of practical guidance, poor or limited communication and negative behaviours from either the clinical supervisor or student can inhibit a student's opportunity to contribute to patient care, and may negatively influence their sense of belonging with the CoP (Wijbenga *et al.*, 2020). In addition, workplace pressures can also mean that it is more difficult for clinical supervisors to involve the more quiet and reserved students (Horsburgh and Ippolito, 2018).

Feeling part of a CoP via positive relationships is perceived as valuable by a student for their learning and can engender a sense of belonging (Nyoni, Dyk and Botma, 2021). This sense of belonging is important to enable the student to progress towards fuller participation within the CoP (Hill, Gayle and Egan, 2011). This 'fuller' participation helps students to form meaningful relationships with its members (Taylor, Anderson and Gay, 2023). In particular, participation and building relationships supports the learning of requisite knowledge and values of the profession (Tobbell and Roberts, 2023). In addition, building these positive relationships can enable students to access additional participation opportunities (Hauer *et al.*, 2012) and can support their professional socialisation (Kirtchuk and Markless, 2023). The

continuity of these interactions is also an important factor which influences student learning (Stoffels *et al.*, 2019) and educators' satisfaction (Strasser and Hirsh, 2011). Moreover, supporting patient care and developing relationships with patients over time also supports student learning (Roberts *et al.*, 2017). Therefore, continuity in clinical supervision and patient care activities is important to facilitate students to take on more responsibility within the CoP and to build these relationships (Walters and Brooks, 2016). Building relationships with other CoP members can enable students to access support from peers, for example, other healthcare students on placement (Nyoni, Dyk and Botma, 2021). This peer support can improve student participation and learning in the clinical workplace (Kandiah, 2017) but they can also feel competition in gaining access to meaningful learning experiences (Adema *et al.*, 2019). This body of research provides compelling evidence of the value of a positive, reciprocal approach between students, CoP members and patients to relationship building, and the benefit this has for students' feelings, participation, learning and PIF. These insights are significant for this study because it underlines the importance of research that explores the sociocultural nature of clinical environments and the interconnection with student participation, learning and PIF.

3.4.2.2 Feeling legitimate and the process of legitimate peripheral participation

As explained in Section 2.3 in Chapter 2 (Theoretical framework), legitimate peripheral participation is the process through which "newcomers become part of a community of practice" (Lave and Wenger, 1991, p. 29) and typically entails an inbound trajectory into the CoP supported by active participation (Lave and Wenger, 1991). Student learning is supported through them assuming legitimate roles and greater responsibility over time within the CoP (Leedham-Green, Knight and Iedema, 2020; Taylor, Anderson and Gay, 2023). The provision of specific roles helps students to feel they are becoming more of a legitimate member of the CoP (Liljedahl *et al.*, 2019). Only observing from a peripheral position is not wholly sufficient for supporting student learning (Hill, Gayle and Egan, 2011) or their feelings of preparedness for practice, particularly those in the later years of an undergraduate medicine course (Illing *et al.*, 2013). In addition to supporting learning and feeling legitimate, participating in authentic activities typically has a positive influence on students' PIF (Liljedahl *et al.*, 2019; Taylor, Anderson and Gay, 2023). Specifically, observing

and working alongside role models can also support a student PIF (Liljedahl *et al.*, 2019; Leedham-Green, Knight and Iedema, 2020). For students to feel that they are participating legitimately, it is important that they are welcomed and invited to do so (Liljedahl *et al.*, 2019), are accepted as members of the CoP and granted access to the shared knowledge (Taylor, Anderson and Gay, 2023). They should also be supported to practice safely within their zone of proximal development (Gillespie *et al.*, 2022). Simply expressed, the zone of proximal development is where educators "should pitch what we teach so that it is slightly too hard for students to do on their own, but simple enough for them to do with assistance" (Wass and Golding, 2014, p. 671). Learning is more effective when students work within their zone of proximal development (Goldszmidt and Lingard, 2018; Kelleher *et al.*, 2024).

When a student's participation is not conveyed as legitimate, this can inhibit their participation (Cooke, Irby and O'Brien, 2010) and lead them to be marginalised and experience feelings of exclusion (Terry *et al.*, 2020). Feeling legitimate is not something that students perceive as guaranteed, even within the medical student role (Yardley *et al.*, 2013). When students do feel a legitimate member of the CoP and when they receive support from CoP members they typically participate more effectively (Connor, 2019). To support this, it can be helpful when authentic opportunities to learn are offered or created so that this participation is legitimised, for example, through taking a patient's history (Horsburgh and Ippolito, 2018). Student learning through legitimate peripheral participation is also supported when they understand the clinical workflow and have a clearly defined role, engage in clinical decision making and patient discussions, and receive timely feedback (Herzog *et al.*, 2023).

Where CoP members encourage participation and demonstrate an interest in a student's learning, this can lead to their greater proactivity and involvement (Boor *et al*., 2008). In addition, participation and learning has a bearing on student confidence and motivation (Dornan *et al.*, 2014). However, feeling unconfident can influence the extent to which students will attempt to engage with patients (Barrett, Trumble and McColl, 2017). Supporting students to feel resilient will also help mitigate any psychological impacts of transitioning into clinical placements (Atherley *et al.*, 2016). In contrast, not feeling psychologically safe (for example, by appearing incompetent or a fear of negative consequences from their actions) can lead a medical student to withdraw from participation

(Thyness, Steinsbekk and Grimstad, 2022). In line with the concept of legitimate peripheral participation, this literature outlines the value of students feeling and being recognised as legitimate, and of them moving from a peripheral position in the CoP via a supported process of actively participating in authentic activities alongside role models and incrementally assuming responsibility. The research also draws attention to the potential negative aspects of a lack of support for this process.

3.4.3 Pedagogic support

Pedagogic support comes from role modelling, informal interactions, supervision, teaching and being helped to engage with practice-based learning (Dornan *et al.*, 2014). Medical student learning is illustrated by considering student roles, responsibilities and goal setting; aligning appropriate learning activities with each student's zone of proximal development; facilitating students' active participation with authentic, patient care focused activities and patients themselves; providing opportunities to observe, imitate and listen to role models; encouraging student proactivity; individualised feedback, professional dialogue and patient care focused conversations.

3.4.3.1 Roles, goals and the zone of proximal development

Learning through practice is key for students and this is supported by having clearly defined roles (Illing *et al.*, 2013) and responsibilities, which will help them participate (Wijbenga *et al.*, 2020). The increase in learning through practice is key to help students prepare for their future doctor role and having students who are more fully prepared for their first post after graduation is a recognised need (Illing *et al.*, 2013). It is also important for students to have clear goals for their clinical placements because these provide a focus for development which also helps to maintain their commitment, engagement and motivation (Swanwick, 2005). Knowing what activities are being undertaken and why, and the different practitioner roles and responsibilities, rather than solely attempting to master the associated medical knowledge, is part of effective learning (Cooke, Irby and O'Brien, 2010). Having the student role identified to others and that their purpose is to learn, can also be helpful for the medical student's psychological safety (Thyness, Steinsbekk and Grimstad, 2022).

A student's experience of clinical placements is typically positive where they feel part of the CoP, have opportunities to practise independently and can practise at a level which corresponds to their current competency (Davis *et al.*, 2019). The degree of student participation in practice on clinical placement varies widely (Egan and Jaye, 2009). It is also influenced, for example, by their previous experience of clinical practice, their values, personal agency, history (Liljedahl *et al.*, 2019) and background (Eppich *et al.*, 2016). Each student's experience and competency will provide an indication of the level of participation they can engage in at the beginning of each clinical placement (General Medical Council, 2023). An individual student's previous experience and readiness will also influence the level of value they place on a range of learning opportunities (Billett and Sweet, 2018). In addition, students can also be strategically selective on what activities they choose to engage with (Liljedahl *et al.*, 2019). Therefore, clinical supervisors should adopt an individual approach to each student when explaining the expectations of the placement, taking into account their stage of development (Cruess *et al.*, 2015). Indeed, working beyond a medical student's zone of proximal development can create negative consequences, for example, frustration or confusion (Billett, 2016). All too often, the clinical environment can lead students to focus less on the opportunities to learn and more on the pressure to perform (Lin and Basaviah, 2021). Therefore, it is important that students do not participate beyond their current level of competence and they should discuss their perceived current level with their supervisor (Tanna, Fyfe and Kumar, 2020). To support this, clinical learning environments should promote an approach whereby students are encouraged to be curious and are not expected to perform too far in advance of their current level of knowledge and expertise (Lin and Basaviah, 2021). The reviewed studies reveal the importance of educators being organised, engaging in planning for effective learning, as well as providing individualised experiences, where possible, which builds upon their students' starting points. This underlines the value of educators getting to know their students and building a positive relationship which includes regular communication. Taken together, these underpin the importance of effective supervision.

3.4.3.2 The importance of active participation in practice

The General Medical Council (2023) states that medical students should "play an important role in supporting patient care" (p. 4). This active participation in a clinical CoP focused on authentic patient care supports their learning (Latessa *et al.*, 2017), PIF (Warmington and McColl, 2017), the ability to form professional relationships with CoP members (Smith *et al.*, 2013) and creates a sense of belonging with the CoP (Wijbenga *et al.*, 2020). However, participation in practice does not always happen naturally, nor are the opportunities to do so always self-evident (Liljedahl *et al.*, 2019). Students may require help to identify suitable opportunities to participate and, at times, the permission to do so (Horsburgh and Ippolito, 2018). Students often experience more of a passive, observer role during clinical placements (Kjær, Strand and Christensen, 2022). However, active participation will increase a sense of authentic learning (Liljedahl *et al.*, 2019) and this is essential for students to develop into doctors (Hauer *et al.*, 2012). For example, students typically begin by observing professional conversations and performing procedural skills, which then leads onto more complex tasks such as taking a history or performing examinations (Taylor, Anderson and Gay, 2023). The learning opportunities students participate in should be a routine part of the CoP activities; in other words, be authentic, challenging and focused on real patient care with real patients (Taylor, Anderson and Gay, 2023). Students value activities which enable them to contribute towards patient care (Ledger and Kilminster, 2015) and typically enjoy placements that allow them to do so (Kandiah, 2017; Tanna, Fyfe and Kumar, 2020). Furthermore, well cared for patients enable students to feel safe to participate and focus on their learning (Thyness, Steinsbekk and Grimstad, 2022) and being a hindrance, making mistakes or even hurting patients can be a concern for some students (Hill, Gayle and Egan, 2011). Effective active participation activities include, for example, conducting patient assessments, presenting these findings to their supervisor, being involved in patient management plan discussions and receiving feedback (Tanna, Fyfe and Kumar, 2020). Student participation in practice can support students to contextualise and integrate their theory with practice (Dornan *et al.*, 2014), improve their awareness of holistic care (Walters and Brooks, 2016), learn new knowledge and skills, and help shape their PIF (Hägg-Martinell *et al.*, 2014). However, inauthentic activities purely for the sake of learning lead students to not feel part of the CoP because they do not share the same sense of purpose (Taylor, Anderson and Gay, 2023).

Learning in the workplace is mediated through a person's intentionality and agency, the sociocultural environment, workplace performance requirements and access to the practice (Billett, 2008). The relationship between these factors is interdependent because neither is sufficient alone for effective learning (Billett, 2008). A student's proactivity is the key factor influencing their social participation within the CoP; however, their proactivity is also influenced through other conditions of participation, such as having CoP members with the time and motivation to support their learning with suitable scaffolded learning opportunities and an organised, welcoming environment (Taylor, Anderson and Gay, 2023). Students also typically describe their experience of clinical placements as variable and a 'gamble' when they proactively seek out learning opportunities but find these conditions of participation are not met (Taylor, Anderson and Gay, 2023). The existing evidence demonstrates that participation, learning and PIF are not only facilitated via the affordances, conditions and people within the sociocultural clinical environment but they also stem from the students' themselves and their personal disposition. This highlights the importance of exploring the medical students' perceptions of the relationship between their participation, learning and PIF, which is the central focus of this thesis.

3.4.3.3 Role models and role modelling

In the medical education context, role models can be defined as "a person who is considered as a standard of excellence to be imitated because of his or her professional attributes" (Benbassat, 2014, p. 551). Learning from role models over time significantly influences students' learning (Cruess *et al.*, 2015) and supports their PIF (Koh *et al.*, 2023); however, limited time spent with a potential role model can inhibit the opportunity to observe their behaviours and learn from them (Horsburgh and Ippolito, 2018). Role models can be positive or negative, and clinical supervisors should support students to recognise the differences and to internalise the positive behaviours (Passi and Johnson, 2016). In the clinical setting, typically "Students learn via observation, imitation, and modelling of their tutors" (Burgess *et al.*, 2014, p. 454), as well as, engaging in practice, and observing situated patterns of behaviour and communication practices (Cantillon *et al.*, 2016). Tacit knowledge is typically acquired by students from role models via consciously observing and engaging in practice, in addition to, unconsciously processing patterns of behaviours (Cruess *et al.*,

2015). Students can also aid their acceptance into a CoP by learning and exhibiting these accepted norms and behaviours (Cruess *et al.*, 2015).

Students need to be supported by being provided with patients to clerk and the appropriate levels of role modelling, imitation, supervision, support, feedback and guidance on how to do this effectively, which helps with the unpredictability of patient reactions (Barrett, Trumble and McColl, 2017). Listening (Lundvall, Dahlström and Dahlgren, 2021), sharing experiences and questioning CoP members (Stoffels *et al.*, 2019) can support student learning. Also, observing medical practice can be a powerful learning approach, especially with role models (Stoffels *et al.*, 2019). In addition, student learning is supported when CoP members provide an explanation of what they are doing, along with why and how this influences a patient's care (Taylor, Anderson and Gay, 2023). Observation is still a form of participation but should lead on to greater active involvement in practice (Taylor, Anderson and Gay, 2023). However, both observation and active participation in practice are important influences on student learning (Lundvall, Dahlström and Dahlgren, 2021). A period of observation can support students to increase their level of responsibility (Tanna, Fyfe and Kumar, 2020). When observing, students focus close attention on behaviours which they associate with the role of a doctor, as well as trying to learn unfamiliar clinical language (Horsburgh and Ippolito, 2018). For example, bedside tutorials are perceived as useful learning opportunities by students because they can observe the actions of experienced clinicians and receive feedback on their own actions (Kandiah, 2017). This literature highlights the value of medical students learning from role models and outlines a range of strategies to support this. These insights evidence the interconnection between relationships, participation in practice, learning and PIF, which this study aims to explore.

3.4.3.4 Constructive feedback and professional dialogue

Receiving constructive feedback is important for student learning during clinical placement (Cooke, Irby and O'Brien, 2010; Kandiah, 2017) and "Clinical learning is an ongoing cycle of progress pivoting on feedback" (Kelly and Richards, 2019, p. 5). However, receiving appropriate feedback is a typical complaint from trainees (Harden and Laidlaw, 2021). Feedback to students in the clinical workplace is important for teaching and correcting

students, revealing blind spots, reinforcing desirable behaviour, motivation and improving patient safety and care (Molloy and van der Ridder, 2018). In addition, effective feedback can reduce the gap between desired and actual performance (Burgess and Mellis, 2015b). Student feedback is most effective as a dialogue between the student and educator, and this can support students to be more self-regulated in their learning (Molloy and van der Ridder, 2018).

Billett (2016) explains that practice pedagogies are interactions or activities which augment or enrich the potential for learning from routine healthcare activities. For example, storytelling from experienced staff, sharing mnemonics to build a student's schema around concepts to aid memorisation and recall, involving students in patient handovers, talking out loud when performing tasks, explaining reasoning and engaging in dialogue all help to make the thinking behind actions more explicit (Billett, 2016). Also, where possible, clinical supervisors should 'think aloud' to make their thoughts processes explicit to students because:

> "Many aspects of medical practice are unseen, taking place in the minds of practitioners, engaged in an internal dialogue based around differential diagnosis, clinical reasoning, management planning and exploring prognosis" (Morris, 2010, p. 50).

The existing scholarship highlights that a central aspect of a positive professional relationship between educators and students, should include effective feedback and dialogue around the practice of patient care, which will support students' learning.

3.4.4 Organisational support

Organisational support includes, for example, curriculum planning and sequencing learning experiences, resourcing considerations, the organisational aspects of healthcare and providing "appropriate continuity, access to practice, and opportunities to participate in practice" (Dornan *et al*., 2014, p. 737). Medical student learning is illustrated by considering the learning environment and the culture of the CoP alongside workplace induction and orientation, access to the CoP shared repertoires and the length of the placement.

3.4.4.1 The learning environment and culture of the CoP

Medical students may experience undertaking activities as a marginal member of the CoP; however, it is important for their learning that they are supported to be more of an active member (Liljedahl, 2018). Their learning is also enhanced when they are provided with access to authentic patient care focused activities (Hauer *et al.*, 2012). Creating a safe, supportive, invitational environment within the CoP is also key to a student's participation and learning (Terry *et al.*, 2020). A welcoming environment for students is where they feel more like colleagues (Terry *et al.*, 2020). An attribute of a successfully functioning CoP is one which embeds students into its activities and social structure, which leads to them feeling empowered and supported (Terry *et al.*, 2020). A culture within the CoP and an environment that is supportive of learning can lead students to seek out new learning opportunities (Stoffels *et al.*, 2019), develop positive relationships and to perceive that they are learning more (Hägg-Martinell *et al.*, 2014). In addition, when students feel welcomed and included this can positively influence their confidence and motivation (Dale, Leland and Dale, 2013). It is also helpful for student participation and learning when they understand and align with the shared vision of care of the CoP (Jaye, Egan and Smith-Han, 2010) and its culture (Hägg-Martinell *et al.*, 2016). To minimise barriers to learning, all CoP members should be encouraged to build relationships with the students, encourage them to contribute ideas and, where appropriate, provide guidance and feedback (Terry *et al.*, 2020). This body of work indicates that a positive learning experience is highly dependent on a sociocultural clinical environment which values students and their learning. To uncover more in this important area of research, this thesis utilises a sociocultural learning theory to investigate how student participation, learning and PIF occurs within the clinical environment.

3.4.4.2 Workplace orientation, access to the shared repertoire and placement length

An orientation to the clinical environment and introductions to CoP members is helpful (Rowland and Trueman, 2024). These initiation activities can help orientate a medical student as a member of the CoP, support them to participate and improve their confidence

(Sheehan, Wilkinson and Billett, 2005). An effective induction can also support students' transition to assuming greater responsibility (Tanna, Fyfe and Kumar, 2020). Student confidence is influenced through previous experiences, therefore, pre-placement preparation activities, such as pre-reading would also help (Thyness, Steinsbekk and Grimstad, 2022). Other useful student initiation activities include becoming acquainted with CoP members and their preferences, specific practices, clinical workplace norms (Sheehan, Wilkinson and Billet, 2005), and having sufficient time to recognise and anticipate the social cues of the CoP (Wijbenga *et al.*, 2020). Student participation is supported through being welcomed into the CoP, being provided access to its repertoires (Kirtchuk and Markless, 2023), using authentic workplace artefacts, for example, being able to use your own consultation room (Kjær, Strand and Christensen, 2022) and having clinical activities scheduled for them (Hauer *et al.*, 2012). The length of the placement can also have an influence on a student's participation and learning, for example, over time, students begin to identify themselves as part of the medical CoP, typified through a sense of collegiality and belonging resulting from the collective enterprise of patient care (Kirtchuk and Markless, 2023). Identifying with a CoP aligns with the identification concept (part of the identity component) from CoP theory (Wenger, 1998), therefore, from a theoretical standpoint, this form of identification is likely to influence the medical student's PIF. Shorter placements may provide less opportunity for students to engage in legitimate peripheral participation and progress towards becoming more of a full member of a CoP (Eggleton *et al.*, 2019). Whereas longer placements can provide more opportunity for students to develop their professional socialisation (Nolan and Owen, 2021) and PIF (Spilg, Siebert and Martin, 2012). These studies show the value of an organised, planned learning experience that supports students to access and participate in the practice of the clinical community.

3.4.5 Professional identity formation

This section focuses on the professional identity formation of medical students by considering: definitions and its importance, factors influencing its formation, participation in authentic patient care focused activities, social interactions and professional relationships, role models and role modelling, communication, professional inclusivity as well as social exclusivity.

3.4.5.1 What PIF is and why it is important

The identity transformation of students has been described as "the highest purpose of medical education" (Cooke, Irby and O'Brien, 2010, p. 81) and supporting their PIF is still a key objective of medical education up to the present day (Quaintance *et al.*, 2025). The concept of professional identity in medical education can be encapsulated through Merton's (1957, p. 7) seminal phrase "to think, act, and feel like a physician". For a medical student, the formation of professional identity can be understood by the question "who do I want to become as a physician?" (Moll-Jongerius *et al.*, 2023, p. 2). Becoming a doctor is more than simply developing competencies, it entails PIF (Moll-Jongerius *et al.*, 2023). In other words, the aim of medical education should be more than the acquisition of relevant knowledge and skills, students also require "a professional identity – ways of being and relating in professional contexts" (Goldie, 2012, p. 641). Weaver *et al.* (2011, p. 1221) explain that:

> "Despite being high achievers, medical students find it challenging to be successful as doctors until they have developed their professional identity, which needs to incorporate strong ethical and practice components".

This emphasis on student PIF is reflected in a more recent recognition of its importance within medical education literature (Warmington and McColl, 2017). Contemporary literature explains PIF as more of a facilitated and supported process, rather than, for example, simply being taught professionalism within structured classroom settings (Helmich *et al.*, 2017). Medical student PIF is a key concern for medical education (Haruta, Ozone and Hamano, 2020) and is seen as "the process of internalising the characteristics, values and norms of the medical profession, gradually resulting in thinking, acting, and feeling like a physician" (Moll-Jongerius *et al.*, 2023, p.2). Therefore, student PIF is a process involving a commitment to professional values and goals accepted by the medical profession, and which align with them personally (Holden *et al.*, 2015). The formation of a student's professional identity is a sociocultural process underpinned by participating in authentic workplace activities and the development of relationships between students and CoP members (Tobbell and Roberts, 2023). In addition, medical student PIF is highly influenced through forming relationships with patients as well (Fredholm *et al.*, 2019). This literature

clearly demonstrates the centrality of supporting medical students' PIF to enable them to become capable future doctors.

3.4.5.2 How professional identity forms

PIF is a non-linear (Quaintance *et al.*, 2025), dynamic and continuing process, happening simultaneously, both individually and collectively, and socialises students into becoming a doctor (Irby and Hamstra, 2016). This identity is in a constant process of transformation (Goldie, 2012) and typically occurs sub-consciously (Passi and Johnson, 2016). Increasing competence and confidence from playing the doctor role then becomes internalised and the student eventually moves from 'doing' to 'being' (Cruess *et al.*, 2014). However, PIF is also recognised as a gradual process that happens in stages and which primarily occurs within a clinical environment (Cruess, Cruess and Steinert, 2016), as well as being shaped by context and culture (Dornan *et al.*, 2014). The ambiguity in the literature of whether medical student PIF is an ongoing, non-linear reconstruction of identity or if it is more linear, stage-like and incremental, highlights the need for greater insight into students' clinical experiences longitudinally. This would develop a more comprehensive picture of how professional identity forms over time, in addition to key factors which enable and inhibit its formation, which this study investigates.

In line with Wenger's CoP theory (1998), PIF is formed through a process of both participation and reification, which enables the negotiation of meaning (Cho *et al.*, 2024). Students continue to rework identity via social participation, experimentation and feedback to behave in a socially acceptable way in the clinical environment (Leedham-Green, Knight and Iedema, 2020). The formation of a student's professional identity is also typically influenced by, for example:

- informal workplace experiences with CoP members and patients rather than formal teaching experiences (Goldie, 2012);
- a subconscious process of participation into the social norms and behaviours of the CoP (Passi and Johnson, 2016);
- interaction with fellow students, the clinical context and the people they meet (Adema *et al.*, 2019);

- a conscious awareness of the practice and discourse of the CoP (Jarvis-Selinger, Pratt and Regehr, 2012);
- a range of sociocultural factors, personal characteristics and experiences (Holden *et al.*, 2015);
- workplace learning affordances (Cantillon, De Grave and Dornan, 2022);
- using physical artefacts in different contexts (Warmington and McColl, 2017; Adema *et al.*, 2019);
- undertaking reflection during clinical placements (Orsmond, McMillan and Zvauva, 2022);
- receiving individualised feedback (Jarvis-Selinger, Pratt and Regehr, 2012);
- learning to manage their own positive and negative emotions during clinical placement (Barman *et al.*, 2023);
- developing clinical competence (Kirtchuk and Markless, 2023; Quaintance *et al.*, 2025).

However, low levels of clinical competence can lead to issues with communication which, in turn, may be damaging to a student's PIF (Weaver *et al.*, 2011). This evidence base indicates the complex, dynamic, relational nature of medical student professional identity and the many factors influencing its formation.

3.4.5.3 The importance of active participation in practice

A key influence on a student's PIF is active participation in practice within a CoP (Orsmond, McMillan and Zvauva, 2022; Taylor, Anderson and Gay, 2023). In particular, meaningful participation in practice with patients can support students' feelings of being a doctor, such as performing a physical examination or taking a history (Adema *et al.*, 2019). When students experience early exposure to patient care, this can have a beneficial influence on their PIF (Snell *et al.*, 2020). In addition, PIF is also positively influenced when student participation happens with authentic, real, day-to-day activities focused on real patient care within a clinical environment (McKenzie, Burgess and Mellis, 2020) and even when they are undertaking simple tasks on the periphery of the CoP (Jarvis-Selinger, Pratt and Regehr,

2012). A positive influence on a student's professional identity can also come from students assuming some responsibilities of being a doctor (Kjær, Strand and Christensen, 2022). In contrast, the literature shows that students with a low sense of professional identity can report low motivation, high stress and poor academic performance (Stephenson and Cox, 2025).

3.4.5.4 The importance of relationships, role models, communication and inclusivity

The formation of a student's professional identity is highly relational and social in nature (Cho *et al.*, 2024). PIF is a key process of student learning during clinical placement which is supported through the development of relationships with CoP members (Roberts *et al.*, 2017; Tobbell and Roberts, 2023), patients (Fredholm *et al.*, 2019; Cho *et al.*, 2024), supervisors (Brown *et al.*, 2020; Quaintance *et al*., 2025), peers (Kirtchuk and Markless, 2023) and role models (Cruess *et al.*, 2014). Similar to relationship building, role modelling from CoP members and enabling students to work alongside and observe role models are key influences on student PIF (Passi and Johnson, 2016; O'Doherty *et al.*, 2021; Yamamoto, Obara and Verstegen, 2024).

Alongside the relational influences on a medical student's professional identity, are factors relating to communication, encapsulated through Monrouxe's (2010) assertion, "Medical education is as much about learning to talk and act like a doctor as it is about learning the content of the medical curriculum" (p. 47). A student's professional identity is influenced through not only learning *from* the talk within the CoP but also through learning *how* to talk as a member of the CoP (Kennedy *et al.*, 2009). For example, listening to and engaging in discourse, and appropriating the professional language within the CoP and clinical environment, as well as using this in conversations influences student PIF (Brown *et al.*, 2020). Students form and perform their professional identities through acts of storytelling about clinical situations, where events and people are positioned in relation to each other (Warmington and McColl, 2017).

A sense of professional inclusivity, for example, through attending placements and "doing the work of a doctor," leads to feeling "part of the profession" and "like a doctor" which, in turn, contributes to a student's sense of belonging with the medical CoP and their PIF

(Weaver *et al.*, 2011, p. 1223). Therefore, early patient contact can support a student's PIF (Weaver *et al.*, 2011). Professional inclusivity is encountered by being treated as future doctors by university staff, clinical supervisors and, importantly, patients, which helps to build students' professional identity (Weaver *et al.*, 2011). A sense of social exclusivity also contributes to PIF, where students feel part of a specific group of 'medical students' with a strong sense of shared identity (Weaver *et al.*, 2011).

These insights underline the value of medical students forming a professional identity and how the sociocultural clinical environment influences this. The literature describes how student PIF is a dynamic and gradual process, happening both individually and collectively within a CoP, and is a process that is highly influenced by increasingly active participation in practice, relationships and communication. This body of work helps frame a key aim of this thesis which is to understand how medical student professional identity forms, as well its dynamic relationship with participation in practice and learning.

3.5 Characteristics of effective medical students

The focus of this study centres on *how* medical students learn and form their professional identity as future doctors during clinical placements. Therefore, an understanding of the characteristics of an effective student during these placements is pertinent. This section illustrates the characteristics of effective medical students by considering engagement with goal setting and placement learning outcomes; self-directedness, proactivity and actively seeking learning opportunities; relationship building with CoP members and patients; observation and listening; being reflective and undertaking reflection; demonstrating motivation, enthusiasm, a positive attitude, compassion and empathy.

3.5.1 Self-directedness and proactivity

Student learning is effective when they are self-directed, engage with goal-setting, choose appropriate activities to achieve the goals and monitor their progress (Watling *et al.*, 2012). There is an increasing emphasis on student autonomy relating to their learning (Karakitsiou *et al.*, 2012) and it is important that they take responsibility for any areas of development

identified when on placement (Kilminster *et al.*, 2007). Students should also be familiar with the specific placement learning outcomes and actively record experiences which support their achievement of these (Kilminster *et al.*, 2007).

Students should not perceive their 'medical student' label as a deficit; rather it is important that they be proactive to seek out learning opportunities (Yardley *et al.*, 2013). Most students understand the need to be proactive to create opportunities to participate in the clinical work (Horsburgh and Ippolito, 2018), as well as an intentional approach to learn and become more competent (Kelleher *et al.*, 2024). A proactive approach to become involved in the activities of the CoP is a key attribute which can help them capitalise on learning opportunities (Tai *et al.*, 2017; Wijbenga *et al.*, 2020; General Medical Council, 2023). Students should take the initiative to be "active agents in refining their previous knowledge and conceptions" (Liljedahl *et al.*, 2019, p. 276). Relevant examples of activities include asking questions, taking a patient's history (Thyness, Steinsbekk and Grimstad, 2022), being punctual and prepared for tasks (Kilminster *et al.*, 2007) and reading around the clinical problems faced by patients within the specific placement (Sheehan, Wilkinson and Billett, 2005). Eraut (2007) states that locating the right people (who have the right information) requires proactivity, social understanding and confidence. Therefore, learning opportunities are only useful if students are proactive and choose to engage with them (Burgess and Mellis, 2015a). However, Tanna, Fyfe and Kumar (2020) indicate that there is sometimes a lack of opportunities for medical students to adopt authentic, active roles while undertaking a clinical placement. In a qualitative study focused on undergraduate medical students' experiences, it was found that learning was more likely to happen when the students acted on opportunities to participate, were proactive, demonstrated initiative and maintained focus on their learning (Thyness, Steinsbekk and Grimstad, 2022). Billett refers to personal epistemological practices which encompass a medical student's focused intentional engagement and ongoing responses to both learning opportunities and the clinical social and physical environment (Billett, 2016). These approaches and responses are not only self-directed but also include:

> "interdependent learning: engaging with social partners, objects and artefacts, and actively looking for and drawing on clues and cues from the social and physical

environment of workplaces, and then monitoring progress during task completion" (Billett, 2016, p. 127).

The literature strongly indicates that effective student learning is, in part, driven by them identifying opportunities, taking initiative and demonstrating agency in relation to their learning goals.

3.5.2 The importance of building relationships

A student's preparedness for practice is supported by their proactive engagement with CoP members and the learning affordances of the clinical context (Roberts *et al.*, 2017). Therefore, actively building relationships with CoP members supports student learning (Lundvall, Dahlström and Dahlgren, 2021), helps them to gain access to meaningful learning experiences and enables social participation in practice more readily (Adema *et al.*, 2019). The medical student also bears a responsibility to engage in dialogue to facilitate their participation in the CoP (Liljedahl *et al.*, 2019). Demonstrating motivation and enthusiasm to engage in discussions with CoP members is as important as focusing on their performance on the placement (van der Zwet *et al.*, 2014). Therefore, students should engage with the CoP through introducing themselves and greeting CoP members daily, and seek to understand the roles of different CoP members (General Medical Council, 2023). Medical students should also seek to understand the stakeholders of the clinical environment and CoP because not doing so may impede their learning (Boor *et al.*, 2008). From a patient perspective, if students proactively develop positive, mutual relationships with them focused on joint action, this can then lead to a learning relationship between the two (Manninen, 2016).

3.5.3 Observation and reflection

Eraut (2007) explains that observing and listening requires the comprehension of what has been observed which requires an appreciation of the significance of the event. Therefore, being observant is a key skill for effective learning in the clinical workplace (Cooke, Irby and O'Brien, 2010). In addition, reflection on learning is an important activity to support student

learning on clinical placement (Kilminster *et al.*, 2007) and this can support the development of skills and competencies (Peter, Engel-Hills and Naidoo, 2024). As part of this practice, it is important that students reflect upon the value of their experiences (Billett, 2016). Students would also benefit from reflecting about how they have participated in clinical placements previously and upon the roles they have undertaken (Liljedahl *et al.*, 2019). These reflections will help support their transition into a new clinical placement (Atherley *et al.*, 2016). In addition, students also have a responsibility to reflect on how they learn and interact with people to inform how they may attempt to nurture, for example, a positive student-supervisor relationship (van der Zwet *et al.*, 2014).

3.5.4 Motivation, enthusiasm, a positive attitude, compassion and empathy

An effective medical student is enthusiastic and is visible on the wards (Goldie *et al.*, 2015) and a positive attitude helps a student transition into new clinical placements (Atherley *et al.*, 2016). Motivation and interest to engage in workplace activities, as well as opportunities to participate, are important for effective learning (Billett and Choy, 2013). An increase in feelings of responsibility for patient care can also positively influence students' motivation to learn (Tanna, Fyfe and Kumar, 2020). In addition, examples of positive medical student attributes include compassion, empathy and a sense of responsibility towards patients and other people (Dornan *et al.*, 2014).

3.6 Characteristics of effective clinical educators and CoP members

The previous section focused on the characteristics of effective medical students; therefore, an understanding of the characteristics of effective clinical educators and other CoP members also requires exploring. A striking contradiction that emerged from the synthesis of existing literature is the importance placed on medical students' self-directedness (General Medical Council, 2024) and a self-regulated approach to their learning (Lu *et al.*, 2023), particularly within the clinical environment (Cho *et al.*, 2017). It is reported that students often struggle to regulate their learning due to the dynamic nature of clinical settings (Bransen *et al.*, 2020). However, in contrast, the evidence-base for how to be an effective medical educator is significantly more developed when compared with literature

relating to how medical students can be effective learners in the clinical environment. This knowledge gap highlights a need for further evidence relating to the most efficient actions students can take to enable learning and PIF, and the personal behaviours and attitudes which facilitate more effective participation in clinical practice. This study responds to this gap by developing a broad picture of how students learn and form their professional identity within clinical settings, perceived from their viewpoint, together with aspects that both enable and inhibit these processes.

This section provides a brief overview of evidence relating to the characteristics of effective clinical educators and CoP members. This is illustrated by considering personal characteristics, behaviours and attitudes; planning for effective learning; creating a welcoming, supportive learning environment; supporting the active participation of students and their legitimate peripheral participation; adopting an individualised approach; supporting relationship building; role modelling; supporting students' PIF; and providing feedback.

3.6.1 Personal characteristics, behaviours and attitudes

Effective clinical supervision is characterised by "inspiring, supporting, actively involving, and communicating with students" (Sutkin *et al.*, 2008, p. 452) and effective clinical supervision is key to the quality of medical student learning (Kandiah, 2017). The clinical supervisor is a key person for the medical student because they build a relationship with them, facilitate further professional relationship building with other CoP members and role model professional behaviours (Hägg-Martinell *et al.*, 2014). Students value the experience of clinical supervisors (Kandiah, 2017) and their disciplinary knowledge (Burgess *et al.*, 2020); however, they also place significant value on clinical supervisors having strong relational (Goldie *et al.*, 2015) and communication skills (van der Zwet *et al.*, 2014). Students value clinical educators who are friendly, approachable and patient (Terry *et al.*, 2020), and who are keen to teach and support them to access learning opportunities (Hilder, 2019). Whereas poorly prepared or disinterested educators can elicit feelings of disappointment in students (O'Brien, McNeil and Dawson, 2019). Actively finding out about a student's motivation and interests enables supervisors to build trust and support students' legitimate

peripheral participation in the CoP which, in turn, supports their learning (van der Zwet *et al.*, 2014). Demonstrating empathy (Jarecke and Taylor, 2010), building rapport (Passi *et al.*, 2013; Burgess *et al.*, 2020) and a strong commitment to students and their learning, leads to a more positive student-supervisor relationship (Dornan *et al.*, 2014). These insights draw attention to the importance of positive human qualities and the value these have for supporting relationship building and communication between medical students and clinical educators.

3.6.2 Planning for effective learning and a welcoming, supportive learning environment

A key focus for the clinical supervisor is to organise and support the students' transition into the clinical environment and clinical learning (Atherley *et al.*, 2016), facilitate their access to the CoP and its activities (Molesworth, 2017) and support engagement with relevant learning experiences (Billett and Sweet, 2018). Billett (2016) emphasises the important role an educator plays in planning and supporting students to engage with the specific practice of that clinical community. Therefore, an important requirement of an effective clinical supervisor is to be organised (Terry *et al.*, 2020). Effective planning can lead to a positive and valuable learning experience (O'Brien, McNeil and Dawson, 2019). The planning process should include an understanding of the student's course and assessment expectations (Burgess *et al.*, 2020) and a focus on how to structure and sequence the clinical work, as well as how to enable the students to participate (Cooke, Irby and O'Brien, 2010). Once students are on placement, clinical educators help them to understand their role and responsibilities (Kehoe and Illing, 2017) and should make the learning opportunities inherent within the clinical environment explicit to the students (Kirtchuk and Markless, 2023). The former two points are important because evidence shows that students value being supported to identify participation opportunities in a systematic way (Horsburgh and Ippolito, 2018). Alongside this, clinical educators should strive to create an open, supportive (Kehoe and Illing, 2017), welcoming (Cruess, Cruess and Steinert, 2018) and positive (Burgess *et al.*, 2020) environment within the CoP. These aspects of a positive learning environment can help alleviate negative emotions in students (Dornan, Scherpbier, Boshuizen, 2009). Clinical supervisors who are encouraging and enthusiastic also improve the learning environment (Burgess *et al.*, 2014). This literature illustrates that effective

medical student learning and a positive experience during clinical placements can be highly influenced by planning, organisation and CoP members cultivating a culture which values students and their learning.

3.6.3 Supporting active participation in practice and legitimate peripheral participation

Clinical supervisors should utilise strategies to facilitate students to be proactive to meet their own learning needs (Kehoe and Illing, 2017). To encourage student proactivity to socially participate, clinical supervisors should enable students to move from observation to increased participation, so that they can learn effectively by participating in appropriate activities at the upper limits of their competency (Taylor, Anderson and Gay, 2023). For example, to support effective student participation in practice, clinical educators could:

- set them challenging learning goals which are appropriate for their stage of development (O'Brien, McNeil and Dawson, 2019);
- encourage them to take an active role instead of a passive one (O'Brien, McNeil and Dawson, 2019);
- provide tailored scaffolding (Herzog *et al.*, 2023);
- encourage them to assume responsibility (Hägg-Martinell *et al.*, 2014);
- facilitate interaction and relationship building with patients (Burgess *et al.*, 2020; Kirtchuk and Markless, 2023);
- involve them in a range of patient related communications (Dornan *et al.*, 2014);
- encourage them to engage in professional dialogue to develop their learning (Morris, 2010);
- encourage them to engage in problem solving (Kandiah, 2017).

During clinical placements students typically assume greater responsibility over time (Stalmeijer *et al.*, 2009) which is a key tenet of legitimate peripheral participation (Lave and Wenger, 1991). Clinical supervisors play a key role in legitimising students' participation in practice (Kelleher *et al.*, 2024). When students feel welcome and a legitimate member of the CoP, this has a positive effect on their sense of motivation and engagement (Atherley *et al.*, 2019). A feeling of legitimacy within the CoP can enable students to then seek out further learning opportunities (Connor, 2019). The legitimate peripheral participation of

students is supported when clinical supervisors facilitate them to engage in the CoP repertoires, when they are welcomed into the communal spaces (Kirtchuk and Markless, 2023) and are, for example, provided with a checklist of activities to undertake (Thyness, Steinsbekk and Grimstad, 2022). These activities should provide the right level of challenge for their current stage of professional development because being under-challenged or over-challenged can be detrimental to a person's learning, confidence and motivation (Eraut, 2007). Clinical educators are expected to design individualised learning experiences (Wald, 2015). Therefore, it is important for clinical supervisors to ascertain each student's knowledge level (Nyoni, Dyk and Botma, 2021) and this would enable specific learning opportunities to be aligned with each student's individual needs (Olmos-Vega *et al.*, 2019). Clinical educators should strive to achieve the right balance between promoting student autonomy and directing them to support their progressive independence (O'Brien, McNeil and Dawson, 2019). Moreover, confidence and motivation can be increased where the attempting of challenging tasks are supported and successfully completed (Eraut, 2007). The body of research reveals the value of educators enhancing their students' learning through intentionally facilitating tailored participation opportunities, supported by an understanding of each individual student's knowledge level and confidence.

3.6.4 Supporting the development of professional relationships

It is important that clinical supervisors support students to interact with patients and CoP members (Kirtchuk and Markless, 2023). In addition, clinical supervisors should provide students with guidance on how to effectively engage with these CoP members (Daly *et al.*, 2013). These relationships are important for students to aid their participation in practice (Chang *et al.*, 2022). When a supervisor supports the social participation and interactions with CoP members, this can have a positive influence on a student's confidence and motivation (Kjær, Strand and Christensen, 2022). Furthermore, facilitating interaction with CoP members and peers both professionally *and* socially can also help students to feel supported (Terry *et al.*, 2020). All members within a CoP can play a key part in a student's learning (Olmos-Vega *et al.*, 2019) and PIF (Warmington and McColl, 2017), for example, a student's legitimate peripheral participation can be supported through joint working with non-doctor CoP members (Kirtchuk and Markless, 2023). Clinical supervisors should

encourage and support wider CoP members to facilitate the learning of students, for example, nurses, more senior students or junior doctors and, where appropriate, patients themselves (Morris, 2010). Near-peers and junior doctors can be useful in helping students to understand and navigate unfamiliar clinical contexts and learning environments (Barrett, Trumble and McColl, 2017). Near peers can also help the socialisation of students within the CoP and help reduce any intimidation they may feel (Atherley *et al.*, 2016). When other healthcare professionals are positive role models to medical students this can lead to a more holistic approach to their learning and PIF (Moll-Jongerius *et al.*, 2023). In addition, engaging in learning experiences with a range of health professional roles can accelerate students' understanding and respect for the range of CoP members' roles and responsibilities (Herzog *et al.*, 2023). CoP members can support student learning during clinical placement through, for example:

- creating an invitational culture and environment to aid interaction and relationship development (Atherley *et al.*, 2016);
- providing informal support, making students feel welcome and recognising their legitimacy in the clinical environment (Barrett, Trumble and McColl, 2017);
- using simple courtesies, such as saying hello and remembering their name (Davis *et al.*, 2019);
- displaying kindness, openness, respectfulness and being caring (Dornan *et al.*, 2014);
- offering suggestions, providing verbal or physical affirmation that they are doing the right thing (Hill, Gayle and Egan, 2011).

This academic discourse confirms the central importance for educators to actively support students in building positive relationships through fostering the necessary conditions and utilising a range of strategies during their time on placement.

3.6.5 Role modelling

Role modelling skills and positive attitudes, as well as enthusiasm for supporting students and their work are equally as important to students as strong subject knowledge (Burgess and Mellis, 2015a). Within a CoP, positive characteristics are more easily communicated to students through role modelling when the CoP members are clear on what constitutes

excellence (Post *et al.*, 2024). Therefore, clinical supervisors should attempt to identify suitable role models for students to observe and work alongside (Goldie, 2012). Clinical supervisors can help medical students identify helpful behaviours and attitudes by being explicit about what they are modelling, however, unconsciously, medical students will be learning the patterns of behaviour (Cruess *et al.*, 2015). Students would benefit from explicitly being made aware that learning from role models can be challenging but it is a skill that they can work on and develop (Horsburgh and Ippolito, 2018).

3.6.6 Supporting professional identity formation

Clinical supervisors should actively support a student's PIF (Mount *et al.*, 2022) through, for example:

- being explicit about the nature of PIF (Cruess *et al.*, 2014);
- enabling students themselves to engage with workplace artefacts, such as patients' notes (Kjær, Strand and Christensen, 2022);
- supporting personal reflection on their PIF journey (Cruess *et al.*, 2014);
- sharing what they feel it means to be a doctor (Stenfors-Hayes, Hult and Dahlgren, 2011);
- helping them imagine their future doctor role (Helmich *et al.*, 2017; Adema *et al.*, 2019).

3.6.7 Providing feedback

Developing a caring and trusting relationship between the student and tutor supports student learning through making them more open to feedback on their practice (O'Sullivan *et al.*, 2021). Providing effective feedback to students supports, for example:

- a positive student-supervisor relationship (O'Brien, McNeil and Dawson, 2019);
- their learning, particularly when received at the time of the event (Eraut, 2011);
- their confidence, particularly when related to patient care focused activities (Sheehan, Wilkinson and Billett, 2005);
- their satisfaction with their clinical placement (Hägg-Martinell *et al.*, 2014);

- the gradual increase in the responsibility they take within the CoP (van der Zwet *et al.*, 2014).

3.6.8 Personal and professional development

Finally, the literature demonstrates that the benefits of supporting student learning are not only for the students but that educators also report improved learning, clinical performance, increased confidence, self-reflection and mindfulness (Frija-Gruman *et al*., 2025). The learning and performance element aligns with Wenger's (1998) primary focus for his theory which explains learning as social participation in the practice of a community. Frija-Gruman *et al.*'s (2025) findings illustrate that, regardless of your existing level of knowledge or seniority within a CoP, social participation in practice can still influence your own learning.

3.7 Further research

This section explains further research requirements that are outlined in existing literature. These areas include: learning via participation in practice, clinical workplace environments and professional identity formation.

3.7.1 Learning via participation in practice

The current context provides significant opportunities for research into how medical students learn (Morris, 2012); however, there is limited research about *how* these students learn in the clinical workplace (Dornan *et al.*, 2014). Specifically, further research is required to understand how social participation supports medical student learning because "Evidence about the interactional nature of participation is strikingly inadequate" (Dornan *et al.*, 2014, p. 737). Barrett, Trumble and McColl (2017, p. 1015) reinforce this perspective by explaining that:

> "More research into the 'black box' of student learning during the clinical phase of medical education is warranted and this itself requires a focus on students' interactions with their learning environments".

This thesis aims to directly address the aforementioned insufficiency of evidence and to create a broad picture of this phenomena within a single study both from a theoretical and practical perspective.

In relation to student participation, further research is needed to understand why participation in authentic workplace experiences is perceived as effective for learning (Billett and Choy, 2013); how the workplace context influences participation (Kjær, Strand and Christensen, 2022); the specific ways of thinking and behaving which can enable people to participate more fully in the community's practice (Smith, Hayes and Shea, 2017) and how building relationships influences a student's experience within a CoP (Jarecke and Taylor, 2010). Moreover, a greater understanding of how students learn during clinical placements will inform how supervisors support their learning (Greaslish and Ranse, 2009) which is a need they raise (Dornan, Scherpbier, Boshuizen, 2009). This thesis aims to provide empirical data to support these research needs.

3.7.2 Clinical workplace environments

In comparison with educational institutions and formal courses, "there is a need to understand workplaces as important learning environments in their own right" (Billett, 2016, p. 130) which can lead to maintaining and improving patient care both today and in the future (Billett, 2016). Further research is required to understand what factors within clinical environments support or hinder medical student learning (Hägg-Martinell *et al.*, 2014); how workplace experiences can be utilised and adapted to support effective learning in healthcare and how to overcome any limitations inherent in these (Billett, 2016); how contributing to patient care influences student learning (Liljedahl *et al.*, 2019); how people learn in the workplace, particularly knowledge that is not explicit, and how this learning can be optimised (Billett and Choy, 2013). This research endeavours to uncover evidence which responds to these areas requiring further investigation.

3.7.3 Professional identity formation

There is a requirement for further research into how learning in the workplace influences students' PIF (Adema *et al.*, 2019). Brown *et al.* (2020, p. 994) highlight that "Identity formation is a longitudinal process and so research using sequential data points over time is needed to deepen understanding" (Brown *et al.*, 2020, p. 994). To address this, this study analyses both longitudinal and cross-sectional data relating to medical student PIF. Further research is also required to develop empirical evidence of sociocultural influences on medical students' PIF (Quaintance *et al.*, 2025) and how the workplace environment influences PIF (Mukhalalati *et al*., 2024). This study aims to contribute to the field of identity formation by presenting findings to address these research priorities.

3.7.4 A critical gap in the existing literature

Research has extensively examined medical student participation in practice during clinical placements, demonstrating a typically positive influence on their learning and PIF. However, the body of work is characterised by three key limitations. First, while Wenger's CoP theory from 1998 has been used extensively in prior studies, its full application in medical education research appears to be limited in the existing literature. Second, while existing studies establish the importance of medical student participation in practice for both learning and PIF, the mechanisms underlying the relationship between these three components remain relatively underdeveloped, aligning with the view of Dornan *et al.* (2014). Three, existing literature largely relies on retrospective, cross-sectional interview data, which may be constrained by reporting bias and also limit insights into the real-time dynamics of learning and professional identity formation (see Section 4.4.1 in Chapter 4, Methodology and methods, and Section 7.4.3 in Chapter 7, Conclusion, for further explanation). Taken together, these reveal a key gap in existing literature, that no single study has yet examined the interrelated nature of how medical students learn and form their professional identity through participation in clinical practice during placement, whilst employing the majority of Wenger's CoP theory (1998) and using both longitudinal (audio diaries) and cross-sectional (interviews) data collection methods. There are a range of consequences for these limitations. First, this constrains theoretical development and our understanding of CoP theory (Wenger, 1998) within medical education. Second, it limits empirical insights and practical implications for key stakeholders, such as medical students

and educators, and institutions which organise clinical placement experiences, such as medical schools and the NHS. Third, it restricts methodological insights into a deeper, holistic and more nuanced view of how participants' experiences reconfigure and evolve over time. This study addresses this gap by: employing the majority of Wenger's (1998) CoP theory within a single study; directly focusing on *how* medical students learn and form their professional identity through participation in practice; utilising both longitudinal and cross-sectional data collection methods to develop a comprehensive picture of the phenomena.

3.8 Conclusion

The ongoing advancement of medical education is central to help the NHS work towards its continual aim of improving the UK's quality of life and health. The achievement of this aim is framed alongside the requirement for more doctors and other healthcare practitioners, the perennial issue of balancing service delivery and education in the clinical workplace, changing demographic and health priorities, technological advancements, resourcing implications and workload pressures. This chapter's literature unequivocally emphasises the fundamental importance of medical students' learning and forming their professional identity within communities of practice in the clinical workplace. Moreover, their learning and PIF is supported by active participation within these communities of practice and by undertaking authentic activities focused on real patient care. However, the nature of this learning and how their professional identity forms via participation in practice requires further investigation, which is the central aim of this thesis.

In Chapter 4, I will present the methodology and methods utilised for this study.

Chapter 4: Methodology and methods

4.1 Introduction

This study aims to develop a detailed picture of how medical students learn and form their professional identity during clinical placements through the lens of community of practice (CoP) theory (Wenger, 1998). To understand this phenomena, the research was guided by the following questions.

Main research question:	How do medical students learn and form their professional identity during clinical placements through the lens of community of practice theory?

Theoretically informed sub-questions (via CoP theory - Wenger, 1998)

Research question 1:	How does participation in social communities of clinical practice support medical students' learning?
Research question 2:	How does participation influence the formation of professional identity within these communities?

This chapter explores the methodology and methods utilised for this study. It begins with a brief explanation of how the research questions were informed by the literature, as well as an overview of my ontological, epistemological and researcher positionality. Then, the research location, sampling strategy, data collection and analysis strategies employed are discussed. The chapter concludes with a discussion of ethical considerations and the trustworthiness of the study.

4.1.1 How the research questions were informed by the literature

The research questions were shaped by literature identifying CoP theory (Wenger, 1998) as a useful framework for understanding learning as participation in practice within clinical workplace settings. While previous research suggests that clinical placements play an important role in both learning and professional identity formation (PIF), there is limited

understanding of how these processes occur through medical students' participation in authentic, day-to-day clinical practice. This gap informed the main research question, which explores how medical students learn and form their professional identity during clinical placements through the lens of CoP theory (Wenger, 1998).

Research question 1 was informed by literature highlighting participation in practice as central to workplace learning, whilst providing limited insight into how social participation within clinical communities supports medical students' learning. The question was therefore developed to examine the relationship between participation in practice and learning within communities of clinical practice.

Research question 2 was informed by literature describing PIF as a socially situated process which is shaped by workplace experiences. Although participation in practice has been recognised as important for identity development, less is known about how participation within clinical communities contributes to the formation of medical students' professional identity. This informed the development of the second research question.

4.2 Methodological framework

4.2.1 Ontological positionality

This study investigates the research questions by exploring the research participants' own perspectives, in particular, focusing on their context, social interactions and conversations (Cohen, Manion and Morrison, 2018) within an authentic clinical context. I view medical student learning and PIF within clinical contexts as involving significant social complexity, interactiveness, connectedness and richness. I further regard the meaning each research participant interprets as being unique to the context and culture of that specific clinical placement and that these meanings and interpretations are also influenced by the participants' biography. Hence, it is unlikely that the process of student participation in practice, their learning and identity formation can be understood through numerical research. The comprehension of this phenomena requires a more holistic, qualitative approach to understand the participants' meanings and interpretations from these social situations. Therefore, I adopted a social constructivist ontological positionality by

recognising my assumption that learning and PIF involves humans constructing their values, opinions, skills and behaviours via participation in sociocultural workplace contexts (O'Connor, 2012; Cohen, Manion and Morrison, 2018). A social constructivist perspective recognises that social constructs such as learning are created through social interactions and the focus for investigation is people's individual, contextual understanding of their world (Hirshfield and Underman, 2017), which aligns with this study's aim and research questions. My ontological standpoint aligns closely with Wenger's CoP theory which underpins its selection for this study. For example, CoP theory (Wenger, 1998) assumes that humans' social nature is part of the process of learning, that knowing is an ability to socially participate within communities and that knowledge is a form of competence to pursue the enterprises of these communities. Even as a non-medic, these assumptions align closely with my own perspective of how medical students learn in clinical settings.

4.2.2 Epistemological positionality

This research sought to gain a deeper understanding of the subjectivity of the research participants' experiences; therefore, I adopted an interpretivist epistemological positionality in relation to the phenomena in question (Cohen, Manion and Morrison, 2018). Assuming this positionality is pertinent because this perspective recognises the meaning and significance participants ascribe to their experiences (Ayton, Tsindos and Berkovic, 2023), and acknowledges that the participants, their behaviour and the data are "socially situated, context-related, context-dependent and context-rich" (Cohen, Manion and Morrison, 2018, p. 288). Therefore, my interpretivist positionality appreciates "the importance of understanding a situation through the eyes of the participants" (Cohen, Manion and Morrison, 2018, p. 175) and leads towards an in-depth, detailed investigation into their experiences, interpretations and perceptions in relation to the phenomena (Tracy, 2020). In the following section, I explain my positionality in relation to the phenomena being investigated and the research participants, but in this section I acknowledge my active role in interpreting the participants' lived experiences and constructing meaning from data. I believe that my personal feelings of not 'wholly being an insider' provided a perspective that allowed for a degree of analytical distance, helping me to approach participants' experiences with fewer preconceived notions. To support my reflexive practice and my

ongoing development as a researcher, I maintained an informal diary of reflections (Appendix 9) during the research process, which heightened my awareness of my own values, past experiences and biases. In an informal manner, I also discussed some of my thoughts and reflections with colleagues who are more experienced with supporting medical student learning in the workplace and undertaking research in medical education.

4.2.3 Researcher positionality

As a researcher employing qualitative methods, it is important that I am reflexive and articulate my positionality (Ayton, Tsindos and Berkovic, 2023). I am a University Teacher, course lead for the Postgraduate Certificate in Medical Education and non-clinical academic at a Russell Group university in the north of England. The undergraduate medicine degree which the research participants are undertaking is taught within this School. Furthermore, the course I lead and other activities I undertake as part of my role, primarily support the educational practice of teachers who work on the undergraduate medical degree. The research participants were made aware of my role at the beginning of the recruitment process. Herod (1999) argues against a distinct dichotomy of insider or outsider research, stating that this concept should be perceived as more of a sliding scale of intimacy between the research participants and researcher. Hence, I was likely perceived as more of an insider by the research participants. This is how I mostly perceived myself during the research and it is likely that this contributed towards a strong sense of rapport between myself and the research participants, as well as enabling me to be familiar with key stakeholders and gatekeepers within the School, which helped with gaining support for the study and helped facilitate access to potential research participants.

My sense of being more of an insider is also shaped by my self-perception as someone who is passionate about learning and teaching, and who has long been interested in the concept of learning within social groups. I am also a qualified secondary school teacher, an experienced educator and have experience of supporting the learning of student teachers on educational placements; therefore, I am also familiar with the language of learning and teaching and the typical benefits and pitfalls of student learning on placements. This self-perception, career experience and current job role influenced my choice of research topic, research questions and the theoretical framework.

I have taught on a module entitled Work Based Learning during my doctorate and, over this time, I have become knowledgeable and conversant with community of practice theory and literature relating to student learning and PIF during clinical placements, which also influenced the focus for this study and has continued to shape the research. More specifically, this enhanced knowledge of the literature informed my choice of data collection methods, for example, selecting audio diaries to collect longitudinal data to triangulate data sources and overcome issues with participant recollection. My current experience of working with a significant number of medical educators, reading and providing feedback on lengthy written assignments focused on supporting learning in the clinical workplace, I feel provided a deep understanding of the contextual issues faced and an enhanced ability to interpret the research data. Finally, I feel that my positionality as more of an insider has supported me in planning for wider impact and dissemination strategies during the research and after its completion. For example, I am working with key academic staff members to utilise the knowledge gained from the study to enhance student learning, teaching practice and placement guidance currently on the undergraduate medical degree. Table 7.2 in Chapter 7 (Conclusion) provides further details on these projects.

However, I did experience some feelings of 'outsiderness' and I believe these mainly derived from not having undertaken a medical degree and not being a healthcare practitioner. As a non-medic, not having personal experience of undertaking clinical placements and not being directly involved in the organisation of clinical placements, I was unfamiliar with some clinical placement policies and procedures during the research planning stage and with some departmental names and specific medical disciplines mentioned by the research participants.

As a consequence of my academic position within the school, I was cognisant of issues surrounding a power imbalance between myself and the research participants, as well as ensuring that the participants always felt comfortable, autonomous, and not subject to undue influence. To ensure participants felt this way during the audio diary phase:

- I included weekly reminders in the emailed prompts (Appendix 3) that reflections did not need planning and could include pauses or changes in opinion.
- I reminded them that they can record more than one diary entry per week if they wished, that they can record any thoughts about their experiences during placement

and that the prompt questions are simply intended as a helpful guide. This strategy aimed to enable the participants to feel that they had control over their reflection content and the process they were following.

- I reminded the participants that they could get in touch with me to ask questions about any aspect of the research and about the confidentiality of their recordings.

The strategies I used during the interview collection phase were, for example, reminding the participants prior to starting the recording that:

- the interview is intended to be undertaken as more of a two-way conversation to help me understand their thoughts, feelings and examples;
- it is acceptable if they took time to think, or wanted me to clarify any words or the meaning of the questions;
- they should not be concerned about duplication if they have spoken about similar aspects already within their audio diary recordings;
- they can ask any questions before, during or after we begin the recording.

4.3 Research location and sample

The study was conducted with fourth-year medical students enrolled in a five-year undergraduate medical degree at a Russell Group university in the north of England. This group was selected for two key reasons. Firstly, the study focuses on investigating how students learn and develop their professional identity whilst undertaking clinical placements in an authentic clinical setting. Therefore, fourth-year students were chosen because they already have some exposure to clinical placements in previous years and they spend this academic year undertaking a range of different clinical placements. Each placement is approximately eight weeks in duration and is typically undertaken in the South Yorkshire and North Derbyshire region (UK). Secondly, this group was chosen for pragmatic reasons because as an academic within the School, I had established relationships with key staff responsible for this phase of the medical degree, which facilitated access to this group.

This study investigates *how* medical students learn and develop their professional identity more generally and not necessarily *what* they learned. Therefore, I did not differentiate between the type of placements undertaken and data was not collected on this. Whilst this

decision limits insights into specific medical specialities and clinical setting type, it provides for a more holistic view of the phenomena of medical student learning and PIF during clinical placement and leads to the creation of knowledge which can be applied broadly, whether that be within, for example, hospitals or more community settings. Section 7.7.1 in Chapter 7 (Conclusion) explains intended future research which will provide insights into medical students' learning and PIF within specific medical specialities and clinical settings.

Audio diary data was collected from the research participants during their first clinical placement of the fourth year and interview data was collected after they had finished this placement. Participants were requested to provide data relating to their experiences of their current placement; however, if they wished, they were allowed to also draw upon previous experiences of clinical placements as well. The date range for data collection was:

- Audio diaries - 15.01.2024 to 08.03.2024
- Interviews - 13.03.2024 to 22.03.2024

This study used the purposive sampling technique (Fitzpatrick, 2019) employing the criterion of convenience to recruit research participants. Flick (2018) explains that this approach can be suitable where there is limited time and resources for both the researcher and participants; therefore, it was deemed this would facilitate access to suitable information-rich research participants that can offer in-depth insights and valuable perspectives to answer the research questions. This sampling technique also aligns with the qualitative research approach and my aforementioned interpretivist epistemological positionality because it affords a deep exploration of multiple perspectives, experiences and interpretations of learning and PIF during clinical placements.

The study's criteria for inclusion was that potential research participants were:

- current students on the undergraduate medicine course.
- undertaking a clinical placement(s) as part of their year's study.

I presented the study to all new fourth year students within a lecture in their introductory week on the 8th January 2024. After this presentation, six students volunteered and were accepted into the study. This number of participants was slightly above the original aim of four participants; however, this number was accepted to overcome potential issues with

participant withdrawal, which was judged as likely due to the high workload of medical students. Ultimately, no participants withdrew from the study. Immediately after the presentation, I discussed the expectations of the study with the accepted participants face-to-face to ensure they understood what was required and I was able to answer any questions.

4.4 Data collection methods

My social constructivist and interpretivist positionality towards the phenomena of the student participation, learning and PIF during clinical placements supports qualitative approaches to research (Cohen, Manion and Morrison, 2018; Ayton, Tsindos and Berkovic, 2023). This study employed weekly audio diary recordings and semi-structured interviews to collect data from the research participants which are key methods used in health professions educational research (Stoffels *et al.*, 2019).

4.4.1. Audio diaries

This study utilised the relatively underused data collection method of audio diaries because in healthcare education it is advocated as a useful way to understand how participants' experiences and identities change over time (Verma, 2021). From an interpretivist perspective, Tracy (2010) suggests that detailed accounts strengthen the credibility of qualitative research, which aligns with audio diaries that collect the participants' evolving reflections longitudinally for the length of the placement, contributing to the development of a comprehensive dataset capturing how participants make sense of their experiences. Audio diaries are also helpful to capture nuances within the lived experience of participants through reflection and sense-making (Meiklejohn *et al.*, 2024). Aligned with interpretivist principles, Stephens, Ottrey and Matthews (2026) explain that diary methods in qualitative research seek to understand participants' lived experiences and subjective meanings, which aligns with the audio diary method because these enable the participants to record their reflections closer to the time of when the experiences happened, helping capture emotions and nuances in expression relating to their experiences and the meaning they attached to these. McCombie *et al.* (2024) argue that qualitative diary methods also support

participants to actively communicate experiences and construct meaning in ways that are suited to them; therefore, from an interpretivist and social constructivist understanding, audio diaries allow participants to reflect on and interpret their social learning experiences and meaning over a period of time.

I deemed that the audio diaries would capture evidence of individual CoP theoretical constructs in-action, which occurred during the data collection phase and is evidenced by the research participant quotes in Chapter 5 (Findings). I also considered that this data collection method was particularly appropriate for addressing the research questions because they captured more in-the-moment experiences close to when they occurred, reducing reporting bias and recording more immediate reactions and reflections relating to their learning and PIF. The use of audio diaries is particularly appropriate for answering both research questions 1 and 2 because they reveal how learning and identity formation occurs over time, such as changes in understanding, confidence and, aligned with CoP theory (Wenger, 1998), they may illustrate how students' learning and identity changes through increasingly active participation within the clinical CoP. In relation to research question 2 in particular, I deemed that audio diaries may provide reflections which give specific insight into transitions in a student's perceptions and feelings towards their evolving identity, for example, whether feelings such as being an outsider within the team gradually changed or whether their identification with the profession increased over time. I also anticipated that the privately recorded nature of audio diaries may reveal personal emotions and depth, such as feelings of belonging or even alienation.

Although audio diaries were eventually selected as one of the main data collection methods, alongside semi-structured interviews, an alternative longitudinal method was also considered, which was participants undertaking weekly written reflective journal writing. Journal writing provides an opportunity for participants to write down their emotions, thoughts and actions (Verma *et al.*, 2021). Both audio and written diaries are underpinned by interpretivist and social constructivist methodological paradigms, which emphasise how individuals subjectively interpret and construct meaning from lived experience (Schwandt, 2015). Consequently, both methods were considered capable of producing rich longitudinal data aligned with the aims of the study and with a social constructivist view of PIF as something which is continuously constructed and reconstructed through experience and

social interaction. Written reflective journals were ruled out for several reasons. First, the written reflective method may be more burdensome to produce (Williamson *et al.*, 2015), particularly because it requires sustained time and concentration to create detailed entries on a regular basis which, given the participants' potentially demanding placement schedules, was a key concern. Second, I deemed that the written method may potentially increase the chances of students producing more socially desirable accounts, particularly in medical education where reflective writing can often be associated with assessment. In contrast, audio diaries were considered to be easier, more convenient and spontaneous for participants to record (Verma *et al.*, 2021) aligning with the participant's busy schedules during clinical placements. Also, audio diaries are more suitable for providing a richer insight into participant's authentic emotions and interpretations through their verbal expression and tone (Williamson *et al.*, 2015), supporting an interpretivist understanding of how participants make sense of their experiences. Third, written reflective methods may lead to more retrospective accounts due to the time taken to write them, whereas audio diaries may allow participants to record reflections closer to the time the experiences happened, therefore, reducing recall bias and capturing more immediate responses (Verma *et al.*, 2021). Therefore, whilst both methods would produce detailed, reflective accounts, weekly audio diaries were considered more appropriate because they provide greater immediacy and depth to the participants' experiences, facilitating the exploration of the meanings they attach to those experiences, along with reducing participant burden and socially desirable responses.

When used together, audio diaries complement semi-structured interviews (Crozier and Cassell, 2016). Audio diaries are appropriate for collecting longitudinal data to address issues with research participant recollection (Dornan, 2012), which helps address the time-lag between having an experience and recreating it within an interview (Crozier and Cassell, 2016). Therefore, audio diaries were judged as appropriate for developing an in-depth insight into student learning and identity formation while they are undertaking an eight week clinical placement. Brown *et al.* (2020, p. 994) state that "Identity formation is a longitudinal process and so research using sequential data points over time is needed to deepen understanding". The audio diaries enabled the capture of 'at-the-present-time' student reflections on learning and PIF whereas, the interviews captured reflections after

the event. Collectively this provided in-depth qualitative data and increased the validity of the findings by mitigating issues with participant recollection and solely relying on reconstructed experiences within interviews.

Additional reasons for the choice of audio diaries are that they are useful for investigating:

- changing, dynamic work patterns (Crozier and Cassell, 2016), which are pertinent for clinical placement learning due to the dynamic nature of the clinical context;
- the research questions, while still being flexible to the participants' circumstances (Verma, 2021). This enabled the participants to record their reflections privately after the placement, if this was preferable for their personal situation. Consistent with an interpretivist perspective, McCombie *et al.* (2024) explain that qualitative diary approaches support participants with a flexible approach for individual, authentic self-expression, aligning with the audio diary method where reflection can be recorded in more private spaces supporting their interpretation of their experiences;
- multiple social components (Verma, 2021), which aligns with Wenger's CoP theory which is a rich, complex theoretical framework (Smith, Hayes and Shea, 2017) and contains multiple theoretical constructs relating to learning and identity formation. From a social constructivist and interpretivist perspective, Stephens, Ottrey and Matthews (2026) explain that qualitative diary methods seek to understand how individuals interpret their experiences within their social contexts. The weekly audio diaries support this by enabling the participants to reflect on the aspects of their everyday lives and social experiences during clinical placements.

To guide student reflections towards aspects of learning and identity formation, I created an Audio Diary Participant Information Sheet (Appendix 3), which contains seven question prompts. These prompts were guided by CoP theory (Wenger, 1998) components of both practice and identity. In particular, the prompts were informed by the individual constructs from practice, including participation and reification, mutual engagement, the joint enterprise and the shared repertoire. I conducted a pilot test of the prompts with a medical student and academic staff members, which helped to refine the wording to improve intelligibility and coherence. During the placement, each participant was expected to record at least one audio diary on their mobile phone per week reflecting on their learning

experience. Hanson *et al.* (2011) state that question prompts should allow for participant perspectives to emerge to develop an in-depth understanding regarding the research questions. The Audio Diary Participant Information Sheet suggested areas that participants may wish to reflect upon; however, as described they were able to reflect upon any aspect of their learning and identity formation during placement. Notably, this is in contrast to the interview questions which were closely designed in accordance with CoP theoretical constructs (Wenger, 1998).

The audio diary strategy was successful: overall, 92% of weekly audio diaries were recorded (see data collection statistics in Appendix 8) and the mean duration of all recordings was four minutes and two seconds. Google Meet technology was used to create written transcripts of the audio diary recordings. Verma (2021) highlights that it can be challenging to maintain participants' engagement with recording the audio diaries and, due to the high workloads of medical students, this was initially perceived as a potential issue. To mitigate this, I sent friendly reminders at the end of the week reminding and encouraging participants to record their audio diary. For ease of access and to remind participants to utilise the question prompts to guide their reflections and recordings, each reminder email contained the Audio Diary Participant Information Sheet as an attachment and the email text reminded them to utilise the guidance to inform their reflections. I monitored the audio diary submissions weekly and sent friendly reminder emails to encourage completion when there had been non-submission.

On reflection, I believe providing clear expectations about recording diary entries weekly at the start of the study and having a timely, friendly and encouraging approach on email partly contributed towards the high completion rate. Other contributory reasons may be an increased sense of obligation once they had agreed to be a participant in the study, as well the high expectations of medical students in terms of professionalism. Another consideration is whether the regular reminders influenced the spontaneity and, as a result, the content of their diary recordings. However, the audio diary prompts which they received weekly as an email attachment provided a clear area of focus and this guidance also explained that participants could record any content relating to their learning or PIF.

Finally, building a positive researcher–participant relationship was key to the success of this data collection method. Verma (2021) highlights that the relationship building between

participant and researcher is helpful to overcome any issues. This study supports this assertion because, due to the regular emails, I was able to address questions around the suitable length of recordings, the focus for their reflections and issues around non-completion, which was typically due to workload or illness. A surprising aspect of using audio diaries as a data collection method was how most participants commented on the beneficial impact recording the audio diaries had on learning and their sense of achievement. This finding will be explored further in the Section 7.4.3 Contribution to methodology and methods within Chapter 7 (Conclusion) and forms part of a curriculum innovation initiative (Workplace learning literacy) and subsequent study detailed in Table 7.2 in Chapter 7.

4.4.2. Semi-structured interviews

Alongside audio diaries, this study employed semi-structured interviews (SSIs) to collect qualitative data from research participants. Interviews are a commonly used method for researching communities of practice in both healthcare (Ranmuthugala *et al.*, 2011) and workplace learning contexts (Dornan, 2012). SSIs were deemed an appropriate data collection method due to their structure and inherent flexibility (Walliman, 2011). This provided an organised but flexible approach to explore the participants' lived experiences in-depth and the meanings attached to these (Seidman, 2013). Consistent with social constructivist and interpretivist assumptions, this aligns SSIs with the in-depth exploration of participants' subjective interpretations and meanings they attach to their lived, social experiences of clinical placements. This approach enabled me to ask additional prompt questions to clarify points and encourage participants to provide further details (Croix, Barrett and Stenfors, 2018), which also contributed towards the rich data set. From an interpretivist perspective, Kallio *et al.* (2016) explain that SSIs balance structure with flexibility, enabling clarification and a deeper exploration of the participants' experience. Aligned with this example and an interpretivist perspective, Cohen, Manion and Morrison (2018) explain that SSIs enable researchers to probe deeper into the meanings and lived experiences. In addition, SSIs allowed me to explain any unfamiliar terms (Taylor, Bogdan and DeVault, 2016), which was helpful when clarifying the primary focus of questions or, for

example, explaining what is meant by professional identity formation, which was a new concept for most participants.

Croix, Barrett and Stenfors (2018) explain that the quality of an interview which collects rich data and answers the research questions in health professions education is linked to both helping the interviewee feel comfortable and developing a rapport with them. Aligned with an interpretivist approach, DeJonkheere and Vaughn (2019) argue that the conversational nature of SSIs supports this rapport-building and encourages more authentic, personal and in-depth responses, therefore supporting a deeper insight into their lived experiences. This study not only used audio diaries and interviews sequentially, but also demonstrated that the former enhanced the quality of the latter, which is an important and insightful finding. I believe this happened because I had developed a rapport with participants through the weekly emails and promptly answered any questions. However, I believe of greater importance is that the participants were already familiar with the focus of the research by the time the interviews began, primarily due to their weekly audio diary recordings and the prompt questions focused on their learning and PIF. This extends Crozier and Cassell's (2016) assertion earlier that audio diaries and SSIs complement each other, with this study demonstrating that interviews are supported by participant familiarisation with the research aims and concepts prior to their commencement through audio diary recordings.

To answer this study's research questions on the medical students' experience of learning and PIF within a community of practice, it is necessary that the collected data set provided an in-depth, comprehensive appreciation of the social phenomena being investigated and SSIs are suitable for this (Galletta, 2013) and were deemed the most suitable method. Aligning with the requirement for a comprehensive appreciation, from an interpretivist understanding, Tracy (2010) suggests that thick description strengthens the credibility of qualitative research by producing detailed accounts of participants' experiences. The word 'how' at the beginning of both research questions requires an in-depth, detailed explanation of how participation processes and experiences influence both learning and PIF. Therefore, the SSIs were particularly appropriate because they allowed for a deep, detailed exploration of participants' experiences and the meaning they attached to these. The interviews produced rich reflections that helped explain participation processes relating to learning and PIF, and helped answer the 'how'. In addition, the semi-structured nature allowed for

flexibility to probe for more specific and detailed answers relating to the research questions, when required.

Although SSIs were eventually selected as one of the main data collection methods, alongside audio diary recordings, alternative approaches were also considered during the research design process. Observation, focus groups and questionnaire surveys were evaluated for their potential to address the research questions and align with the study's social constructivist and interpretivist orientation. The following sections outline the rationale for rejecting these methods and explain why SSIs were deemed the most appropriate method of exploring medical students' experiences of participation in practice, learning and PIF.

Observations as a data collection method are commonly used in qualitative research to examine behaviours within real-world settings (Hammersley and Atkinson, 2007), such as clinical contexts. However, this method was less suitable for this study because, for example, identity formation, which is a central focus of the study, is perceived as being both an individual, reflective and socially constructed process, whereby individuals interpret and attach meaning to their experiences. In addition, interpretivist approaches emphasise the importance of assessing participants' subjective understanding (Schwandt, 2015). However, whilst observation would be helpful in capturing observed behaviours and interactions (Cohen, Manion and Morrison, 2018) relating to the participants' experiences of participation in clinical practice, it would be less useful in collecting personal reflections, emotions and interpretations which underpin PIF. In addition, observations within clinical settings also present practical challenges, such as issues with access for research due to patient confidentiality (Morris, 2012), which is not an issue faced with SSIs and was therefore deemed more feasible within the resources of this study. Consequently, whilst observation may have provided greater insight into contextual factors surrounding the phenomena being studied, SSIs were considered more appropriate because they allow participants to reflect and explain the subjective meanings they attach to their clinical placement experiences. Moreover they facilitate an interpretivist understanding of how learning and professional identity are constructed through participation in clinical practice.

Focus groups are informed by social constructivist perspectives that perceive meaning as generated through interactions within groups (Barbour, 2018). Although useful for exploring

shared experiences, focus groups were considered less suitable than SSIs because, for example, PIF may involve personal and sensitive experiences which participants may feel reluctant to discuss openly in front of their peers. There were also concerns surrounding whether the participants may feel a need to present more socially desirable responses (Bergen and Labonté, 2020), particularly with high expectations relating to professionalism in medical education. Focus groups could also cause issues such as participants not wanting to disclose information due to concerns around confidentiality and anonymity between the participants outside of the group (Sim and Waterfield, 2019). For example, participants may be uncomfortable sharing personal experiences with fellow medical students present, about clinical practitioners from placement who are in senior positions due to a perceived professional hierarchy and power imbalance. This could lead participants to self-censor their responses, resulting in less open and detailed discussions of their experiences. Therefore, SSIs were considered more appropriate because they provided a confidential and private environment where participants could reflect and discuss their experiences openly, facilitating a deeper exploration of how they interpreted these experiences.

Questionnaire surveys were also considered as a possible data collection method. This method is more commonly associated with positivist approaches (Hasan, 2016), which typically prioritise collecting comparable data from large numbers of participants (Cohen, Manion and Morrison, 2018). This method was considered less appropriate because learning through participation and PIF are complex, socially constructed phenomena which are influenced by engagement with people and the clinical setting, and are most usefully understood through a detailed exploration of participants' experiences. In contrast, survey data tends to lack depth and nuance when compared with interview data (Braun and Clarke, 2013), for example, through relying on pre-determined questions. Whereas SSIs would allow for clarification of points, probing and follow up questions (Braun and Clarke, 2013) potentially leading to detailed, comprehensive responses. SSIs also align closely with an interpretivist approach through enabling probing into interesting aspects and responses, clarification and exploration of participants' subjective experiences (Cohen, Manion and Morrison, 2018). In addition, the flexibility of SSIs to explore meanings in depth aligns with the interpretivist orientation (Brinkmann, 2013). Another issue is that the surveys may elicit responses that are close to the defined survey structure, which may inhibit the explanation

of meaning and experiences related to, for example, PIF. Given the social constructivist and interpretivist orientation, SSIs are more appropriate because they facilitate exploration of meanings participants attach to their experiences, allowing understanding to stem from their perspectives and not, for example, predetermined categories (Schwartz-Shea and Yanow, 2012). As a result, SSIs were considered more suitable for generating rich qualitative insights into medical students' experiences of learning and PIF.

Finally, in relation to the conduct of the SSIs, after research participants had completed their first placement within the fourth-year, each one undertook an interview online using Google Meet technology. The interviews were recorded, written transcripts were automatically created by the technology and their mean duration was 89 minutes. The high level of engagement from the participants and their motivation to explain their experiences, feelings and opinions was pleasantly surprising.

4.4.2.1 Semi-structured interview question development

To structure the SSIs, I created an interview format (Appendix 7) containing nine questions. As this study investigated learning and identity formation through the lens of CoP theory, the creation of the interview questions involved a lengthy process and followed the stages shown in Table 4.1.

Table 4.1 - The stages followed for creating the semi-structured interview questions

Stage	**Process**
1	Repeated readings of Wenger's (1998) text, making detailed notes on each chapter and concept.
2	Identification and summarisation of fundamental aspects of each concept.
3	Translation of these summaries into interview questions which reflected the key tenets of each theoretical construct.

4	Refinement of wording and sequencing through repeated reading of the theory and pilot tests with a medical student and academic staff (clinical and non-clinical).

The final set of interview questions were mapped against the key CoP constructs to ensure robust theoretical coverage. Therefore, this interview schedule provides a data collection tool which can be utilised or adapted by future researchers within medical or health professions education. It could also be utilised by all other fields and disciplines, particularly with CoP theory reputed to be the most widely cited social theory (Farnsworth, Kleanthous and Wenger-Trayner, 2016) and because "We all belong to communities of practice. At home, at work, at school, in our hobbies" (Wenger, 1998, p. 6) and because "Communities of practice are an integral part of our daily lives" (Wenger, 1998, p. 7). The interview questions were effective in enabling the participants to explain their experiences and views in relation to each question. On occasions, the participants required some interpretation and explanation of the meaning of question phrasing, such as, 'active participation', 'legitimate member' or 'the feeling of becoming a doctor'. These explanations successfully enabled the participants to explain their views.

4.4.2.2 Deductive interview question design and mitigation of confirmation bias

The semi-structured interview schedule was explicitly informed by CoP theory (Wenger, 1998). As the study adopted a deductive, theory-driven approach, the use of language related to CoP theory constructs is both intentional and methodologically aligned with the overall research design. A deductive, qualitative inquiry typically begins with theoretically derived constructs which guide the data collection and analysis (Fife and Gossner, 2024). In this study, all CoP theory (Wenger, 1998) constructs functioned as sensitising concepts by guiding the researcher's attention to particular meanings (Fife and Gossner, 2024). The constructs also function as operationalising concepts to help translate the theoretical idea into something that can be empirically investigated through the interview questions (Fife and Gossner, 2024) (see Appendix 7). Incorporating the CoP theory constructs into the interview schedule ensured conceptual coherence between the study's theoretical

framework, research questions and data collection methods. It also enabled a systematic analysis of theoretically relevant phenomena within the chosen context of clinical placements and with medical students.

In this deductive, theory-driven approach there are the potential concerns of, for example, asking leading questions or having embedded assumptions within the data collection and analysis process. One potential criticism is that by using CoP theoretical constructs to guide data collection and analysis, this could presuppose the existence of phenomena such as joint enterprise, shared repertoire or mutual engagement, which could narrow participant responses to the boundaries of these constructs and restrict openness to alternative interpretations. A related concern is confirmation bias. For example, the participants' responses may appear to confirm the validity of CoP theory because the investigation was structured around it and I may be more likely to focus on evidence relating to the theoretical constructs, potentially overlooking data which contradicts it. To guard against this confirmation bias, I adopted a number of strategies. For example, the semi-structured interview format provided for theoretically guided questions, whilst allowing flexibility and responsiveness to participants' experiences. While the interview schedule was shaped by CoP theory (Wenger, 1998) constructs, the questions were framed in accessible, non-technical language, which was piloted with a medical student and academic staff prior to use, in order to guard against imposing abstract CoP theoretical terminology onto the participants. The interview questions (Appendix 7) did not have theoretical terms embedded within them but allowed participants to explain openly, for example, how they participated, when they felt a sense of responsibility and accountability, when they used the workplace's tools, as well as an exploration of examples which supported or inhibited feelings of becoming a doctor. This approach retained the deductive integrity of the research design, whilst minimising a risk of leading responses and allowed for inductive insight alongside the deductive analysis. This approach to question design also illustrates a commitment to theoretical clarity and transparency in the analysis. In addition, the explicit alignment between the theoretical framework and data collection ensured the constructs were visible and open to scrutiny.

Other strategies to overcome confirmation bias include, first, adopting a reflexive approach throughout the whole research process, which helped uncover any preexisting assumptions

I have around the phenomena (see example in Section 4.6.3). Second, during the analysis, I actively identified data which did not fit, challenged or complicated the assumptions of the theoretical constructs, which supported inductive insights alongside the deductive analysis. Third, the accessible language and semi-structured nature provided an opportunity for participants to contradict, disconfirm or complicate CoP theoretical assumptions within the clinical placement context. Fourth, I also discussed coding and interpretations with my research supervisors and critical colleagues. In addition, I followed transparent, rigorous recording procedures for data collection and analysis (see example in Section 4.7.3).

4.5 Data analysis

This section details the theoretical and practical steps taken during the data analysis, including the use of CoP theory to develop analytical themes (Section 4.5.1), the rationale for excluding certain constructs (Section 4.5.2), and the staged approach to analysis (Section 4.5.3).

4.5.1 Analysis of medical students' experiences

This study adopted a deductive analytical approach to the research and, as illustrated in Table 4.2, the analytical framework comprises themes grounded in CoP theory. The research questions are informed and underpinned directly by CoP theory (Wenger, 1998). Therefore, both the audio diary and interview data were analysed together employing a selective coding process (also termed deductive coding) utilising key theoretical constructs from CoP theory, as represented in Table 4.2. Using the analytical themes (column 2) and theme descriptions (column 4) in Table 4.2 resulted in a clear distinction between the analytical themes and a clear articulation of the essence and boundary of each which was explained in Chapter 2 (Theoretical framework).

Table 4.2 - The analytical themes and theme descriptions used for data analysis

Analytical Theme Code	Analytical Theme	Theme Description Code	Theme Description
A	CoP theory - Practice	1	Meaning
		2	Participation
		3	Reification
		4	Dimensions of practice - Mutual engagement
		5	Dimensions of practice - Joint enterprise
		6	Dimensions of practice - shared repertoire
		7	Boundaries/ Social discontinuities
B	CoP theory - Identity	8	Participation
		9	Reification
		10	Dimensions of identity - Mutuality of engagement
		11	Dimensions of identity - Accountability to an enterprise
		12	Dimensions of identity - Negotiability of a repertoire
		13	Non-participation
		14	Modes of belonging - Engagement
		15	Modes of belonging - Imagination
		16	Modes of belonging - Alignment

		17	Identification
		18	Negotiability

While the majority of Wenger's concepts were used to structure the analysis, a small number were intentionally excluded, as described in the following section.

4.5.2 Theoretical constructs not included within the data analysis

Not all components of CoP theory were relevant to the aims of this study. Table 4.3 outlines those theoretical constructs that were excluded and the rationale for doing so.

Table 4.3 - The analytical themes and theme descriptions excluded from the data analysis

Analytical theme	**Theme description**	**Reason for exclusion from the data analysis**
CoP theory - Practice	Brokering	Brokering is defined as "connections provided by people who can introduce elements of one practice into another" (Wenger, 1998, p. 105). The focus of this study is on medical students' learning and professional identity formation *within* a CoP during clinical placement, not *between* communities of practice. Therefore, this notion was deemed less relevant for the scope of this study because it was considered that the insights would be less relevant to answer the research questions.
	Boundary objects	Boundary objects are forms of reification for example, concepts, terms, artefacts and documents - which span multiple communities of practice (Wenger, 1998). Similar to brokering, the focus of this study is on the medical students' learning and professional identity formation *within* a CoP

		during clinical placement, not *between* communities of practice. Therefore, this notion was deemed less relevant for the scope of this study because it was considered that the insights would be less relevant to answer the research questions.
	Locality	Locality concerns indicators of when a CoP has formed and the relationship between multiple communities of practice to form constellations of interconnected practices (Wenger, 1998). Clinical placements can be perceived as time spent within a CoP (Morris, 2012) and students perceive them this way (Amery and Griffin, 2020). Therefore, this informed the study's pre-conceived notion that the placement students entered will, to a greater extent, contain the indicators that a CoP had formed and that CoP theory is valid to use. Moreover, similar to brokering and boundary objects, the focus of this study is on the medical student working and learning *within* a CoP, therefore, investigating relations between multiple communities of practice was deemed less relevant for the scope of this study because it was likely the insights would be less relevant to answer the research questions.

With the analytical framework established, the following section outlines the systematic stages followed in the data analysis.

4.5.3 Data analysis stages

The research followed the data analysis stages detailed in Table 4.4.

Table 4.4 - The data analysis stages followed during the study

Main data analysis stages	Data analysis stage description
Stage 1 - Transcription	I used Google technology to create transcripts. Audio diaries - I utilised Google Docs Voice Typing to create the transcripts. I listened to each audio diary recording in turn while, at the same time, the technology transcribed the voice of the participant into written words within the Google Document. This approach had the additional benefit of familiarising myself not only with the content of the diaries but also the tone and emotion contained within the voice of each participant. Interviews - I utilised the online meeting technology of Google Meet to undertake the interviews. Google Meet allowed each interview to be recorded and subsequently produced a written Google Document transcript. For all selected excerpts used in the findings (Chapter 5, Findings), I checked the accuracy of each against either the audio diary or interview recording, which also aided my understanding of tone of voice and any inferences, strengthening the conclusions made.
Stage 2 - Selective coding	I familiarised myself with the entire data set through repeated reading of the audio diary and interview transcripts, giving each aspect of the data equal attention. I actively observed patterns and meanings relating to the analytical themes and themes identified in Table 4.2. I then selected what excerpts to code through identifying interesting features within the data set that could be assessed regarding the analytical themes and theme descriptions (Appendix 10 provides an example of a coded audio diary transcript). Sometimes excerpts received multiple codes because they contained meaning related to different themes. To maintain the context of the excerpt, I coded inclusively (Braun and

	Clarke, 2013) by retaining parts of the excerpt both before and afterwards.
Stage 3 - Analysis	I transferred all selected excerpts into an Excel spreadsheet so that these could be filtered by: ● Participant number (P1 to P6) ● Source (Audio diary or interview) ● Clinical placement week number (Audio diaries) or transcript page number (Interviews) ● Analytical theme (A or B) ● Theme description (1 to 18) Pragmatically, the filtering option was useful because this allowed for the analysis of meaningful data groups, particularly the individual theme descriptions (for example, 1 to 18 in Table 4.2). I familiarised myself with all of the excerpts for each theme to gain a deeper understanding of the meanings contained within and across individual excerpts. I also reviewed each theme to ensure that it contained sufficient data.
Stage 4 - Writing	Following the analysis of the excerpts, I interpreted the meaning it portrayed and wrote individual analytical claims. I placed each of these individual claims in an order which I believe reflected the natural flow of the story for each theme. I then selected relevant research participant quotes to support each claim presented.

Early within the development of a study, it can become clear that deductive, theoretically informed research might tell a richer, more complex and useful story (Braun and Clarke, 2021). This became apparent for this study following my analysis of CoP theory (Wenger, 1998), identifying its relevance for medical education research (see Section 2.3.3 in Chapter 2, Theoretical framework) and the knowledge gap in current literature (see Section 7.4.1.2 in Chapter 7, Conclusion). Braun and Clarke (2021) also underscore the central importance of being explicit about how theory informs the collection and analysis of data, which is an

approach I adopted by framing the research questions, data collection tools (Appendix 3 and 7) and analysis through CoP theory (Wenger, 1998). For a more deductive study, Braun and Clarke (2021) explain that the themes and codes can be developed independently of the data and require no engagement with it; however, this approach can enrich an empirically based understanding of the theoretical framework, which is a central aim of this research. Furthermore, deductive, reflexive theoretical analysis also allows for a theoretical exploration of qualitative data but is also open to meaning situated within it. In other words, it does not ignore data which does not fit the theory, it simply gives greater analytical priority to the theory (Braun and Clarke, 2021). To align with this, I approached the analysis using deductive coding (also referred to as selective coding - Braun and Clarke, 2013) but also aimed to gain inductive insight from the data, to tell the "fuller story" (Braun and Clarke, 2021, p. 210).

While guided by Braun and Clarke's (2006, 2013) thematic analysis framework, I adapted their approach to suit the theory-driven, deductive nature of the study. In accordance with Braun and Clark, for example, I:

- created transcripts and repeatedly familiarised myself with the data;
- decided what excerpts to code;
- analysed the data by codes to inform the findings, produce the narrative;
- selected which excerpts supported each individual result.

As analytical themes were predetermined based on CoP theory (Wenger, 1998), stages such as theme development and revision were not applicable. I employed a selective coding process as described by Braun and Clarke (2013) through searching for data which aligned with the themes and codes from Table 4.2 and marking those instances, while remaining open to meaning situated within the data (Braun and Clarke, 2021) to gain inductive insight.

4.5.3.1 Similarities and differences in qualitative data by method

The two data collection methods, audio diaries and semi-structured interviews, both collected verbal, qualitative data providing a detailed insight into participant's experiences and the meanings attached to these. However, the methods varied in terms of their

structure, the context in which the data was produced and the timing when they happened. For example, participants recorded the audio diaries weekly and typically at the end of each week's clinical placement, the recordings were on average 4 minutes in length and they captured more in-the-moment or shortly after, longitudinal data. The participants also typically recorded the diaries in their own time and whilst alone. The recorded content was guided by question prompts which were broadly related to CoP theory (Wenger, 1998) themes, for example, participation in practice, mutual engagement, joint enterprise, shared repertoire and PIF (Appendix 3). However, participants were advised that they could record any aspect of their placement experiences, their learning and/or professional identity formation. For the interviews, each participant undertook one semi-structured interview shortly after their clinical placement had finished. The interviews lasted on average 89 minutes in length and captured retrospective, cross-sectional data informed by a deeper exploration and reflection related to defined CoP theory constructs (Wenger, 1998) (Appendix 7 illustrates the alignment between interview questions and these constructs). However, the semi-structured nature of the interviews also allowed an adaptive approach in response to the participants' experiences. Each interview was held online and questions were led by myself.

Whilst both methods collected rich, qualitative data, there are notable implications for data quality. In relation to the timing of data collection for example, due to the audio diaries being recorded in-the-moment or shortly after the weekly clinical placement experience, this may reduce reporting bias, potentially improving the data accuracy. Whereas, due to the retrospective nature of the interviews, this may increase the chance of memory errors from participants due to forgetting or altering details from past events, potentially reducing data accuracy. I attempted to mitigate this potential data accuracy issue by conducting the interviews as soon as possible, for example, within two weeks after the clinical placement experience. In terms of the data collection context and depth, another implication is that the audio diaries were deemed more appropriate for capturing longitudinal changes, daily and weekly routines, whereas the interviews were deemed more appropriate for a deep, reflective exploration of 'how' and 'why' activities occurred, and the emotions and meaning participants attached to these. Finally, in terms of structure and control, another implication is that the audio diaries were participant-led, providing more freedom to their thinking but

potentially less detailed or focused data. Whereas, the interviews were interviewer-led, providing me with an opportunity to guide the conversation, probe more deeply into topics, producing data which is more focused towards the CoP theory constructs and research questions.

Further consideration was also given to the relationship between the longitudinal, in-the-moment audio diaries and the cross-sectional, retrospective interviews, including how the different timing and the reflective nature of these methods shaped the data produced and their contribution to the analysis. The audio diaries captured participants' more immediate reactions, their emotions and interpretations of experiences in close proximity to the events as they occurred, whereas the interviews provided a more reflective space in which participants could contextualise experiences, reconsider earlier perspectives, and elaborate on aspects raised in the audio diaries. In several instances, issues that were originally described in the audio diaries were subsequently explored in greater depth during interviews, with participants providing additional contextual detail regarding participation and learning, reflecting on the significance of events, or providing more depth to their understanding of experiences over time. Whilst the interview accounts occasionally developed or reframed the earlier audio diary accounts, they rarely contradicted them. During analysis, attention was given not only to similarities across the data sets but also to changes in emphasis, reinterpretations and differences between accounts provided in real time and retrospective accounts. By considering these distinctions, I was able to develop a richer understanding of participants' experiences of participation, learning and PIF, and interpret how meanings were constructed, negotiated and refined over time. The combination of both data sets strengthened the analysis by capturing both immediate lived experiences and subsequent reflections, resulting in a deeper, more nuanced interpretation of the phenomena.

4.5.3.2 Rationale for combining audio diary and interview data for analysis

The qualitative data from both methods was combined for analysis because I deemed that this would offer conceptual and analytical advantages. First, combining the data from both methods allows an analysis of participant experiences over time. It was deemed that this

would allow me to analyse how participant interpretations of their experiences evolve because the diaries captured in-the-moment accounts and the interviews provided retrospective, reflective sense-making. Second, I considered that each method both complements and might compensate for the limitations of the other. For example, diaries reduce reporting bias but potentially lack in-depth reflection, whereas, interviews allow for in-depth exploration of thoughts and feelings surrounding events but will involve reconstructed accounts based on memory. I deemed that analysing the data together would produce a more comprehensive understanding of the phenomena, rather than treating them separately. Third, I deemed that combining the data sets could strengthen the explanatory power of the analysis. For example, integrating the data sets allows themes to emerge holistically and across the contexts from when and where the data is collected, rather than the analysis and themes remaining restricted to the method. For example, a point raised in an early audio diary may be later reframed or explained in the interview conversation. Therefore, analysing the data together, rather than separately, enables an exploration of how participants negotiate and reconfigure their experiences, providing for a deeper, more nuanced understanding of participation, learning and PIF.

4.6 Ethical considerations

This study required the careful consideration of possible ethical implications, particularly due to the sensitive nature of medical students potentially recording experiences related to individual staff members, patients and patient safety, healthcare practice and/ or professional conduct. Therefore, I was cognisant of moving beyond a primarily compliance perspective (for example, simply meeting standard university ethics procedures) to a position where ethical considerations were integral to all stages of the research and were reflected in the study's research design.

I adhered to the ethical research standards of the University of Sheffield and gained ethical approval for the study on the 7th September 2023. The following additional documentation is included in the application.

- Participant Information Sheet (Appendix 2)
- Consent Form (Appendix 4)

- Data Management Plan (Appendix 5)
- Anonymisation Protocol (Appendix 6)

This section illustrates some of the other main ethical considerations which necessitated myself adopting a reflexive approach when making key decisions. Several specific ethical risks were identified and addressed throughout the study. These are outlined in Sections 4.6.1 to 4.6.4.

4.6.1 Managing sensitive reflections on patient care and conduct

A primary ethical concern was the potential for participants to reflect on experiences involving individual staff, patients, or perceived unsafe or unethical practices. This was particularly relevant in the context of medical education, where high-profile cases such as that of Dr. Bawa-Garba, in which reflective practice documentation was perceived as being used in a legal case (Emery, Jackson and Herrick, 2021) have raised awareness of the risks surrounding sensitive data.

To address this, I adopted similar strategies across both the audio diaries and interviews. For example, on the Audio Diary Participant Information Sheet (Appendix 3) I included the following guidance:

> "Within both the audio diary recordings and semi-structured interviews, you are specifically requested to not mention the names or make reference to any individual non-participant, such as a specific medical student, tutor, colleague and/or patient. However, if data is collected which could identify other people not involved in the research, research protocols are in place to ensure that all identifiable data will be anonymised"

I explained the importance of adhering to this guidance at key stages within the study, for example, when initially discussing the study, Participant Information Sheet and the signing of the consent forms. The Consent Form has a specific criterion relating to this that requires signing. At the beginning of the interviews, I was able to remind the participants of the importance of adhering to this guidance and to focus their responses on their learning and

professional identity development. I was also mindful of this guidance when conducting the interviews and asking follow up questions.

4.6.2 Data security

Alongside participants recording audio diaries on their mobile phones, typically at the end of each week of placement, there was a requirement for this sensitive data to be recorded on a secure device and then transferred securely to a research folder for later analysis. This was to prevent the data from being hacked or lost due to an unsecure device or being transferred insecurely, for example, by being emailed to the researcher. Therefore, to develop these processes, I engaged in discussions with the IT Security Team at the University to develop guidance for how participants should record and upload each audio diary to their own secure individual folder, which only I had access to. This guidance is explained on page 2 of the Audio Diary Participant Information Sheet (Appendix 3). To promote compliance, guidance was also included within Section 6 ('What will happen to me if I take part? What do I have to do?') of the Participant Information Sheet (Appendix 2). All participants were required to sign a declaration on the study's Consent Form agreeing to follow this guidance. This supported all audio diary recordings being securely transferred.

4.6.3 Researcher unconscious bias

Reid *et al.* (2018) explain the importance of transparency on the researcher's positionality and potential biases when evaluating the authenticity of research findings. Before data collection, I conducted a wide ranging review of literature relevant to the study (see literature search and analysis strategy in Appendix 1) which strongly indicated that participation in the practice of a CoP is beneficial for students' learning and PIF. As a consequence, I recognised this as a likely source of unconscious bias towards the research phenomena and, as the researcher, I am *active* in the research process (Braun and Clark, 2013). Therefore, I realised that this could influence my decision making and impinge on the credibility of the results, for example, through how I communicate the study to potential and chosen research participants, design and ask interview questions or interpret the data. Reflecting, becoming aware and acknowledging this potential unconscious bias was a first

step in mitigating it. I was cognisant of it when making decisions and communicating with research participants about the study, for example, by adopting a neutral stance when asking the interview questions and follow up questions. In addition, where suitable, I sought advice from my supervisors and trusted academic colleagues, on such things as the wording of the audio diary prompts and interview questions.

4.6.4 Power imbalance between the researcher and research participants

As an academic member of staff within the School which organises the undergraduate medical degree, I was mindful of a perceived power imbalance between myself and the research participants (medical students) because, historically, learning and work in medicine is both highly social and influenced by social power and hierarchy (Vanstone and Grierson, 2022). For example, I was aware that this may create the potential for research participants to be wary or even mistrustful of sharing any negative learning experiences because they consciously or unconsciously believe that this could have negative consequences on, for instance, their course attainment or progression. To mitigate this, I explained my role as a researcher and that all data collected would be treated in the strictest confidence and kept securely. Informed by the views of Karnieli-Miller, Strier and Pessach (2009), I also explained the rights, roles and responsibilities of the research participants to them at key stages within the research, as well as speaking with colleagues about the expectations of medical students when undertaking clinical placements. This awareness was developed primarily through speaking with academic colleagues involved in both organising and facilitating student participation during clinical placements. This awareness was important because, as a non-clinical academic, I have not undertaken an undergraduate medical degree or clinical placements before.

Vanstone and Grierson (2022) explain potentially harmful but also generative features of power and hierarchy in medical education. For example, students may engage in impression management and choose to express themselves in a performative manner to offer views which they perceive as being valued by those with more power or status within the hierarchy. A generative aspect includes the potential to influence student behaviour and responses through praise. In this study, there was potential for the perceived power dynamics to influence the participants' willingness to be open, to feel pressured to respond

in a way which pleases me or to confirm any perceived expectations. To address this, I sought to build trust and a safe space for openness through being transparent about the aims of the research, my desire to understand their specific lived experience, recognising both their expertise and busy schedules, as well as explaining the potential importance of this study for enhancing future student learning experiences. Additionally, I sought to build rapport and a relationship with the participants through regular communication on email, being friendly and regularly asking if they are ok with everything they are doing and if they have any questions. Furthermore, I was conscious of how potential power dynamics and my own biases could influence how I interpret the data, underscoring the importance of an ongoing, reflexive approach to acknowledge my own researcher positionality and inherent biases. To aid this I kept a reflective diary (Appendix 9).

With the main ethical considerations established, the following section articulates the trustworthiness of the research.

4.7 Trustworthiness

The trustworthiness of qualitative research is paramount in the fields of health (Ahmed, 2024), health education (Fitzpatrick, 2019) and higher education (Stahl and King, 2020). Therefore, to support the trustworthiness of this research, I utilised the following four criteria defined by Lincoln and Guba (1985) from which qualitative researchers can evaluate the trustworthiness of their study:

- credibility (internal validity);
- transferability (external validity);
- dependability (reliability);
- confirmability (objectivity).

The equivalents for each criterion from quantitative research are listed within the brackets. In addition, I utilised an additional criterion stated by Adler (2022) who describes the importance of clarity of the theoretical framework used for social science research.

4.7.1 Credibility

Credibility refers to how closely a researcher's interpretation of the data reflects the participants' views (Nowell *et al.*, 2017). In other words, the confidence one has in how accurately the findings reflect the phenomena being studied. To ensure the credibility of this study, I collected longitudinal data about participants' learning experiences through weekly audio diary recordings and cross-sectional data through in-depth interviews soon after the clinical placement. These multiple data collection methods helped with collecting a rich data set (Fitzpatrick, 2019) and triangulating the data sources, which facilitated a deeper, more comprehensive understanding of the phenomena. In addition, I adopted a reflexive approach throughout the study by maintaining a reflective diary (see Appendix 9) of thoughts about the study and the research process, as well as detailing the process followed throughout the theoretical framework development (See Table 2.1 in Chapter 2), literature search and analysis (Appendix 1) and data analysis (See Table 4.4). The researcher unconscious bias example within Section 4.6 illustrates how I recognised a potential source of unconscious bias towards the phenomena and the steps I took to address this.

4.7.2 Transferability

Transferability refers to the extent to which qualitative findings can be applied in other contexts (Nowell *et al.*, 2017). This research is a relatively small-scale study focused on the experiences of six medical students undertaking clinical placements. To aid transferability, Fitzpatrick (2019) recommends providing "thick description" (p. 214) which describes the participants, events and brings the story alive for the reader. Therefore, to aid the reader to make transferability judgements to different settings and contexts, this study's findings provide a detailed insight into the phenomena through rich descriptions of students' experiences of participation, learning and identity formation over time within a clinical placement, as well as detailed descriptions of the methodology, sampling criteria and processes followed.

4.7.3 Dependability and confirmability

Dependability refers to the transparency of the research process allowing others to confirm the results and confirmability refers to the extent to which the findings are grounded in the actual data (Nowell *et al.*, 2017). Hanson *et al.* (2011, p. 380) state that a clear "paper trail" and rigorous recording procedures for data collection and analysis strengthens the dependability and confirmability of the qualitative research. Therefore, to support the dependability and confirmability of the findings, documentation records and accounts of the following research processes have been retained.

- Literature search and analysis strategy (including the ranking of each literature item).
- Theoretical framework development notes.
- Audio diary and interview recordings and transcripts.
- Data analysis decisions and communication details with all participants.

Adler (2022) explains that reflexivity is key for strengthening researcher objectivity towards the participants and phenomena. Hence, a reflexive approach was maintained throughout the study by exploring and documenting my own researcher positionality as well as maintaining a reflective diary (see Appendix 9).

4.7.4 Theoretical framework used

Adler (2022) states that to improve the trustworthiness of qualitative research, the researcher should be clear with themselves and the consumers of the research on what theoretical framework has been used to guide the research questions. This study utilises CoP theory (Wenger, 1998) and each theoretical construct used is detailed in Table 4.2 and the concept is explained within Chapter 2 (Theoretical framework). The key theoretical constructs not used as part of the data analysis or subsequent findings are detailed in Table 4.3 with reasons for this choice. The audio diary prompts (Appendix 3) were informed by the theoretical constructs of CoP theory; however, participants could reflect upon any aspect of their learning or professional identity formation. The interview questions (Appendix 7) used are also mapped against each theoretical construct of CoP theory (Wenger, 1998).

4.8 Conclusion

I adopted a social constructivist ontological and interpretivist epistemological positionality towards the research questions and phenomena under investigation. To answer the research questions, this study utilised the data collection methods of audio diaries and semi-structured interviews which led to the collection of a rich data set. The data was analysed using a selective coding process utilising constructs from CoP theory which resulted in a detailed theoretical and pragmatic understanding of the research phenomena. Ethical integrity and trustworthiness were ensured by ongoing reflexivity throughout the whole research process.

In Chapter 5, I will present the findings following the data analysis to address the research questions.

Chapter 5: Findings

5.1 Introduction

The overall aim of this research is to understand how medical students both learn and develop their professional identity during clinical placements through the lens of community of practice (CoP) theory (Wenger, 1998). This chapter presents the findings following the analysis of the participants' audio diary recordings and interviews to address the following two theoretically-informed research questions.

> **Research question 1:** How does participation in social communities of clinical practice support medical students' learning?
>
> **Research question 2:** How does participation influence the formation of professional identity within these communities?

The findings are organised under two main analytical themes from CoP theory, namely practice and identity. Each analytical theme relates to a specific research question which is detailed in Figures 5.1 and 5.2. Each analytical theme is then further subdivided into individual theoretical sub-themes from CoP theory (Wenger, 1998).

The following bullet points signpost the location of information relevant to this study's findings.

- Analytical themes and sub-themes - Table 4.2 in Chapter 4 (Methodology and methods).
- Explanation of the aforementioned themes - Chapter 2 (Theoretical framework).
- Participant quotation selection process - Table 4.4 in Chapter 4 (Methodology and methods).
- Findings which influence both practice and identity - Section 7.2.3 in Chapter 7 (Conclusion).

The findings in this chapter are supported by participant quotations. Typically, a single quote is provided to illustrate what the findings indicate, and to offer insight into the participants' voices and experiences; however, on occasions, multiple quotes are used because of slight differences in meanings. Thick descriptions of the phenomena for each theme and detailed

descriptions of the methodology and data analysis process (Chapter 4) should enable the reader to assess against their own experience and potential comparability with other contexts.

5.1.1 Participant information overview

Six students from Year 4 of the undergraduate medicine course at a university in the north of England took part in the study (see Table 5.1). In Year 4, students typically undertake clinical placements across a range of medical disciplines and each placement has a duration of approximately eight weeks. As a reminder, the study investigated *how* students learned more generally on placement and not necessarily *what* they learned, therefore, I did not differentiate between the type of placements undertaken and data was not collected on this.

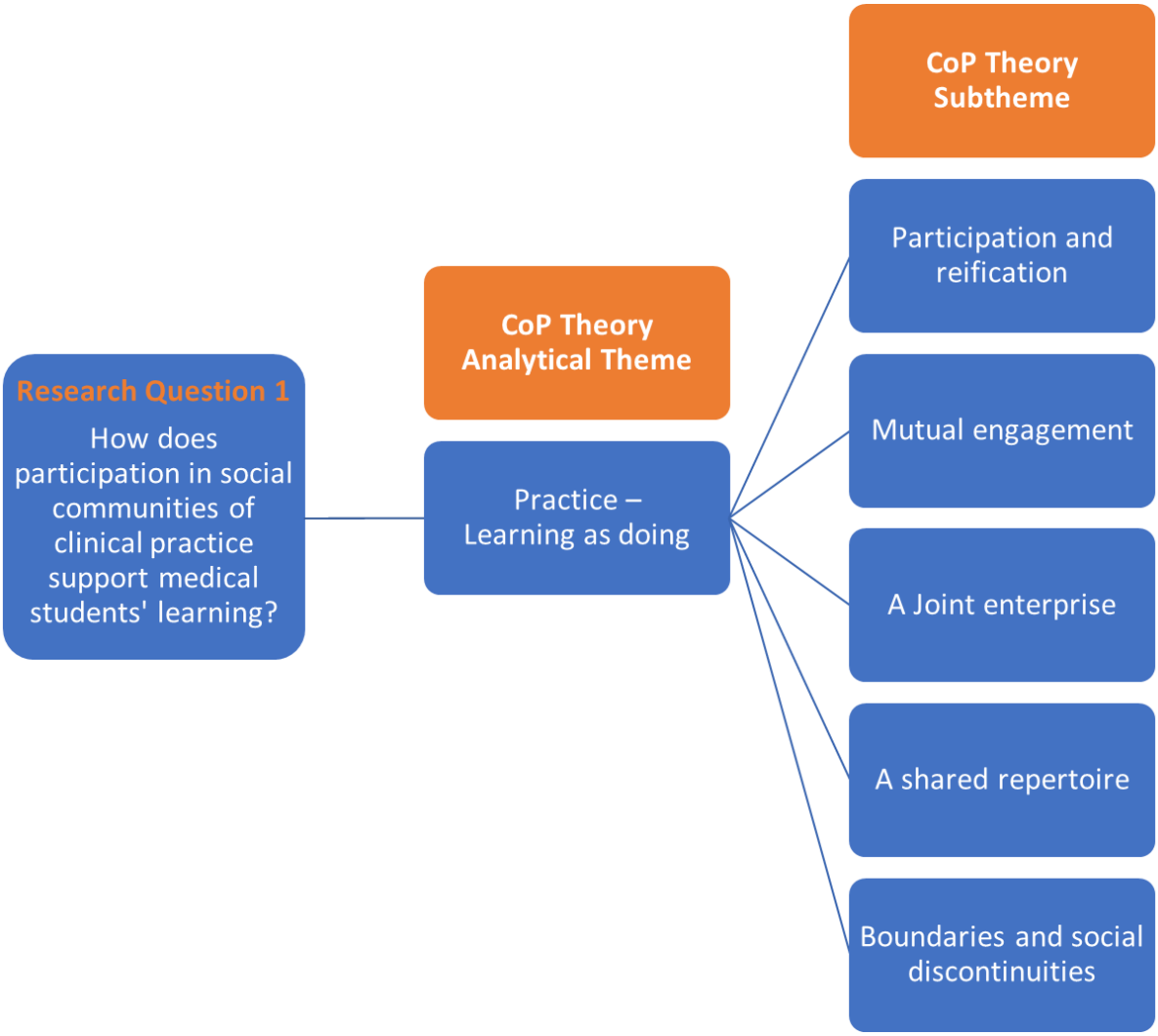
Table 5.1 - Participant information

Participant Identifier	**Participant**
P1	Participant 1
P2	Participant 2
P3	Participant 3
P4	Participant 4
P5	Participant 5
P6	Participant 6

5.2 Community of practice theory - Practice (Learning as doing)

This section presents an analysis of the findings relating to Practice (Learning as doing) to address research question 1, which is: 'How does participation in social communities of clinical practice support medical students' learning?'.

Figure 5.1 - Structure of findings for practice (Learning as doing)



5.2.1 Participation and reification

5.2.1.1 Active, sustained participation in authentic clinical experiences

The following participant quotes illustrate that active participation in authentic clinical experiences supports student learning. The first quotation highlights a common theme across the data that students perceive that they learn through passive modes of participation such as demonstration and observation, but learning is typically viewed as more effective when it involves more active participation in practice. Collectively, these quotations also exemplify Wenger's (1998) notion of participation being an active process in an enterprise.

> "actually doing the experience myself, I think definitely is a way that I find very useful to learn" [P6, Audio Diary]

> "there's always that saying like see one, do one, teach one … I think fundamentally that's kind of how it works in medicine … I've just found it useful to be able to just be shown how to do something … then you just kind of, you go away and do it" [P4, Audio Diary]

Data from Participants 4 and 5 indicate that a student's learning can be perceived as effective when they are participating in activities that are at the edges of their comfort zone but still feel safe, and that participation in the clinical context helps this learning and the memorisation of information.

> "I think being shown how to do things that are kind of outside your comfort zone and then being given a chance to do them yourself … in the sense that you're given the opportunities like in a safe environment" [P4, Audio Diary]

> "when the knowledge is combined in the clinical setting with medical context and sensory and visual context around that information, it definitely sticks in your brain better" [P5, Audio Diary]

The following quotation from Participant 3 illustrates a finding within the data that a student's learning through participation in practice can be perceived as happening more sub-consciously over a period of time. The important element of time is a notable trend in both data relating to learning *and* identity, demonstrating the importance of *sustained* participation in practice.

> “I think it's almost a subconscious thing how, I think if you're just fully immersed in these people speaking a different language” [P3, Interview]

5.2.1.2 Connections between proactively building positive professional relationships and participation in practice

The following quotation from Participant 2 provides evidence for a finding which suggests the importance of a reciprocal, proactive approach from both a student and CoP members to enable the student’s successful participation in practice. When a student demonstrates proactivity, this can increase the likelihood that CoP members will support their participation. These following participant quotations also illustrate a common theme across the data that a proactive approach to student participation from both students and CoP members is beneficial and important.

> “it was a mixture of me like offering, saying like oh you know, could I practice doing that or them be like … you mentioned you want to do this” [P2, Audio Diary]

Data from Participants 3 and 6 suggest that building positive relationships with CoP members can provide potential opportunities for participation in practice and can help a student negotiate their level of involvement. The resultant participation can help build trust and confidence in a student’s competence, which can facilitate future mutual engagement. The following first quotation also illustrates Wenger’s (1998) notion of mutual engagement, whereby people start to become a member of a CoP through sustained, dense relations of mutual engagement.

> “but I think it’s the relationships you build with people. I think when you have more rapport outside just that very much student-teacher dynamic, where they actually, kind of, got to know you as a person, you do feel more able to push … I had much more control over how involved or not so involved” [P3, Interview]

> “I was able to help a lot more with documentation and aided the team in admitting new patients because I feel like since I've been there for quite a while now, they were able to trust me in knowing the process and getting really involved so I was able to work alongside people better” [P6, Audio Diary]

Data from Participant 4 suggests that professional dialogue about practice with a supervisor or doctor can improve a student's learning. When this dialogue is focused on the joint enterprise, this can help a student to feel more involved in the practice, even if they may not be able to participate fully yet.

> "I kind of formulate a management plan and discuss that with my supervisor, being challenged on that really helps … it helps you develop your own reasonings for your decisions as a doctor … it also makes you think what else could I have done … and I think that kind of allows for lateral thinking" [P4, Audio Diary]

> "at the end of the consultation they might say, oh have you got any questions to ask? … and it just allows you to kind of feel a bit more like part of the consultation" [P4, Audio Diary]

The data suggests that when doctors demonstrate belief in a student's ability, their motivation to participate and to assume responsibility and accountability can be increased. In turn, their participation and increased greater responsibility and accountability can improve their motivation. This implies a relationship between participation, responsibility and accountability, and student motivation. Also, when a student's participation in practice becomes increasingly independent, this can positively influence a student's confidence.

> "think having a doctor who's really invested in and wants to push, even passed like when you're saying, oh I'm not really ready, but they're like no, this is something you need to do, I really find that helpful" [P3, Audio Diary]

> "after a day where I feel like I've been given quite a lot of accountability, I do feel always energised and it gives me a bit more of a buzz" [P6, Interview]

> "I could kind of find this flow and get to know the patient a bit more … I felt the more time I had alone with patients the more confident I became" [P3, Interview]

5.2.1.3 The influence of participation in practice and when it is inhibited

The data indicates that successful student participation in practice can positively influence a student's learning and feelings. Participants indicated that successful participation can

support them to feel: a legitimate member of the CoP; more competent and confident in their clinical ability; increased satisfaction with their learning; and useful and helpful.

> “and also being able to actively participate in some of the clinical skills … has definitely made me feel a part of the team” [P1, Audio Diary]

> “It made me feel competent and more confident in my ability because they've been quite a while since I practised those specific clinical skills” [P1, Interview]

> “so I'm getting more out of the placement because I've gotten stuck in and involved” [P2, Audio Diary]

> “they commented they're like you really do make my job quite a bit easier and it's just a really nice feeling to not feel like I'm generating more work. I'm actually able to use my knowledge and my time to help” [P3, Interview]

This final quotation indicates the value of students feeling useful and helpful. Other data explored in Section 5.3.9 (Identification and negotiability) also indicates that this feeling helps students to feel a legitimate member of the CoP.

A quote from Participant 3 suggests that the clinical context and a doctor’s workload can inhibit opportunities to learn via participation. This aligns with other data indicating how sometimes the sociocultural clinical context and a lack of consideration from CoP members can inhibit student participation and learning.

> “Sometimes you come in and they're like, I'm really sorry this clinic's mental. I'm just not gonna have the time to kind of sit with you and give you those opportunities because they're just bang, bang, bang” [P3, Interview]

Collectively, the findings in Section 5.2.1 illustrate that medical student learning is not simply associated with presence in clinical practice but it is significantly enhanced through active participation that situates the students as legitimate and engaged members of the CoP rather than peripheral observers. The analysis suggests that when students move beyond their comfort zones, engage in professional dialogue, develop relationships and

assume responsibility, participation becomes a mechanism through which students learn the practice of the clinical community.

5.2.2 Mutual engagement

5.2.2.1 The influence of building positive, reciprocal professional relationships

The following first quotation from Participant 3 implies that positive experiences from mutually engaging with CoP members can help a student to be more proactive with participating in the practice, which is a novel aspect emerging here. These experiences then further support their mutual engagement creating a virtuous cycle; however, the opposite is also evident illustrated by the following second quotation from Participant 5. The identification of a potential virtuous and vicious cycle is a novel aspect in the data and this aligns with the view of Wenger who explains that communities of practice are significant places of "learning, meaning and identity" (1998, p. 133) but should neither be romanticised nor vilified.

> "I think being able to have that rapport and getting to know, and becoming part of the kind of community, then allows you to feel more comfortable with putting yourself out there" [P3, Interview]

> "It just means that you come into it feeling like a small insignificant person plus a burden on the doctors that are already quite stressed. Which means you're less likely to strike up conversation, which it's just that loop again, they're less likely to help you, you're less likely to ask them for help" [P5, Interview]

Again, the important element of time is also evident in mutual engagement, which a student may perceive as a relational process that is developed over time, illustrated by the following quote from Participant 5. This quote also embodies Wenger's (1998) notion that mutual engagement is not just a one-off event but involves sustained, ongoing interactions.

> "I think that's just natural tendency, the more you get to know someone the more you like them, the more you're happy to help them and take energy and time out of your day to explain something more in depth to someone else" [P5, Interview]

The data suggests that mutual engagement between students and CoP members can help build shared expectations, facilitate future student learning and can help a student to feel a legitimate member of the CoP. A novel aspect in the data is the relationship between student mutual engagement in practice and the creation of shared expectations, which indicates the benefits of a proactive, reciprocal approach to sustaining mutual engagement in practice.

> "I think they got to a point where they kind of, I guess you build up that sort of relationship of being able to like know what to expect of each other" [P6, Interview]

> "when you've had those discussions not just purely about medicine … it then facilitates you when you're back talking about medicine and placement to have more in depth discussions there or ask more questions" [P6, Interview]

> "they're coming and have a chat and you get included and whether it's not just about non-medicine stuff. Even if it's just that your opinion's valued in a discussion about maybe a patient … you feel like you're not just like some person who's arrived this week … you're actually a valued member of the team" [P3, Interview]

This final quotation illustrates the influence of rapport development with CoP members and a culture that values student participation, which can help students to feel a legitimate and valued member of the CoP.

Linked closely to Wenger's (1998) other dimensions of practice, the following participant quotations suggest that mutual engagement can help a student to understand the joint enterprise and the shared repertoire. Wenger (1998) states that these three dimensions are a source of coherence for a community. Thereby, the data indicates their existence in practice and relevance for clinical communities of practice.

> "just in the office, like talking about patients and kind of having those discussions … you could just get a sense of what, that everyone was on the same page of what they were wanting" [P6, Interview]

> "we've got quite a good system going where I'll call the patients and sat in front of him and then we'll put the patient on hold and then decide like kind of agree on a management plan and then finish the call" [P3, Audio Diary]

A notable trend in the data indicates that the relational process of mutual engagement is supported via a proactive, reciprocal approach to participation, and positive experiences with this process can influence a student's motivation to sustain their participation.

> "I think you have to be quite proactive and willing to take initiative and also I'd say pretty confident and to be able to put yourself out there" [P6, Interview]

> "really reinforces to me that you can't wait, that you have to kind of have to offer to do something instead of waiting … or even if they said no, you know unfortunately can't do it this time … they offered to kind of take part in some other things" [P2, Audio Diary]

> "whether motivation comes after action or the other way around but, you see a patient, you actively participate, feel fulfilled and then if you get kind of good feedback from these patients it helps you sustain that" [P4, Interview]

5.2.2.2 Strategies to support students' mutual engagement

The following participant quotations suggest that introductions with CoP members can support students' integration into the CoP and more social conversations with CoP members can help a student to mutually engage in practice.

> "I was always introduced and it sounds like a really simple thing … just having been introduced makes you feel actually a part of the discussion and as though you may be kind of invited to say something" [P6, Interview]

> "you start getting to know them which means you can have conversations outside of the clinical sessions … it means that you become more comfortable with them to ask the silliest of questions … I guess that just comes from interacting with other people" [P5, Interview]

To support a student's mutual engagement, a quote from Participant 6 suggests that the location of where a student sits, their vicinity to practice and being able to observe conversations focused on the joint enterprise is also important. This quotation illustrates that mutual engagement can be supported when a student is physically closer to the

practice and CoP members. The quotation also exemplifies Wenger's notion that it is important that people are included "in what matters" (1998, p. 74) and the practice to enable mutual engagement.

> "I think being able to sit in the office as well really helps that because it meant that whenever there was a patient that someone had questions about, I'd feel like I was a part of those conversations as well" [P6, Interview]

However, a quote from Participant 2 implies that a lack of dialogue from CoP members with a student can lead them to feel that they are not mutually engaging in practice and are not a legitimate member of the CoP. The following quotation exemplifies Wenger's notion that being part of a CoP can be as much about being involved in "bits of talk about work" or even, for example, knowing "the latest gossip" (1998, p. 74).

> "it's always quite difficult when people aren't talking to you, you just kind of feel like, one, you're not involved but two, you're not a part of the team" [P2, Audio Diary]

Participant 4 indicates that when professional dialogue and questioning from doctors focuses on the practice, this can help a student to recall knowledge, learn and improve their confidence.

> "debriefing as well at the end of sessions … going over things that didn't go so well, things that did go well, having like a professional opinion on some of your own decisions. It just instils that confidence and like making mistakes is fine but then at least you learn from them" [P4, Audio Diary]

Overall, the findings in Section 5.2.2. suggest that mutual engagement is not simply an incidental social context for medical students but that it is a key process through which they participate meaningfully within the CoP. The process of building relationships with CoP members appears to help students feel more of a legitimate member and encourages proactivity, which supports a reinforcing cycle whereby positive participatory experiences strengthens their understanding of the shared repertoire and the joint enterprise.

5.2.3 A joint enterprise

5.2.3.1 Learning about the joint enterprise and the importance of feeling responsible

Data from Participant 6 suggests that a student can learn about the joint enterprise over time through mutual engagement with multiple CoP members. The following quotation also illustrates Wenger's notion that the joint enterprise is evident from a collective process of negotiation, and is defined by participants pursuing it and their "negotiated response to their situation" (1998, p. 77).

> "there wasn't anything exactly given to me … I guess that I just came to appreciate that from spending time and listening to the discussions almost and what the approach was of all the people involved" [P6, Interview]

The data suggests that student learning, their motivation to learn and their feelings of legitimacy are positively influenced when they feel responsible for the joint enterprise. These feelings of responsibility to the joint enterprise of patient care can increase a student's sense of professional fulfilment. The following quotations relating to student involvement in patient care illustrate a key theme in the data of the importance students place on interacting with patients and participating in practice focused on the joint enterprise of patient care, for both the enhancement of their learning and professional identity formation (PIF).

> "being given more responsibility definitely helps you learn … like you feel like you have slightly more involvement in patient management and I think that's just really aided my learning a lot" [P4, Audio Diary]

> "it was in front of a patient and I want to know what I'm talking about and that's the push and drive to learn more. That's been the most impactful for me" [P5, Interview]

> "I've really enjoyed feeling like kind of a proper part of the team. I think the trust that's now placed in me with like having consultations" [P3, Audio Diary]

> "I guess the sense of fulfilment and I guess the sense of responsibility that you've had an active part in that patient's care … and I think that's just so big for someone … that you get to feel like you've done a doctory thing as a student" [P4, Interview]

However, when a student does not participate in authentic clinical experiences, this can inhibit their feelings of responsibility and contribution towards the joint enterprise. Also, the nature of the practice can influence the extent to which a student feels that they can contribute towards the joint enterprise.

> "In terms of feeling responsibility, I didn't really feel this at any point this week … I didn't feel like my presence was necessary to be there or that I was particularly contributing to the patients' care this week" [P1, Audio Diary]

> "to compare to other places, so I do think I maybe had less accountability in this one … I don't think it would have been appropriate for me to maybe have as much accountability anyway because they were very sensitive discussions" [P6, Interview]

Participant 4 indicates that when a student feels responsible for the joint enterprise, this can help them participate in practice at the edges of their comfort zone. This comfort zone finding is similar but notably different to the previous finding in the participation and reification section. The previous finding illustrates how learning is enhanced when a student works outside their comfort zone but this finding extends this knowledge by demonstrating that increasing levels of responsibility to the joint enterprise can help a student work outside of their comfort zone.

> "being given more responsibility definitely helps you learn, I think it gets you out your comfort zone and pushes you a bit more, and it's like just bordering on the things that you can't do like" [P4, Audio Diary]

Notably, data from Participant 4 also indicates that a student feeling responsible for their own patients and practising medicine more independently can support their learning.

> "I think it definitely gives you a sense of responsibility and we were saying before that really improved my learning that it felt like I was responsible for my own patients" [P4, Interview]

> "Again being given kind of more responsibility, having my own patients, getting to do a bit more with them, slowly just getting better at consultations on my own" [P4, Audio Diary]

5.2.3.2 Strategies to support students to assume responsibility to the joint enterprise

Simple participation activities can enable a student to feel that they are contributing towards the joint enterprise. The following quotation highlights a common point across the data that activities and tasks that students undertake are perceived as useful for their learning particularly when they contribute towards the joint enterprise of patient-care and are authentic, in other words, they are part of the normal, day-to-day activities of the CoP.

> "I guess I definitely was able to help out as I said with the pre-note, making the notes before seeing patients and stuff like that … I was able to help" [P6, Interview]

Belief and encouragement from CoP members for students to assume responsibility for some aspect of practice can increase a student's confidence to participate. In addition, reifying a student's name in practice, and feedback from patients and doctors can increase feelings of responsibility and accountability to the joint enterprise of patient care, and this final point is a novel emerging aspect.

> "it gives me more confidence that they kind of want me to do this and want me to take this responsibility" [P3, Audio Diary]

> "I definitely felt accountable because my name was going down that I've written those notes" [P6, Interview]

> "I definitely felt responsibility and accountability because the patients would feed back to the doctors and they would feed back to me at times" [P5, Interview]

5.2.4 A shared repertoire

5.2.4.1 How students learn the shared repertoire

The following quotation from Participant 6 suggests that how effectively a student learns the shared repertoire can be influenced by their existing knowledge and experience.

> "when I was sat in the MDT this week, I didn't really feel like there was much for me to gain or to contribute … discussing things which may be a bit above my level of

knowledge, it sometimes feels like it's a bit hard to probably catch on" [P6, Audio Diary]

Data from Participants 4 and 3 indicates that a student can learn the shared repertoire subconsciously, over time. In addition, the data illustrates a range of strategies that can support a student to learn the shared repertoire such as, for example, by proactively participating in practice and mutual engagement, and via activities such as asking questions, professional dialogue with CoP members, observation of practice, their own research and direct instruction. The following first quotation also illustrates Wenger's (1998) notion of a shared repertoire which are resources for negotiating meaning, such as words, concepts or routines. Also, the second quotation indicates a novel emerging aspect that learning the shared repertoire of the CoP is typically a process which a student is not immediately aware that they are learning.

"And then it's quite fake until you make it kind of thing that you kind of got to stick at it and force yourself to keep using these terms and jargon and systems … but eventually I think it does come" [P4, Interview]

"I think when you realise that you're kind of subconsciously comfortably using words … that you so easily understand something that was so confusing before" [P3, Interview]

"I think you've just got to speak up as a student that if you're unsure of how to use tools and equipment safely then just say, can you show me how to do it for this one? And there's nothing wrong with that" [P4, Interview]

"He was like, what are you really concerned about? … What type of conditions are you thinking of? … for me the reason why I find it really helpful was because it allows me to actually recall on my knowledge" [P2, Interview]

"I think you've got to be quite observant … I guess the same way that we pick up on dialect and new words that we learn, it's the same with kind of how to use them, that you just hear them in context and hear them in sentences. And I guess maybe just trying to use them yourself" [P4, Interview]

> “I just think I've picked it up as I go along or we research afterwards or at the time” [P6, Interview]

> “there's a lot of terminology … that completely went over my head … that luckily my supervisor took some time to give me a bit of teaching on” [P1, Audio Diary]

Collectively, these findings suggest that a students’ understanding of the shared repertoire develops through sustained, proactive engagement in practice and engagement in everyday interactions within the CoP.

Strand *et al.* (2015) suggests that clinical educators still focus on a teaching curriculum, rather than a work-based learning curriculum. In this study which solely focused on learning via participation, this final quotation is more of an anomaly in the data but is interesting because it illustrates that students learn from being ‘taught’ and direct instruction from others during clinical placement, in addition to participating in practice. This supports Sfard’s (1998) viewpoint regarding the learning by acquisition and learning by participation metaphors, and that “it is essential that we try to live with both” (p. 10).

5.2.4.2 The influence of learning and using the shared repertoire

Data from Participant 1 indicates that a student's learning from using the shared repertoire in the clinical context can improve their memorisation, confidence and help them to feel a legitimate member of the CoP. Participant 4 implies that a student learning from using the shared repertoire in the clinical context could support them to develop their own style of practice. The following second quotation indicates a novel aspect which is that learning and using the shared repertoire can improve a student’s confidence.

> “learning it in the context of a patient is what really helps to remember those things” [P1, Interview]

> “I think the familiarity with all the conditions, language, routines, that I used … I think all of these things contributed to me feeling confident” [P1, Audio Diary]

> “So I'm definitely starting to get used to some of the language being used which is definitely helping me to feel more like a part of the team” [P1, Audio Diary]

> "I've just found it useful to be able to just be shown how to do something on the system or with a patient and then you just kind of, you go away and do it and you get to like do it yourself in your own style and slowly you kind of just develop your own like professional identity" [P4, Audio Diary]

This final quotation indicates another novel feature in the data, which is that when a student uses the shared repertoire in their own individual manner, this can then be perceived as forming part of their professional identity. The quotation illustrates Wenger's (1998) notion that while CoP members may produce an individual practice in response to their perception of the enterprise, it still belongs to the CoP as a whole.

5.2.5 Boundaries and social discontinuities

5.2.5.1 Factors that influence students to feel a legitimate member of a CoP

Data from Participants 5 and 1 suggests that social conversations with CoP members, having a student's name reified in practice, and what a student wears can help them to feel a legitimate member of the CoP. The first following quotation exemplifies Wenger's (1998) notion that subtle reifications can signify that a person is within the boundary of a CoP and the final quotation illustrates Wenger's notion that explicit markers of membership can sometimes reify the boundary of a CoP.

> "I was invited to go to lunch … and spoke about things outside of medicine and that was very refreshing and it made me feel like part of the community of practice" [P1, Interview]

> "everyone knows that you're part of the team looking at the electronic record, having your own room with your name" [P5, Interview]

> "because you're normally wearing this stethoscope around your neck and the lanyard, and the sort of clothes that some doctors would be … often a few of the nurses on the ward would mistake me for being a doctor … then I'd have to say sorry I can't do that but that would probably help to feel like a community practice" [P1, Interview]

5.2.5.2 Factors that influence students to not feel a legitimate member of a CoP

However, the data also suggests that a dismissive attitude from CoP members and not knowing the physical environment can lead a student to not feel a legitimate member of the CoP.

> "there's been times when kind of doctors would fob me off or told me to go with someone else … and it just felt like you weren't wanted and I think that just gives you a sense of just being outside of the boundary" [P4, Interview]

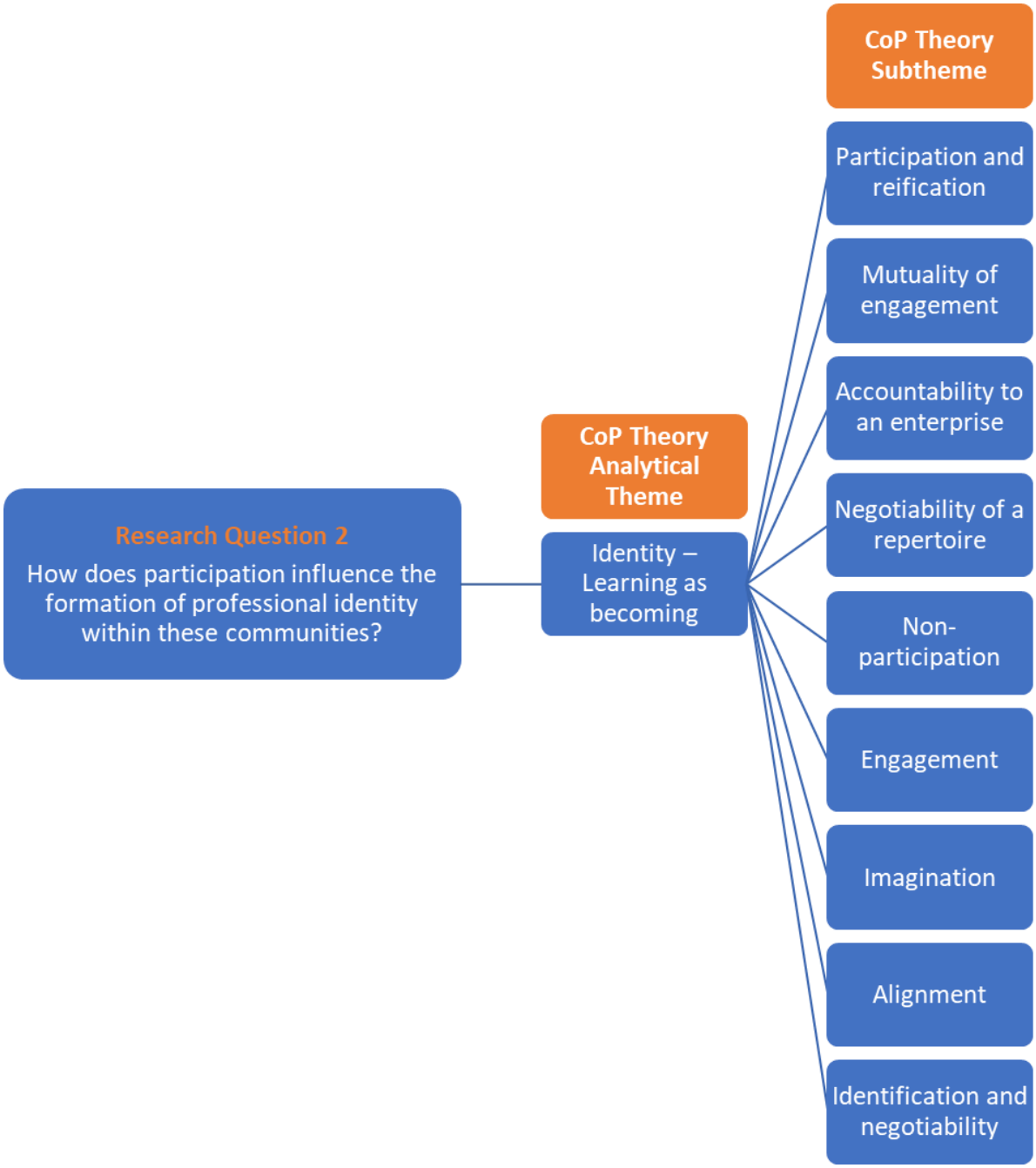
> "Weirdly enough not recognising the actual location very well. So, for example, I found the [Hospital name removed] to be like a maze … so it's quite easy to feel on the outside of that community of practice in those environments" [P1, Interview]

Collectively, the analysis of Section 5.2 suggests that medical student learning during clinical placements is enhanced when they engage in sustained, active participation in authentic clinical practice, whilst developing positive, reciprocal relationships with CoP members and contributing to the joint enterprise of patient care. Their participation in practice helps them learn the shared repertoire and, as their responsibility increases, they develop a strong sense of legitimacy within the CoP, which reinforces their continued participation in practice and learning.

5.3 Community of practice theory - Identity (Learning as becoming)

This section presents an analysis of the findings relating to Identity (Learning as becoming) to address research question 2, which is: 'How does participation influence the formation of professional identity within these communities?'.

Figure 5.2 - Structure of findings for identity (Learning as becoming)



5.3.1 Participation and reification

5.3.1.1 Active, sustained participation in authentic clinical experiences and other factors which influence PIF

The data indicates that active, sustained participation in authentic experiences during clinical placement focused on the joint enterprise of patient care can help students shape

their professional identity. The following participant quotes also typify Wenger's (1998) view that identity formation in practice involves how we experience participation and reification within a CoP and comprises a layering of events "which build upon each other to produce our identity as a very complex interweaving of participative experience and reificative projections" (p. 151). The following first quotation from Participant 1 implies that a trajectory of beginning to participate in a practice which helps a student feel like they have more active involvement in the community and its joint enterprise can support the formation of their professional identity.

> "I was really lucky to have been given the opportunity to suture one of the patients in the surgery and that was a really amazing experience, it really made me start to feel like a doctor" [P1, Audio Diary]

> "I'm just a student and it feels a little bit unnatural. And sometimes you feel like you're pretending to be a doctor, but I think you have to kind of pretend until it feels natural and that's maybe what developing your professional identity is a little bit about" [P4, Interview]

These findings indicate a common theme across the data whereby active participation in authentic clinical experiences focused on the joint enterprise of patient care influences *both* medical student learning *and* professional identity formation.

The noteworthy trend in the data that a student's learning and their professional identity formation happens over time, is illustrated by the following quotation. This quotation from Participant 4 also indicates the importance of *sustained* participation in practice and embodies Wenger's notion that "identity is a trajectory in time that incorporates both past and future into the meaning of the present" (Wenger, 1998, p.163).

> "I'm getting really comfortable with my own consultations and dealing with patients in my own way, and I think it is just, it just takes time to develop that, but it's definitely necessary like developing a professional identity as a doctor" [P4, Audio Diary]

Data from Participants 4 and 3 suggests that taking on responsibility, increasingly independent practice and feeling increasingly competent via participation in practice can

influence a student's PIF. The following first quotation illustrates Wenger's (1998) notion that an identity manifests itself through assuming responsibility for and contributing to a joint enterprise.

> "I guess the sense of responsibility that you've had an active part in that patient's care … and I think that's just so big for someone like that, that you get to feel like you've done a doctor thing as a student" [P4, Interview]

> "that kind of having that independence really affects my kind of learning and how I feel like empowered to be my own doctor" [P3, Audio Diary]

> "But I think the feeling of like, o yay today I get to do doctory things as a student … and I think the more you do the more comfortable you feel with doing those things and the more like easy it is and the more like you probably feel, when things start to become more slick and you feel more doctory" [P4, Interview]

This final quotation typifies Wenger's (1998) notion that engagement (a mode of belonging) affords a person the power to be actively involved in negotiating meaning (participation and reification) to construct experiences and experience an identity of competence.

Participant 4 in particular, illustrates that they perceive developing their own individual style of practice as part of their professional identity and that participating with a range of doctors supports this.

> "you go away and do it and you get to like do it yourself in your own style and slowly you kind of just develop your own like professional identity" [P4, Audio Diary]

> "but maybe having like two or three doctors across your week. And it just allows you to kind of compare different consultation styles … and it's nice to be able to kind of take a bit of their style into your style" [P4, Audio Diary]

5.3.1.2 Strategies to support students' PIF

Participant data indicates that doctors can support a student's PIF through, for example: involving them in the practice and social aspects of the CoP; reifying their name/ role on work systems which is a novel aspect in the research; providing constructive feedback and

using communication techniques such as active listening and reflecting back. The following first quotation supports an earlier suggestion that a medical student's participation in practice does not necessarily require activities which are highly complex. The data also indicates that learning and PIF is perceived as being enhanced when a student undertakes authentic CoP activities which contribute towards the joint enterprise of patient care. This again typifies a common theme across the data which underscores the importance of students contributing to the joint enterprise for both learning and PIF development.

> "I've been able to kind of do like the lower-level stuff … I think that's really helped me like develop a sense of professional identity, kind of being able to feel a little bit closer to being a doctor when you're not one" [P4, Audio Diary]

> "I also went and had lunch with the staff members … we had a nice chat about our personal lives and it was just really nice and refreshing to feel a lot more respected and almost like a staff member" [P1, Audio Diary]

The previous quotation from Participant 1 most closely relates to the identification construct (contained within the broader identity component) and is an important aspect of a person's identity formation according to CoP theory (Wenger, 1998). This was described in Section 2.4.2.4 in Chapter 2 (Theoretical framework) and will be explained further in Chapter 6 (Discussion).

> "I found that I've been able to really build on my professional identity on these clinical placements and feeling like a doctor, a student doctor, but you know more close to a doctor, the fact that the patients have to come into my room, a room that's specifically for me, that says student doctor on the outside" [P5, Audio Diary]

> "I think the doctors that I'm with at the minute are very good at telling me what I've done well and also giving me a little bit of, you know, constructive criticism, that I can take into my next consultation and that's definitely helped me feel a bit more like I'm doing the job right, a bit closer to being a real doctor" [P4, Audio Diary]

> "sometimes I feel like a colleague who's also learning. A student who is a colleague. When they take their time to sit with me and talk to me about something and I guess it's a conversational technique where they understand what I've said and reflect on

how they felt about what I've said ... it makes me feel like more of that colleague learner" [P5, Interview]

A novel aspect in the final quotation is that a student can feel more like a 'colleague learner', in comparison with feeling like a student, when CoP members use communication techniques such as active listening and reflecting back. This implies that these types of conversational techniques could help students identify as more of a legitimate member of the CoP.

5.3.2 Mutuality of engagement

Data from Participant 2 suggests that sustained mutual engagement with CoP members can support the formation of a student's professional identity by helping them to identify as a legitimate member of the CoP (identifying with a CoP is related to the concept of Identification which is a part of the Identity component within CoP theory). Data from Participant 6 suggests that mutual engagement with patients can also aid a student's PIF. Again, the crucial element of time, the importance of *sustained* participation and that mutual engagement is developed over time is illustrated by the following first quotation. Participant 6 indicates that more social conversations with CoP members can influence the extent to which a student identifies as a legitimate member of the CoP and, by theoretical implication, their PIF. Data from Participant 6 also suggests that when mutual engagement experiences are perceived as positive, this can help a student to have optimistic thoughts and feelings about their potential future professional self, in other words, imagination (Imagination is a mode of belonging in CoP theory, as discussed in Chapter 2, Theoretical framework, Section 2.4.2.3).

"was really a part of that team because I was there for quite a while … I don't know their names exactly, but you recognise their faces and they recognise your face after seeing you again and again and again" [P2, Interview]

"It's more the interactions with the patients … this is what I'm going to be doing … I think that more rings true with me and my sense of becoming a doctor" [P6, Interview]

> "all of the doctors … we all had lunch together and that was really nice in terms of feeling involved in the team … not just talking about medicine and I think that helps with the whole identity thing, and feeling where your place is in the team" [P6, Audio Diary]

> "I think on the whole, the interactions I've had with patients and how good my consultant is with dealing with patients, it's made me think I want to be like she is when I'm a doctor … and that's definitely helped my sense of becoming a doctor" [P6, Audio Diary]

Collectively, these findings underline the central role that mutual engagement and relationship building plays in supporting the formation of medical students' professional identity. Furthermore, these final three quotations also exemplify Wenger's (1998) notion of mutuality of engagement, whereby we form our identity through playing a part in the relations of engagement and establishing relationships.

5.3.3 Accountability to an enterprise

5.3.3.1 Participation, responsibility and accountability, and increasingly independent practice

Participant data indicates that participation in authentic clinical activities focused specifically on the joint enterprise of patient care can support the formation of a student's professional identity. However, when participation is not facilitated but perceived as possible by a student, this can hinder the formation of their professional identity. The data suggests that participation can influence the level of responsibility a student feels towards the joint enterprise, and when this participation results in them feeling an increasing sense of responsibility and accountability, this can positively influence their PIF, learning and feelings of legitimacy within the CoP. When increasing levels of responsibility and accountability lead to increasingly independent practice focused on patient care, this can also have a positive influence on a student's PIF.

> “I was responsible for my own patients … and sometimes you feel like you're pretending to be a doctor, but I think you have to kind of pretend until it feels natural and that's maybe what developing your professional identity is a little bit about” [P4, Interview]

> “feel a bit like you're not kind of worthy of doing your job because you haven't been given the responsibility ... because you haven't been given that responsibility, it's because you're kind of not capable of doing the job that they're doing” [P4, Audio Diary]

> “so kind of writing tasks to do referrals or maybe like writing the referral letter for the doctors that they can send off … I think that's really helped me develop a sense of professional identity … being given more responsibility definitely helps you learn” [P4, Audio Diary]

> “to be given … some sort of responsibility as a medical student and I managed to perform that task successfully … so that definitely made me feel good about myself and my part in that clinical team” [P1, Audio Diary]

> “they're coming to me with a long consultation independently … it helps me practise this identity that I'm trying to form of being a clinician, an independent clinician” [P5, Audio Diary]

This final quotation aligns with inferences from other participants in this identity section, which suggest that students may be cognisant that their participation in practice is supporting their PIF. Also this final quotation and other data from Participant 5 in Section 5.3.1 indicates that a student can possess agency in supporting the formation of their own professional identity. This data implies that PIF is not simply a passive process or that it is developed solely through time spent on clinical placement but that the process of ‘becoming’ involves a sense of proactivity, and is at the same time both an individual and social process. This also embodies Wenger’s (1998) view that the concept of identity serves as a pivot between the social and the individual, and that explaining identity in social terms does not deny individuality. Moreover, this quote and other data illustrates Wenger’s notion that there is a “profound connection between practice and identity” (1998, p. 149).

5.3.3.2 Factors that influence PIF and confidence

Participants 4 and 6 provide similar but slightly different viewpoints. For example, Participant 4 indicates that positive feedback from patients and feeling trusted to participate can support a student's PIF and confidence. Data from Participant 6 suggests that feeling trusted to participate can support a student's PIF and confidence. The following final quotation indicates that the element of trust can build confidence and this improved confidence can influence imagination, which is a mode of belonging in CoP theory and a fundamental part of how professional identity forms within a CoP (described in Chapter 2, Section 2.4.2.3). This final quotation also illustrates Wenger's (1998) view that imagination is a source of identity by perceiving connections of a future extended identity through time and space via extrapolating from our own experiences.

> "that gratification from patients when something goes well … really really helps. And I think it just makes you feel like a doctor, it is building that professional identity and just instilling confidence" [P4, Audio Diary]

> "I think I really like being able or being trusted to do things. It definitely makes me feel more confident … it just makes me feel more confident for what I'll be doing in the future" [P6, Interview]

5.3.4 Negotiability of a repertoire

The data illustrates that both learning and using the shared repertoire of the CoP can support the formation of a student's professional identity and help them identify as a legitimate member of that community. The quotation from Participant 4 in particular implies that when a student uses the shared repertoire in their own individual way, this can be perceived as forming part of their evolving professional identity.

> "maybe there'll be a few terms if you're on a new rotation that you're not completely familiar with but there's so many that have just become kind of second nature and it is, yeah it's, you understand … be part of those people who understand" [P3, Interview]

> "because I'm observing all these doctors doing it, using the terminology or wearing certain things and then when I'm then doing the same thing, it does make you feel like that's a part of your identity … yeah, it makes you feel more like a doctor I think" [P1, Interview]

> "I've gotten better using that jargon … using those words when presenting back to the doctor made me feel like more of a colleague again" [P5, Interview]

> "you get to like do it yourself in your own style and slowly you kind of just develop your own like professional identity" [P4, Audio Diary]

The quotations relating to students learning and using the shared repertoire illustrate Wenger's (1998) view that membership of a CoP constitutes our identity through varying forms of competence. This competence is formed via participation in practice which "yields an ability to interpret and make use of the repertoire of that practice" (Wenger, 1998, p. 153) and the quotations support Wenger's (1998) notion that our identity forms through a personal history of participation and using the shared repertoire of that practice.

5.3.5 Non-participation

Participant data suggests that a student's professional identity can be influenced through non-participation in practice. The following first quotation also embodies Wenger's (1998) notion that we produce our identities through what we engage in and what we do not. Collectively, the data suggests that typically a student may experience peripherality and want to participate and move towards becoming more of a full member of the CoP, but they also recognise why it may not always be possible; however, when suitable participation opportunities are regularly missed or prevented, this can lead them to feel marginalised from the CoP.

> "I understand they could never get us involved in like an actual cardiac arrest for example, but I just think there's some things we won't actually practise fully until we're a doctor" [P2, Interview]

> "The medical student is there but the medical student will not be involved in any of the conversations. They're almost as if they are just observing, which is true, but I'm

also here to learn and learning is best done by active involvement, not by observing" [P5, Interview]

"Sometimes when people are talking to colleagues, it doesn't really happen, I kind of feel like I'm just there in the background, not really a part of it … even if you don't say anything, just having been introduced makes you feel actually a part of the discussion" [P6, Interview]

5.3.6 Engagement

Participant data demonstrates that a student's professional identity is formed more through the *'doing'* of the role of a doctor (via the interaction between participation and reification focused on the joint enterprise of authentic patient care) than through simply learning *about* medicine. To illustrate this, the following is a striking quote which strongly emphasises the importance of learning by participation in practice for medical students to develop their professional identity and to feel that they are *becoming* a future doctor, underscoring the fundamental nature of participation in practice during clinical placements.

"I love the theory behind it as well and all the science. I love learning all of that but, I think, that doesn't really give me such a sense of being a doctor … whereas the patient interaction is and the problem solving and sort of thinking about their management plan is what is actually being a doctor to me" [P6, Interview]

Data from Participant 3 suggests that developing mutual relationships and rapport with CoP members can influence the formation of a student's professional identity, and can improve their confidence to negotiate further participation opportunities. Participant 5 indicates that having professional dialogue focused on the joint enterprise with CoP members can influence the formation of a student's professional identity.

"when you're able to have those more human interactions, you're less afraid of being perceived because you're seen as more than just your kind of medical school identity and more as just the doctor" [P3, Interview]

> “but I think it’s the relationships you build with people … I think when you have more rapport outside just that very much like student teacher-dynamic … I had much more control over how involved or not so involved I wanted to be” [P3, Interview]

> “It really helps when the doctor comes to review the patient with me … present the case as a professional, as an independent professional and I don't feel as much of a student, I feel part of the team when they listen carefully to my presentation … at the end when the doctor asks me what I think afterwards, it's a really empowering feeling” [P5, Audio Diary]

In the previous quotation, the word ‘independent’ indicates a student having their own valid professional viewpoint and, when this is listened to, it can influence their feelings of legitimacy within the CoP.

5.3.7 Imagination

5.3.7.1 Factors that influence students to think positively about their future professional role/ self

Participant data indicates that successful participation in practice, observation of practice, feeling like a legitimate member of the CoP, and mutual engagement with role models and patients can help students to think positively about their future professional role/ self. The following final three quotations also illustrate Wenger’s (1998) notion that mutual engagement with CoP members develops a shared reality through which people can construct an identity.

> “maybe wasn't capable of taking as good a history as I can now, in the past, so it definitely felt good. It made me feel like I'm going in the right direction towards actually becoming a doctor and I can now see myself doing that part of the job in the day-to-day” [P1, Interview]

> “even just watching … a discussion between doctors … I was just like, wow, that's just so cool, that at some point I'll be part of that team and be having these really

intelligent discussions about patient care … I think makes me … look forward to that aspect of becoming a doctor for sure" [P6, Interview]

"I think having quite a nurturing tutor … helps you feel that legitimacy and part of the team can help you envision things" [P4, Interview]

"it was just me and the consultant and I was writing down the notes for her as she was speaking to the patient which is like a classic F1 job. And then I asked her to double check at the end and she said yeah, that's fine … so that was a time where I could envision myself, this is a job that I'll probably be doing a lot in a year's time" [P1, Interview]

"the interactions I've had with patients and how good my consultant is with dealing with patients has really, it's made me think, I want to be like she is when I'm a doctor" [P6, Audio Diary]

The analysis of these findings suggests that students' imagined futures are shaped through meaningful participation in practice, where feelings of legitimacy within the CoP and exposure to positive role models enables them to envision themselves as future doctors.

5.3.7.2 Experiences that influence perspectives about future career trajectories

Participant 4 in particular indicates that positive experiences during clinical placement can help a student to think favourably about working within a particular discipline or role in the future. However, Participant 6 indicates that the opposite is also evident. These quotations embody Wenger's view that imagination creates new images through time and space which "become constitutive of the self" (1998, p. 177).

"there's the times when I've envisioned myself doing that thing in the future is when those things have happened, that it's been a really good environment, it's been a really nurturing environment … all the times when you've had a really good personal relationship with the doctor and you feel like because you see a bit of yourself in them that you can see yourself doing what they do" [P4, Interview]

> “when you see the kind of politics and just quite how overworked some people in the system are … that's the kind of doctor I want to be but unfortunately, I don't see how I can achieve that in the system at the moment” [P6, Interview]

Data from Participants 6 and 3 suggest that hearing about the personal career experiences of doctors can help a student to consider potential future career trajectories; however, it can also help create negative perceptions of undertaking their role as a doctor.

> “just being able to talk to the GP about his experience … because I know that's potentially an area I want to go into … I think that helped quite a lot” [P6, Audio Diary]

> “I think there's quite a few doctors who kind of candidly share their experiences of what it's actually like being in those shoes. And the thing I do find myself when I'm envisioning positively, I do jump quite a big gap in my career from all the hardships and struggles, that it is just the tough bit of your career” [P3, Interview]

5.3.8 Alignment

Participant data suggests that a student can appreciate the importance of aligning their activities with the expectations of the CoP and the following first quotation illustrates Wenger’s (1998) notion that alignment can involve people following the institutional practices and customs, which leads us to become part of something larger than ourselves. The data indicates that a student can either proactively learn how best to align their activities with the joint enterprise of the CoP or they can draw upon existing knowledge and previous experiences. The data also illustrates that inductions can be helpful for a student to learn how to align with the expectations of the CoP. In addition, wearing the archetypal dress of a doctor and using the shared repertoire can help a student to feel that they are aligned with the norms and expectations of being a doctor and identify as more of a legitimate member of a CoP.

> “I wouldn't want to say the wrong thing and cause repercussions for the practice because even though I'm a student and not that important, it’s not one of the doctors really annoying them [difficult patient], it could reflect badly and I think you

do carry that in every interaction, I would always in the back of my mind, very careful about what you say" [P3, Interview]

"for this placement and I sort of just had to go around and ask people … I think I feel more confident on that now …. I was more willing to kind of just go and be like right, where's the [inaudible word] and where do I get changed? How do I get to this theatre or find the anaesthetists? … I just had to kind of find my own way around in that scenario" [P6, Interview]

"And particularly on the ward, even though I've not been there too many times, I've definitely refamiliarised myself with how general wards work and what I can do as a medical student to be a part of the team and to actually help out" [P1, Audio Diary]

"I ended up missing the induction day and I'll definitely say even still now I'm not too sure about how this whole placement's working … for me anyway, to get the best best out of my placement as well, I feel like I do need to have stuff, like the inductions are very important" [P2, Audio Diary]

"because you're normally wearing this stethoscope around your neck and the lanyard, and the sort of clothes that some doctors would be … often a few of the nurses on the ward would mistake me for being a doctor … then I'd have to say sorry I can't do that but that would probably help to feel like a community practice" [P1, Interview]

5.3.9 Identification and negotiability

5.3.9.1 Feeling useful, helpful and competent

Data from Participant 1 suggests that actively participating in appropriate, authentic activities can help a student to feel useful and helpful, which can support their feelings of legitimacy within the CoP; however, Participant 4 indicates that *only* observing can hinder feelings of legitimacy. The following first quotation also illustrates Wenger's notion that identification is "a process that is at once both relational and experiential, subjective and collective" (1998, p. 191).

> "I did bloods on two more patients after this and those were successful, so that made me feel much better and like I was actually helping … so that definitely made me feel more like a part of the team and that I was contributing to patients' care" [P1, Audio Diary]

> "again having that kind of colleague feel, that you don't feel just like a student sat in the back because anyone could do that" [P4, Audio Diary]

Data from Participant 3 suggests that a student's increasing knowledge and feelings of competence can support their PIF. However, data from Participant 4 implies that not feeling competent can negatively affect a student's feelings of legitimacy within the CoP.

> "it makes you feel part of it, you know when you understand it and it's like you're in the know and, I don't know, it gives you, I think that is a big part professional identity" [P3, Interview]

> "I think there's definitely been times when doctors especially in hospitals ask you things about patients, if you just get it wrong and they really make you feel like you're just not worthy of being like there or being a student or you should really know that and then you start to feel like should I be doing this? Am I good enough?" [P4, Interview]

5.3.9.2 Feeling legitimate, relationship between personal and professional identity, and influence and ownership of meaning

The data indicates that students value feeling and being recognised as a legitimate member, and Participant 4 in particular indicates that they value when their perceived personal identity can form part of their developing professional identity. This student describes an interaction between their own personal identity and the perceived professional identity of the doctor role and that they feel more relaxed when they are able to 'be themselves' within the professional identity of a doctor, which is a novel aspect in the data. This student's quotations suggest that they believe that their actual identity constitutes both their personal and professional identity, particularly illustrated by the following second quotation. This illustrates Wenger's (1998) view of identity who states that it is "neither

individualistic nor abstractly institutional or societal" and is typified by the statement that identity "is the social, the cultural, the historical with a human face" (p. 145). The following second quotation also typifies Wenger's notion of mutuality of engagement, whereby identity becomes a form of "individuality defined with respect to a community" (1998, p. 152).

> "I've really enjoyed feeling like kind of a proper part of the team" [P3, Audio Diary]

> "But it was quite relaxing and comforting knowing that, you know, you can just kind of be yourself and I think especially as a student you're kind of always trying to fulfil this role as a doctor and especially like I'm not a doctor yet and you're trying to fit into this box" [P4, Interview]

> "you realise that … we're all just different people with different personalities … but we're still doing the same job and I think your identity as a doctor is actually about being yourself within the job role and not kind of conforming to this stereotype … being yourself within the job role is like your actual identity" [P4, Interview]

The data indicates that a student may only feel able to influence the CoP and have ownership of meaning at more of an individual patient level. Data from Participant 6 in particular suggests that the level of influence a student believes they have can affect their feelings of legitimacy within the CoP.

> "the way I don't really feel like my voice, in terms of the way things are done and that like actually implementing on a bigger scale. Maybe like on a smaller scale with just like an individual patient, where I'm like, have you thought about this or have you considered this?" [P3, Interview]

> "really thinking about the legitimacy words, maybe say not so much because … I just didn't really feel like there was a lot I could add" [P6, Interview]

5.3.9.3 Strategies to support students' feelings of legitimacy

The data indicates that there are a wide range of strategies which can support students' feelings of legitimacy within a CoP. These include, for example:

- demonstrating a welcoming approach and officially recognising them as a team member;
- proactively involving them in practice and the social aspects of the CoP;
- supporting them to assume responsibility and practise independently where appropriate;
- affirming their strengths to build their confidence;
- addressing them using their name and including their role within work processes;
- using positive non-verbal body language;
- ensuring patients are aware that they will be speaking with a medical student.

> "He almost welcomed me in socially, using words and body language by saying you'll have a good time. Almost speaking to me as a one-to-one conversation, but there's lots of other people present and it makes you feel part of the team" [P5, Interview]

The previous quotation also embodies Wenger's (1998) notion of identification, which relates to a person's emotional investment in being a member of the CoP but also, conversely, the degree to which others recognise them as being a member.

> "maybe if the doctors had been more proactive … that's a big thing with making you feel like an important member" [P3, Interview]

> "I think that's heavily dependent on the kind of people that you're working with. But definitely the practice I was at, they really made me feel part of the team. And even things like coming in and having toast and coffee with the reception staff in the morning, it just makes you feel like you're part of their routine … it's just like a little thing isn't it? Just makes you feel like a sense of belonging" [P4, Interview]

> "so I felt legitimate. For example, in the surgical clinic where my supervisor would let me see quite a lot of patients, the nurse that was assisting her clinic would find me a separate room, call the patient to my room and fully treat me like a doctor" [P1, Interview]

> "They see you as the next doctors … they've said I seem like, I think I've suddenly, just changing the way I am with patients, I've become more confident … maybe how

I'm perceived, then you perceive yourself and you kind of have that confidence" [P3, Interview]

"I think someone using your name has a really big effect on how you feel … said my name before she asked me to do it and I was like, wow, she knows my name, I'm surprised and that made me so much more like I wanted to do the job for her because she's actually even remembered it … and like I was a member of the team in a way" [P1, Interview]

"I think this was done by having my own room, with the room saying medical student outside. Having my own section on the electronic system, that they can send patients onto the system. All the staff know that I am on that system" [P5, Interview]

"I felt more heard when they were looking at me and their body language was turned towards me" [P5, Interview]

"sometimes I'd call a patient up or call them in and they'd be a bit confused about why they were seeing me … it almost made me feel less legitimate that people weren't aware that they were going to be speaking" [P3, Interview]

Collectively, the analysis here suggests that students' sense of legitimacy is strengthened when they are visibly recognised and meaningfully included within the CoP, where supportive interactions, affirmation, and opportunities for responsibility signal their acceptance amongst CoP members.

5.3.9.4 Student strategies to support their feelings of legitimacy and PIF

Participant data suggests that a student can support their feelings of legitimacy through, for example, proactively seeking participation opportunities and dressing appropriately. Also, working alongside doctors is more helpful to the formation of a student's professional identity than working with other healthcare roles. The following second quotation also illustrates Wenger's (1998) notion of identification through alignment, for example, whereby a medical student's willing alignment with a perceived clothing style of doctors subtly becomes part of who they are.

> “particularly on the ward, even though I've not been there too many times, I've definitely refamiliarised myself with how general wards work and what I can do as a medical student to be a part of the team and to actually help out” [P1, Audio Diary]

> “It's so silly. I bought this coat and it's a very long trench coat and I was really dressed up and sometimes our housemates will make comments that ... we really look like doctors … you can see the way people perceive you especially with your badge around your neck … and they don't necessarily know that you're the student” [P3, Interview]

> “I would say because I spent a lot of time with nurses for the past week, it didn’t really help my feelings of being a doctor but it did still help to understand the roles of other healthcare professionals and their importance in the team” [P6, Audio Diary]

Collectively, the analysis of Section 5.3 suggests that medical student PIF during clinical placements develops through sustained participation in authentic clinical practice, as students gradually assume greater responsibility and practice more independently. Through interactions and relationship building with CoP members and patients, engagement with the tools and language of the CoP, and working alongside role models, students are able to align themselves with practice expectations and develop a greater sense of legitimacy within the CoP.

5.4 Conclusion

This chapter has presented and analysed data relevant to answering my two research questions. Overall, the data demonstrates that medical student participation in authentic activities of the social communities of clinical practice over time supports their learning and professional identity formation.

In Chapter 6, I seek to answer the two research questions and present an evidence-based, theoretically informed picture of medical student learning and professional identity formation during clinical placements.

Chapter 6: Discussion

6.1 Introduction

The synthesis of existing literature (Chapter 3) underlines the importance of medical students accumulating experiences over time and the value of participation in practice for the development of their learning and PIF during clinical placements. The analysed data from Chapter 5 (Findings) further supports much of this existing knowledge. However, evidence on *how* participation in practice facilitates student learning is inadequate (Dornan *et al.*, 2014) and research is required into this "black box" (Barrett, Trumble and McColl, 2017, p. 1015). Moreover, from a theoretical standpoint, community of practice (CoP) theory (Wenger, 1998) is perceived as key for understanding how medical students learn (Kirtchuk and Markless, 2023) and form their professional identity (Cruess *et al.*, 2015); however, few studies utilise the majority of CoP theory constructs comprehensively, with most focusing just on a few key aspects (Smith, Hayes and Shea, 2017), resulting in a helpful yet partial picture of the phenomena from a theoretical viewpoint.

To address the aforementioned requirements, this chapter seeks to answer the study's main research question: 'How do medical students learn and form their professional identity during clinical placements through the lens of community of practice theory?' and presents an evidence-based, theoretically informed picture of medical student learning and PIF. Moreover, this study's comprehensiveness is facilitated through using the panoply of Wenger's CoP theory (1998) within a single study (noteworthy concepts excluded from the analysis are explained in Table 4.3 in Chapter 4). Indeed, I hope this study will both inspire and provide tools for others to conduct further research by employing the majority of CoP theoretical constructs within individual studies, both within medical education and further afield.

The majority of this chapter mirrors the same structure as Chapter 5 (Findings), seeking to answer the two research questions relating to practice and identity, with the most novel findings being explored in greater depth in relation to existing literature. Also, at times, there is overlap between data relating to practice and data relating to identity, and this is reflected in the writing. For example, from the identity section, accountability to an

enterprise, negotiability of a repertoire and engagement are discussed within other sections due to a natural overlap with that data. This approach remains faithful to CoP theory because as Wenger (1998) states “There is a profound connection between identity and practice” (p. 149) and they are “inseparable” (p. 145). However, where possible and for clarity, the discussion is kept distinct to the specific theoretical construct.

6.2 Community of practice theory - Practice (Learning as doing)

This section seeks to answer research question 1: ‘How does participation in social communities of clinical practice support medical students' learning?’ This section includes discussion relating to: Participation and reification, mutual engagement, a joint enterprise, a shared repertoire, and boundaries and social discontinuities.

6.2.1 Participation and reification

The findings indicate a recurring theme that medical students learn and develop their professional identity primarily through active participation in authentic clinical activities. This finding, which notably relates to both practice and identity (see Section 7.2.3 in Chapter 7 which explains a range of fundamental elements of practice which influence both medical student learning and PIF) as explained by CoP theory, is expected and confirms the same consensus within existing literature, which is illustrated within this study’s literature review. This result aligns with a key tenet of CoP theory, that learning is not always necessarily a result of teaching but is a process of people being “active participants in the *practices* of social communities and constructing *identities* in relation to these communities” (Wenger, 1998, p. 4). The word ‘active’ within CoP theory is significant for medical students and indicates that their learning will be enabled most by engaging in, and contributing to, authentic CoP activities. Authentic activities contribute towards the joint enterprise of the CoP. As shown particularly in Section 5.2.1 (Chapter 5, Findings), the participants’ experiences illustrate the importance of being ‘active’ to enhance their learning. As a result, this finding underlines the importance of students being facilitated to have, where possible and safe, access to and involvement in the normal day-to-day activities of the CoP. This practice-based finding aligns with what is already known, such as, that facilitating access to:

practice (Hauer *et al.*, 2012), shared knowledge (Taylor, Anderson and Gay, 2023) and expertise (Lloyd *et al.*, 2014), is important for student learning.

The data in Sections 5.2.1 and 5.3.1 (Chapter 5, Findings) illustrate that students learn and form their professional identity by participation in practice throughout the *duration* of clinical placements. This temporal finding is important because it confirms student learning is a continual process which requires sustained periods of participation. This finding resonates with Wenger's (1998) assertion that the specific length of time as a member of a CoP is not as important as a "matter of sustaining enough mutual engagement in pursuing an enterprise together to share some significant learning" (p. 86). Moreover, this finding confirms that the formation of a student's professional identity happens over time (Holden *et al.*, 2015) and is a continual process (Irby and Hamstra, 2016). It underscores the value existing literature places on students having sufficient time to, for example, work alongside role models (Dornan *et al.*, 2014) and to form relationships with CoP members (Taylor, Anderson and Gay, 2023). The finding also corroborates existing literature which states that PIF is a gradual process which happens primarily within the clinical environment (Weaver *et al.*, 2011; Cruess, Cruess and Steinert, 2016). Therefore, the length of the clinical placement is one factor which can influence the extent to which students can engage in meaningful participation; however, this temporal finding indicates that learning and PIF will be enabled when students are supported to participate in a range of authentic, day-to-day CoP activities for the placement's *duration*.

The results indicate that student participation in practice is supported by a reciprocal, proactive approach from both the student and CoP members and that as well as enabling a student's learning, successful participation in practice helps students feel more competent, which consequently has a positive influence on the formation of their professional identity. Successful participation can also positively influence a student's confidence, satisfaction with their learning experience, helps them develop a more holistic understanding of patients and their experiences, and enables them to identify as more of a legitimate member of the CoP. This last point relates most closely to the identification construct (contained within the broader identity component) and is an important aspect of a person's identity formation according to CoP theory (Wenger, 1998).

The competence and legitimacy findings suggest the important relationship between practice and identity, supporting Wenger's (1998) assertion that the experience of participation is important to identity development and is "a display of competence" (p. 152) and that CoP membership "translates into an identity as a form of competence" (p. 153). These findings illustrate a relationship, which typically starts with a student's participation in practice, and that, if students perceive this as successful, it increases their feelings of competence which then positively influences feelings of legitimacy within the CoP. Medical education literature explains the link between a student's increasing feelings of competence and the formation of their professional identity (Cruess *et al.*, 2014; Cruess *et al.*, 2015). However, this study's results indicate that a student's feelings of increased competence positively influences feelings of legitimacy. Notably, the data illustrates that each of these three aspects, successful participation, feelings of competency and legitimacy, can have a positive influence on a student's PIF. Therefore, the data offers a novel insight by, firstly, illustrating that there is a relationship between participation, competency and legitimacy and secondly, demonstrating that each aspect individually contributes to a student's PIF. The results confirm the assertions within existing literature that the process of PIF is non-linear (Holden *et al.*, 2015; Orsmond, McMillan and Zvauva, 2022) because the findings show that clinical experiences might not be predictable and can be perceived by students as positive and negative which, in turn, has a corresponding effect on their PIF. As shown in Section 5.3.3 (Chapter 5, Findings) but particularly illustrated through the striking first quote in Section 5.3.6, the findings illustrate that PIF is primarily supported through participation in authentic patient care-focused activities, aligning with the view of Dornan (2012). These findings are important because it confirms that a student's professional identity is not formed as an end result of placements but is continually forming throughout all aspects of their education and participation in practice, illustrated particularly by Participant 4 in Section 5.3.1 (Chapter 5, Findings) who states specifically that they feel it take time to develop their professional identity as a doctor. The relationship between participation, competency and legitimacy, as well as the importance of students building relationships with patients for PIF and that PIF develops over time, is important for CoP members to be cognisant of when planning for and supporting students' participation in practice.

In contrast, data from Participant 4 (Section 5.3.9, Chapter 5, Findings) suggests that when a student feels *less* competent, they feel *less* of a legitimate member of the CoP. This points to a direct relationship between feelings of competence and legitimacy. It further suggests a need for both social awareness and emotional intelligence within educators and CoP members, as well as the need for providing constructive feedback to build their students' confidence, not damage it. This practice-based suggestion also aligns with a later suggestion in this chapter, which indicates that educators should attempt to tailor each student's participation to enable them to successfully practice at the edges of their comfort zone, wherever possible, which will improve their feelings of increasing competence. Moreover, it underscores Wenger's (1998) view that communities of practice "are not privileged in terms of positive or negative effects" (p. 85), which is also evidenced in additional study results and will be returned to later in the chapter.

The findings indicate that successful participation in practice can help a student to feel useful and helpful, and how feeling this in relation to the joint enterprise and CoP members enables them to learn, identify as more of a legitimate member of the CoP, and continue to form their professional identity. Existing literature indicates that taking on responsibility for practice helps students learn (Leedham-Green, Knight and Iedema, 2020), improves their motivation to learn (Tanna, Fyfe and Kumar, 2020) and supports their PIF (Kjær, Strand and Christensen, 2022). However, this study's data illustrated the value a student places on feeling both useful and helpful via participation and how this helps them identify as more of a legitimate member of the CoP. These results underscore the value of students being supported to assume some responsibility and accountability (explored later in the chapter) to the joint enterprise to feel more useful and helpful. Therefore, it is important that CoP members have conversations with students individually about the practice and being responsible for which activities would help them feel useful and helpful, while still ensuring safety for patients and themselves. This aligns with a later practice suggestion regarding tailoring educational strategies to individual student needs.

The results indicate that a high clinical workload for CoP members can inhibit student participation opportunities which reflects similar findings within existing literature that indicate that there can be limited dedicated teaching time for clinical educators (General Medical Council, 2017) and difficulties with balancing clinical work and educational

responsibilities (Sethi *et al.*, 2017). This highlights the importance of clinical supervisors having sufficient time to facilitate students' participation in practice.

6.2.2 Mutual engagement

The results demonstrate that building positive working relationships and having conversations between students and CoP members during clinical placement notably relates to both practice and identity (see Section 7.2.3 in Chapter 7) as explained by CoP theory, and these relationships and conversations are important for a student's participation, learning and the formation of their professional identity. Fostering positive working relationships and communication are naturally interrelated and underscore the importance of the social side of the clinical workplace for student participation, learning and PIF. This aligns with the views of Cruess *et al.* (2014) on PIF who highlight that learning alongside a particular group can enable students to adopt their norms and values which leads to an altered sense of self. The relational aspect will be covered more in the subsequent mutual engagement results. However, to support student participation, learning and feelings of legitimacy, the findings indicate the importance of communication, for example, regular professional dialogue between students and CoP members focused on the joint enterprise of patient care and CoP members using communication techniques such as active listening and reflecting back. However, as shown in Section 5.3.1 (Chapter 5, Findings), the active listening and reflecting back data point is a novel insight because it suggests that these conversational techniques can help a student identify as more of a legitimate member of the CoP. This aligns most closely with the identification concept from CoP theory, which is contained within the broader identity component, illustrating that from a CoP theoretical viewpoint, these conversational techniques can positively influence the formation of a student's professional identity. It also identifies a potential gap in knowledge which explains *how* effective communication techniques and behaviours such as active listening and reflecting back can support medical students to identify as more of a legitimate member of a CoP. Research into this area could provide interesting, new insights for medical educators' practice. The quote is also a clear example of identification in action. Hence, this data suggests the importance of doctors not only knowing but also using effective

communication skills, which existing literature shows that students value in their educational supervisors (Sutkin *et al.*, 2008; van der Zwet *et al.*, 2014).

It was stated previously that mutual engagement between students and CoP members relates to both practice and identity as explained by CoP theory (see Section 7.2.3 in Chapter 7, Conclusion). This confirms what CoP theory explains, that mutual engagement is identified as both a dimension of practice and dimension of identity. For practice, Wenger (1998) explains that "It exists because people are engaged in actions whose meanings they negotiate with one another"; therefore, membership of a CoP is "a matter of mutual engagement" (p. 73). For identity, Wenger (1998) states that "We become who we are by being able to play a part in the relations of engagement that constitute our community" (p. 152). Existing evidence illustrates that social interactions within a CoP supports students' learning (Chen *et al.*, 2014), and that students' PIF is supported through relationship building with CoP members (Tobbell and Roberts, 2023) and supervisors (Brown *et al.*, 2020). However, based on quotes from Participant 3 (Section 5.2.2., Chapter 5, Findings), these data points suggest a novel insight demonstrating a link between mutual engagement and the development of shared expectations of practice between themselves and CoP members. Existing literature highlights the value of dialogue in helping align student and supervisor aims towards supporting a student's PIF (Brown *et al.*, 2020), adopting an individual approach when explaining placement expectations (Cruess *et al.*, 2015) and supervisors understanding the students' course expectations (Burgess *et al.*, 2020). However, this new knowledge highlights the value of deliberate, proactive and sustained interactions between students and CoP members to build a shared understanding of practice and to facilitate effective student participation.

The study's findings confirm that a reciprocal proactive approach from both students and CoP members is important to support mutual engagement, for example, through actively involving students in conversations and activities outside of clinical practice, and engaging in ongoing dialogue as explained earlier in this mutual engagement section. Existing literature illustrates that student proactivity on placement can be influenced by CoP members who are motivated to support learning (Taylor, Anderson and Gay, 2023). Also, related to these findings, Lundvall, Dahlström and Dahlgren (2021) explain that students actively building relationships with CoP members supports their learning. However, as illustrated in Section

5.2.2 (Chapter 5, Findings), this study's data provides a new insight by suggesting that the process of mutual engagement itself leads students to be increasingly proactive in their approach to participation. This indicates that mutual engagement increases future opportunities for students to participate in practice and learn, thereby creating a more virtuous cycle between mutual engagement and participation in practice. However, as also shown in Section 5.2.2., the data indicates that when students and CoP members have negative experiences with mutual engagement, this can lead to more of a vicious cycle which hinders student participation. The indication that mutual engagement within a CoP can produce both positive and negative effects is reflected in CoP theory. As Wenger (1998) explains, communities of practice "provide a privileged context for the negotiation of meaning … are not intrinsically beneficial or harmful … Yet they are a force to be reckoned with, for better or for worse" (p. 85). These findings also confirm a similar view by Wijbenga *et al.* (2020) who explain that negative behaviours from either the clinical supervisor or student can inhibit a student's opportunity to contribute to patient care and their sense of belonging with the CoP. The identification of a potential virtuous and vicious cycle is a novel insight and underscores the importance of positive interactions and mutual reciprocity for student learning. Collectively, these results are important because they confirm the value of positive relational experiences and the need for these to happen consistently throughout the duration of the placement to enable students' participation and mutual engagement. These findings also confirm a recurring theme across the data which resonates with the views of Wenger (1998) who states that communities of practice should neither be idealised or vilified, "they can reproduce counterproductive patterns" (p. 132) but are also "important places of negotiation, learning, meaning, and identity" (p. 133).

The findings indicate that mutual engagement between students, CoP members and patients helps students to understand the joint enterprise of the CoP and learn its shared repertoire. This finding is new within medical education literature which uses CoP as its theoretical framework (Wenger, 1998). These results are important because they describe and confirm a relationship between the three dimensions of practice: mutual engagement, a joint enterprise and a shared repertoire (Wenger, 1998). Wenger (1998) explains that these three dimensions describe a relationship through "which practice is a source of coherence of a community" (p. 72). Their identification within the data confirms that clinical

placements contain these fundamental characteristics of a CoP as explained by Wenger (1998) which supports the use of CoP theory for student clinical placement research. This finding aligns with Morris (2012) who explains that clinical placements for students can be conceived of as time spent within a CoP. This is important because it evidences the interrelated nature of the dimensions of practice within clinical placement learning, which are fundamental constructs in CoP theory and support its utility for medical education research.

The data suggests that students being located physically close to CoP members, facilitating more social conversations about life outside medicine and including students in the more social aspects of the CoP, such as going for lunch, helps students mutually engage and supports them to feel more legitimate and their PIF. This finding, which notably relates to both practice and identity (see Section 7.2.3 in Chapter 7) as explained by CoP theory, aligns with similar viewpoints, that positive social interaction supports student learning (van der Zwet *et al.*, 2014), supervisors and students getting to know each other supports student participation (Thrysoe *et al.*, 2010) and PIF is influenced more by informal workplace experiences (Goldie, 2012). Moreover, the importance of the physical environment for learning (Billet, 2016), particularly its learning affordances (Durning and Artino, 2011) and making these explicit to students (Morris, 2010; Kirtchuk and Markless, 2023) is discussed within existing literature. Cruess, Cruess and Steinert (2018) explains that the sharing of tacit knowledge requires "joint activities and physical proximity" (p. 189). This study's findings offer a similar but slightly distinct perspective by showing that a student is more able to mutually engage when they are physically located within a closer vicinity to CoP members and the practice which CoP members should be cognisant of when planning where students will be based during their time on placement.

6.2.3 A joint enterprise

The findings demonstrate that students assuming responsibility and accountability for authentic activities focused on the joint enterprise of patient care supports their learning and PIF. By way of a reminder, the joint enterprise is more than just a shared aim of the CoP, it results from a collaborative process of negotiation and is defined through CoP members' pursuit of it, together with their negotiated response to it. This finding, which

notably relates to both practice and identity (see Section 7.2.3 in Chapter 7) as explained by CoP theory, is expected and confirms the same perspective within existing literature regarding student learning (Leedham-Green, Knight and Iedema, 2020; Taylor, Anderson and Gay, 2023) and PIF (Kjær, Strand and Christensen, 2022). These findings are important because they evidence that students assuming responsibility and accountability for the joint enterprise is supported by a proactive approach from both students and CoP members, which then beneficially influences their learning and PIF. This findings aligns with similar previous conclusions regarding the importance of proactivity for participation. The results also signify that student learning and their PIF are enhanced when a student's responsibility for practice leads to increasingly independent practice (explained further within participation and reification in the identity section - Section 6.3.1), wherever appropriate and safe.

Students perceive their learning to be more effective when they are practising at the edges of their comfort zone, aligning with the views of Gillespie *et al.* (2022), Taylor, Anderson and Gay (2023) and Kelleher *et al.* (2024) on medical student learning. This finding confirms what existing literature indicates, that learning is more effective when medical students work within their zone of proximal development (Goldszmidt and Lingard, 2018), which "represents the difference between what a learner can perform with and without assistance" (p. 116) and is a "locus widely accepted as being optimal for learning" (pp. 116-117). This finding also confirms what Eraut (2007) highlights, that engaging with challenging tasks is helpful for learning, however, being under- or over-challenged can be detrimental to learning, confidence and motivation. The data suggests that assuming responsibility to the joint enterprise improves students' motivation and feelings of professional fulfilment. It is noteworthy that the data indicates that this also improves student's confidence because this resonates with Eraut's (2007) viewpoint that having responsibility for completing challenging workplace tasks improves confidence which, in turn, influences learning in the workplace. Collectively, these findings highlight the importance of CoP members getting to know the students individually, for example, their level of knowledge (Nyoni, Dyk and Botma, 2021). The information about each student can then be used by CoP members to tailor individualised participation strategies so that learning experiences have sufficient challenge but still feel safe for each individual student and ensures patient safety. This

strategy of tailoring student participation and learning experiences to the individual is also supported by similar suggestions within existing medical education literature (Burford, Whittle and Vance, 2014; Dornan *et al.*, 2014; Wald, 2015).

The study's results indicate that assuming responsibility and accountability for the joint enterprise of patient care can support students to identify as more of a legitimate member of the CoP. This aligns with similar findings whereby a student's PIF is influenced when they are undertaking simple authentic tasks (Jarvis-Selinger, Pratt and Regehr, 2012), when they feel a legitimate member of the CoP (van der Zwet *et al.*, 2014) and experience increases in responsibility (Durning and Artino, 2011). Furthermore, these findings also align with CoP theory because assuming responsibility and accountability closely aligns with CoP theory's negotiability construct, which "refers to the ability, facility, and legitimacy to contribute to, take responsibility for, and shape the meanings that matter" (Wenger, 1998, p. 197) and "determines the degree to which we have control over the meaning in which we are invested" (Wenger, 1998, p. 188). According to Wenger (1998), negotiability forms a dual process with identification which, as already explained, most closely relates to feelings of legitimacy within a CoP. Therefore, the relationship between students assuming responsibility and accountability and the influence this has on their feelings of legitimacy within the CoP provides evidence to support the dual nature of identification and negotiability.

However, this study's findings (Sections 5.2.3 and 5.3.3, Chapter 5, Findings) suggest that the opposite is also true, whereby, no or limited opportunities to assume responsibility for the joint enterprise hinders feelings of legitimacy and the chance to develop their professional identity. This underscores the importance of supporting students to assume responsibility and accountability to the joint enterprise of patient care, where suitable and safe. The study's results indicate that CoP members can support students to assume responsibility through a broad range of strategies but, in particular, they suggest that feedback from patients about their practice increases feelings of responsibility and accountability to the joint enterprise. This is a novel insight because while existing medical education literature emphasises the positive influence feedback has on student learning (Kandiah, 2017; Jerjes and Harding, 2024), this data point suggests that feedback from both doctors *and* patients can help a student to feel more responsible and accountable to the

joint enterprise. These findings collectively are important because they reinforce the value that constructive feedback from doctors and patients can have in supporting student motivation, and their responsibility and accountability towards the joint enterprise. This underlines the need for feedback practice to be a fundamental component of a student's experience of clinical placements which aligns with the view of Kelly and Richards (2019, p. 5), that "Clinical learning is an ongoing cycle of progress pivoting on feedback".

6.2.4 A shared repertoire

Students learning the shared repertoire typically happens subconsciously over the length of the placement. The word "using" from Participant 3's quotation in Section 5.2.4 (Chapter 5, Findings) is a clear example of learning the shared repertoire in action. The word "using" also resonates with Wenger's (1998) view that the shared repertoire "reflects a history of mutual engagement" (p. 83) and is a resource to negotiate meaning; in other words, medical students employing the shared repertoire through participation and reification in the community's practice. This finding corresponds with the previously discussed temporal findings from the participation and reification section, that student learning is an ongoing continual process which requires sustained periods of participation, and reaffirms the importance of students being actively supported to participate in authentic CoP activities for the placement's duration. Passi and Johnson (2016) explain that PIF is typically a subconscious process; however, this study demonstrates that learning the shared repertoire, as described by CoP theory, can be a process which a student is not immediately aware that they are learning, which is a novel insight within the literature. This finding confirms that "Learning is an emergent, ongoing process, which may use teaching as one of its many structuring resources" (Wenger, 1998, p. 267) and underlines the importance CoP members should place on supporting student participation when compared with teaching in the workplace to support effective learning, aligning with the same viewpoint as Dornan, Scherpbier, Boshuizen (2009). Strand *et al.* (2015) explain that doctors still place emphasis on learning by acquisition and teaching rather than a work-based learning curriculum and this finding suggests the importance of a paradigmatic shift more towards recognising the value of learning as participation, while not discounting the value of learning by acquisition. In addition, the data shows that typical learning by acquisition strategies, such as direct

instruction and demonstration from CoP members, helps students learn the shared repertoire. Therefore, these findings underscore what Sfard (1998) explains regarding the acquisition and participation metaphors of learning, that "it is essential that we try to live with both" (p. 10).

The findings indicate that using the shared repertoire in authentic clinical activities helps students to improve their confidence, identify as more of a legitimate member of the CoP and it supports their PIF. Existing literature explains that student participation in practice can improve their confidence (Thyness, Steinsbekk and Grimstad, 2022). As illustrated by Participant 1 discussing confidence in Section 5.2.4 (Chapter 5, Findings), this statement offers a novel insight suggesting that when a student uses and learns the shared repertoire, as explained by Wenger (1998), this can improve their confidence. Kirtchuk and Markless (2023) describe the importance of CoP members facilitating students to engage in the shared repertoires of the CoP and how this supports them to identify more as a legitimate member of the CoP, which this study's data aligns with. These findings are important because it reinforces the value of CoP members proactively supporting students to participate and engage with the shared repertoire, which aligns with a similar recommendation from Kirtchuk and Markless (2023).

Data from Participant 4 in particular (Sections 5.2.4 and 5.3.1, Chapter 5, Findings) suggests a novel insight illustrating that when a student uses the shared repertoire of the CoP in authentic activities, for example, either on a workplace electronic system or with a patient, this can support them to develop their own style of practice which they can perceive as forming part of their professional identity. Existing literature explains that a student's professional identity is influenced through using the shared repertoire (Adema *et al.*, 2019; Brown *et al.*, 2020), and that students identify who they are through participation (Goldie, 2012). However, these results indicate that when a student uses the shared repertoire of the CoP, they will sometimes do this in their own style which they then internalise and which then forms part of their own professional identity. This insight provides a new perspective on the viewpoint of Moll-Jongerius *et al.* (2023), who explain that PIF is a "process of internalizing the characteristics, values and norms of the medical profession" (p. 2). Yet, this finding suggests that PIF is not simply an act of internalisation but that it also can involve individual, subjective interpretation, which aligns with Irby and Hamstra's (2016)

perspective that PIF happens simultaneously, both individually (psychological) and collectively (sociological). This finding is important because it indicates that theories of identity formation should account for each individual's lived experience of their identity, meaning that any label of identity produced externally to the individual will not tell the whole story of identity. This aligns closely with Wenger's (1998) conception of identity which explains that self-image and labels are not the full picture of identity, but can be important. Wenger (1998) discusses the "experience of identity in practice", that "Who we are lies in the way we live day to day" and that identity in practice "is produced as a lived experience of participation" (p. 151) within communities of practice. This finding is insightful because it confirms that providing access for medical students to the shared repertoire and facilitating and encouraging them to use it is important for supporting the formation of their professional identity. Therefore, this suggests that facilitating students to use the shared repertoire correctly but also to be comfortable doing this in their own manner, as well as to helping them reflect on their changing professional self, can support their learning and PIF.

6.2.5 Boundaries and social discontinuities

Wenger (1998) explains that participation in practice creates social discontinuities between those who have and have not participated (also referred to as boundaries), and that the learning involved in moving into a new CoP requires transformation to engage in its practices. This study's findings indicate that by students participating in practice, mutually engaging with CoP members, supporting the joint enterprise and using the shared repertoire, this supports them to identify as more of a legitimate member of the CoP. When a student begins to identify as more of a legitimate member of the CoP as a result of these activities, this is an indication of a perceived change of their professional self. Therefore, these findings confirm Wenger's (1998) assertion that "participation and reification act as sources of social discontinuity" (p. 104). In relation to reification, the findings confirm that learning during clinical placement includes boundaries which are reified through markers of membership, as described in CoP theory (Wenger, 1998), which suggest the extent to which a student is inside or outside the CoP. The study's findings reaffirm the recurring theme of both positive and negative effects from participation within a CoP. They also indicate the

importance of CoP members being cognisant of how physical artefacts and CoP member behaviour can influence students to feel inside or outside the CoP.

With the main practice (learning as doing) considerations established, the following section focuses on identity (learning as becoming).

6.3 Community of practice theory - Identity (Learning as becoming)

This section seeks to answer research question 2: 'How does participation influence the formation of professional identity within these communities?'. This section includes discussion relating to: Participation and reification, mutuality of engagement, non-participation, engagement, imagination, alignment, identification and negotiability. As a reminder, some themes of the component of identity, for example, accountability to an enterprise, negotiability of a repertoire and engagement, are discussed within other sections due to a natural overlap with that data.

6.3.1 Participation and reification

The findings demonstrate that medical students develop their professional identity through active participation in authentic clinical activities focused on the joint enterprise of patient care. The data suggests that the 'doing' of the role of a doctor enables the formation of a student's professional identity to a greater extent when contrasted with students learning *about* medicine, science and the underpinning theory. The active aspect of these findings is expected and confirms the same consensus within existing literature which is illustrated within Chapter 3 (Literature review - Section 3.4.4 Professional identity formation). This finding also aligns with CoP theory which explains that constructing an identity in relation to a CoP involves on-going, proactive participation in its activities and building relations with others in the pursuit of the joint enterprise (Wenger, 1998), which, in the case of medical students on clinical placement, is patient care. This is illustrated through the following quotes from Wenger (1998) - "it is produced as a lived experience of participation in specific communities" and:

> identity exists - not as an object in and of itself - but in the constant work of negotiating the self. It is in this cascading interplay of participation and reification that our experience of life becomes one identity (p. 151).

CoP theory explains that a person's experience of participation creates reificative projections, illustrating that identity construction is not simply 'taking part' but also perceiving your influence on the world and also ourselves as participants within a CoP (Wenger, 1998). This illustrates two key points. Firstly, it reinforces a similar point regarding participation in the practice section (Section 6.2.1), which explains the importance of students having active involvement in the authentic activities of the CoP which focus directly on patient care but also indicates the importance of student participation for constructing identities within a CoP. Secondly, it confirms Wenger's (1998) viewpoint that "There is a profound connection between identity and practice" (p. 149) and that identity in practice is "produced as a lived experience of participation in specific communities" (p. 151).

The findings indicate that the construction of a student's professional identity is supported through them assuming responsibility and accountability to the joint enterprise of patient care, and this responsibility and accountability helps students identify as more of a legitimate member of the CoP. This aligns with CoP theory which explains that, through participation and our membership of the CoP, this partly constitutes our identity through the forms of competence it requires. Wenger (1998) explains that "Being a … doctor … gives a certain focus" (p. 152) and that accountability to an enterprise and participation within a CoP influences certain perspectives, for example, engaging in certain actions and making certain choices, which form part of our identity. These results also confirm the same viewpoint as Kjær, Strand and Christensen (2022), who state that feeling the responsibility of being a doctor is important to a student's PIF. Hence, these findings indicate a similar viewpoint regarding the value of students assuming responsibility and accountability to the joint enterprise in the practice section (Sections 6.2.1 and 6.2.3), and illustrates the importance of students assuming responsibility and accountability to support the formation of their professional identity.

When students take on responsibility and accountability for practice this can lead to them undertaking some aspects of practice more independently and these findings suggest that increasingly independent practice supports students to construct their professional identity.

Existing literature explains that it is important for students to be supported to become progressively independent in their practice (O'Brien, McNeil and Dawson, 2019), that their professional identity is forming even when they undertake simple tasks on the periphery of a CoP (Jarvis-Selinger, Pratt and Regehr, 2012) and for them to feel the responsibility of being a doctor (Kjær, Strand and Christensen, 2022). This study's findings build upon this knowledge and extend it to highlight two separate but interrelated points. Firstly, independent practice by students provides experiences from which their professional identities form and, secondly, that students can *actively* construct their own professional identity through participation. As illustrated in Sections 5.3.1 and 5.3.3 (Chapter 5, Findings), the data supports Wenger's notion of identity in practice, and that identity is produced through participation and a lived experience within communities of practice. These findings are important for both educators and medical students because they highlight that student PIF is not simply a passive process, whereby students *receive* a professional identity solely through participation in practice or time spent on placement. In contrast, it suggests that a student can possess agency with regards to their PIF and can actively construct it through participation in practice. This finding is important for medical students because it indicates the importance of being proactive with regards to participation to gain access to authentic experiences which aligns with Thyness, Steinsbekk and Grimstad's (2022) viewpoint. Therefore, a student's proactivity can help facilitate access to the necessary experiences to support their PIF. This finding also points towards a potential gap in knowledge and an interesting area for further exploration to enhance our understanding of medical student agency and their PIF. For example, by considering questions such as: how do medical students perceive the concept of agency in relation to their PIF? And, what factors could enhance or inhibit their sense of agency in relation to their PIF? These new insights could provide important implications for practice for both medical students and medical educators.

The findings in Section 5.3.9 (Chapter 5, Findings) suggest that a proactive approach from both students and CoP members to participation in practice helps students to identify as more of a legitimate member of the CoP, which forms part of their professional identity. Existing literature explains the importance of proactivity from students to participate in practice (Wijbenga *et al.*, 2020; Thyness, Steinsbekk and Grimstad, 2022) and the value from

CoP members supporting students to be proactive (Kehoe and Illing, 2017). This finding extends existing knowledge and provides a novel insight demonstrating that student proactivity to learn how to participate and CoP members' proactive approach to involve students, supports them to identify as more of a legitimate member of the CoP which forms part of their professional identity according to CoP theory (Wenger, 1998). This finding is important because it confirms the value of a mutual, reciprocal approach between students and CoP members to the notion of proactivity to support a student's participation in practice. Therefore, clinical educators should be aware of the importance of proactive behaviour, such as identifying learning opportunities and inviting them to participate, and incorporate this into how they plan to facilitate student learning, which aligns with the views of Kehoe and Illing (2017). In addition, it would be helpful for students to be made aware of the value of demonstrating proactive behaviour prior to attending clinical placements to aid their participation and feelings of legitimacy within the CoP. This suggestion partly resonates with the view of Adema *et al.* (2019) who explain the value of students proactively building relationships to support their participation.

Participation in practice by its nature involves communication between students and CoP members. The individualised nature of communication, for example, such as when students see their name and/ or role used within official work processes, or receiving constructive feedback from doctors on their practice, can support the formation of a student's PIF. As highlighted earlier, the reification of a student's name within official work processes can support a student to assume responsibility for practice and can also be a marker of membership within a CoP. Davis *et al.* (2019) highlight the value of using a student's name to demonstrate that they are welcomed into the CoP and are valued. This finding offers a novel insight illustrating the value of the reification of a student's name and/ or role for their PIF. These results underscore the practical importance of incorporating the student's name and role as a medical student within authentic activities and work processes (where possible) which could help them to identify more as a legitimate member of the CoP and therefore support their PIF according to CoP theory.

It was highlighted earlier in the practice section that feedback can support a student to assume responsibility and accountability for the joint enterprise (Section 6.2.3); however, this study's findings suggest the importance of feedback from doctors and patients to

support a student's PIF. Existing literature explains how feedback helps students rework their professional identity to behave in a socially acceptable way (Leedham-Green, Knight and Iedema, 2020) and to understand their progress towards becoming a physician (Jarvis-Selinger, Pratt and Regehr, 2012). This finding extends this understanding and offers an additional perspective by indicating that feedback from doctors can help a student to understand their competency level which can help them feel closer towards *being* a doctor and, similarly, positive feedback from patients helps them feel the same. Therefore, this finding confirms the value of feedback for both learning the practice and the formation of a student's professional identity. Hence, it is important that doctors understand the importance of feedback and know how to provide it constructively.

As shown in Sections 5.3.1 and 5.3.4 (Chapter 5, Findings), the data from Participant 4 in particular suggests that when a student is participating in practice with a range of doctors, this can help them develop their own style of practice which they may then perceive as forming part of their own professional identity. Existing literature explains, for example, the importance of students engaging with a range of patients (General Medical Council, 2023) and ways of communicating with them (Dornan *et al.*, 2014), novel clinical experiences (Billett, 2016), as well as the range of member roles in a CoP (Morris, 2010). This data offers a potential new insight, suggesting that by students participating in practice with a range of doctors, this then allows them to experience distinctive styles of practice, which helps inform their own style of practice and is then perceived as forming a part of their developing professional identity. This partly aligns with Wenger's (1998) view that a person's identity is influenced through using and negotiating the shared repertoire of a CoP, for example, "Sustained engagement in practice yields an ability to interpret and make use of the repertoire of that practice" (p. 153) and "As an identity, this translates into a personal set of events … experiences that create individual relations of negotiability with respect to the repertoire of a practice" (p. 153). This indicates the importance of facilitating students to participate in practice with a range of doctors primarily to appreciate different practice styles. In addition, it suggests that it is preferable for students to engage with those whose roles align most closely with their future professional selves, for example, doctors, rather than a large range of other healthcare roles because, while this is useful for understanding

other roles and importance in the CoP, it has less influence on their PIF, as illustrated by Participant 6 in Section 5.3.9 (Chapter 5, Findings).

6.3.2 Mutuality of engagement

The study's findings indicate that mutually engaging with CoP members, building relationships and rapport can help a student to identify as more of a legitimate member of the CoP, which can support the formation of their professional identity according to CoP theory (Wenger, 1998). These findings align with CoP theory which, to repeat a quotation from the previous practice section (Section 6.2.2), explains that "We become who we are by being able to play a part in the relations of engagement that constitute our community" (Wenger, 1998, p. 152), which involves building expectations surrounding how to interact and work together (Wenger, 1998). These results also align with existing literature which explains that mutual engagement between students and fellow professionals helps them to identify as more of a legitimate member of the CoP and to feel a sense of belonging and valued (Kjær, Strand and Christensen, 2022). These findings are important because they confirm the value of CoP members facilitating opportunities for students to interact, engage in dialogue and build professional relationships. It was evidenced earlier that it takes time for students to learn how to participate; therefore, CoP members should plan for sustained periods where students can participate in practice and mutually engage with CoP members.

The findings illustrate the importance of mutually engaging with patients and the influence this can have on a students' PIF. It was indicated earlier that participation in practice focused on the joint enterprise of patient care and receiving feedback from patients is valuable to support a student's PIF. However, these findings suggest the importance of students mutually engaging with patients for their PIF and this result aligns with what we already know (Fredholm *et al.*, 2019; Cho *et al.*, 2024). As a result, this finding underscores the importance of students interacting, engaging in dialogue and building relationships with patients. The data from Participant 6 (Section 5.3.2, Chapter 5, Findings) also embodies Wenger's concept of accountability to an enterprise (part of the dimensions of identity), which as a source of identity, translates into a tendency to "value certain experiences", such as patient interaction, and to "engage in certain actions" (Wenger, 1998, p. 153).

6.3.3 Non-participation

As shown in Section 5.3.5 (Chapter 5, Findings), the data suggests that a student's non-participation in practice has an influence on their PIF. CoP theory explains that "non-participation is, in a reverse kind of fashion, as much a source of identity as participation" (Wenger, 1998, p. 164). This finding reinforces the value of CoP members facilitating students' participation in practice, wherever safe and suitable, but knowing that students appreciate this will not always be possible. The results also suggest that students can experience both peripherality and marginality as described within CoP theory. Existing literature recognises that students can sometimes feel marginalised, for example, when they experience limited hospitality (Eggleton *et al.*, 2019) and this study's data indicates that CoP members can use simple strategies to reduce these feelings in students. This finding underscores the importance of CoP member's emotional intelligence and social awareness to recognise how participation creates opportunities for positive emotions, whereas, perceived missed opportunities for student participation can create negative emotions within a student.

6.3.4 Imagination

The findings indicate that positive experiences with participating in practice can have an important influence on students' PIF and can influence them to imagine their possible future professional self. However, conversely, negative experiences can have the opposite effect. These findings align with CoP theory which explains that "The creative character of imagination is anchored in social interactions and communal experiences" and that "it is through imagination that we … envision possible futures." (Wenger, 1998, p. 178). Wenger (1998) also explains that the process of imagination supports a person's identity formation by "creating images of the world and seeing connections through time and space by extrapolating from our own experience" (Wenger, 1998, p. 173). Existing literature explains that participation in practice supports students to imagine their possible future career paths and preferences (Parker, Hudson and Wilkinson, 2014; Lewis and Kelly, 2018), that supervisors should support students to understand the concept of professional identity and how it can influence their future doctor role (Cruess *et al.*, 2014), as well as support them to

imagine possible future professional roles (Helmich *et al.*, 2017; Adema *et al.*, 2019). In addition, working alongside role models is a key influence on students' PIF (Passi and Johnson, 2016; O'Doherty *et al.*, 2021; Yamamoto, Obara and Verstegen, 2024). This study's findings validate existing knowledge which underscores the importance of participation, mutual engagement and dialogue with doctors but particularly positive role models, and how this supports students to imagine their future professional self. However, these findings also point to a gap in our knowledge and an interesting area for further exploration, for example, by focusing research more specifically into *how* different types of medical student participation in practice influences aspects of a medical student's imagination of their future professional self. These new insights could provide important recommendations for medical educators' practice. In relation to communities of practice, Wenger (1998) explains that "Rather than idealizing or vilifying them in general terms, we must recognize them as a fact of social life. They are important places of negotiation, learning, meaning, and identity" (p. 133). This study's findings align with this viewpoint because whether a student's experience is positive or negative, this typically translates into students imagining either positive or negative future images of their professional self. In particular, these results underscore the importance of positive participatory experiences for students during clinical placement and for supervisors to be cognisant of how their behaviours and attitudes influence their students to consider whether they wish to work in a similar discipline or to behave like them.

6.3.5 Alignment

The findings suggest that students are conscious to align themselves with the expectations of a CoP, for example, wearing typical dress or using the stereotypical tools of a doctor, and this helps them identify as more of a legitimate member of the CoP. Also, the results indicate that an effective placement induction and a proactive approach from students can help them learn how to align with the practice expectations. These findings align with CoP theory, which explains that alignment involves "Following the law of the land, complying with reified institutional requirements", for example, "buying the right kind of shoes" (Wenger, 1998, p. 179). This study's findings resonate with other evidence which illustrates that wearing the typical clothes of a doctor helps students to feel legitimate, supports their

legitimate peripheral participation and their PIF (Cho *et al.*, 2024). This study's insights also align with Cruess *et al.*'s (2015) viewpoint that students need to learn the dress norms of the clinical workplace and that participation helps them understand and align with the shared vision of care (Jaye, Egan and Smith-Han, 2010) and the culture of the CoP (Hägg-Martinell *et al.*, 2016). By way of an example, this study's findings underscore the importance of an effective induction which will help orientate the medical student to the expectations and norms of that specific CoP. In addition, the findings directly respond to Adema *et al*.'s (2019) call for further research into how the concepts of imagination and alignment from CoP theory (Wenger, 1998) support the process of medical student PIF through gathering stories from different parts of the world; their study took place in the Netherlands.

6.3.6 Identification and negotiability

The analysis of the study's results and the concept of identification from CoP theory (Wenger, 1998) demonstrates that when students identify as more of a legitimate member of the CoP, this most closely aligns with the concept of identification. Earlier work from Etienne Wenger with Jean Lave (1991) emphasised the importance of legitimate peripheral participation as a fundamental principle of learning in communities of practice but Wenger (1998) developed these concepts further in 1998 through the publication of a social theory of learning which is a more comprehensive theoretical framework and includes identification as a source of identity development. Identification relates to the extent of a person's emotional investment (positive and negative emotions) through the three modes of belonging (engagement, imagination and alignment) in being a member of a CoP and, conversely, the degree to which others recognise them as being a member of the CoP. Wenger (1998) describes that identity in communities of practice "form in this kind of tension between our investment in various forms of belonging " (p. 188), namely, engagement, imagination and alignment. This study finds that these three forms of belonging as described by Wenger (1998) are present in the experiences of students during clinical placement which is important because it demonstrates the utility of the theory and these constructs to comprehend how students' professional identity forms. Alongside the concept of identification is negotiability and together they form a duality supporting the

process of identity formation. Negotiability involves our ability to negotiate the meanings that matter within communities of practice and, as shown in Section 5.3.9 (Chapter 5, Findings), the data suggests that students perceive their ability to influence and have a degree of ownership of meaning primarily at the individual person and patient level, rather than at a broader CoP level. The second quotation by Participant 3 in this section provides a clear example of Wenger's concept of ownership of meaning (within the construct of negotiability) illustrating the perceived ability of a medical student to take responsibility for local meanings of healthcare. Wenger (1998) states that ownership of meaning is more personal than simply control, "It refers to the ways meanings, and our ability to negotiate them, become part of who we are" (p. 201). Therefore, it is important for CoP members to recognise that the degree of participation, accountability and responsibility students experience will influence a student's ownership of meaning.

The findings suggest that both CoP members and students can undertake a range of strategies to support students to identify and feel more of a legitimate member of the CoP. The insights particularly in Section 5.3.9 (Chapter 5, Findings) are clear examples of identification in action and illustrate Wenger's (1998) view that identification can include "what we enjoy being" (p. 191) and also involves relations between "participants and the constituents of their social existence", such as "social configurations" (p. 192), or in this case, a healthcare team. In addition, as noted specifically by Participant 4 in Section 5.3.9, a student can appreciate being able to be themselves within their own developing professional identity. The words 'being yourself' indicate that this participant appreciates being able to allow their own personality traits to be part of their evolving professional identity. This also indicates that this student perceives their own identity and professional identity as separate but related and that they may arrive at placements with a pre-existing notion of what the professional identity of a doctor is. Wenger (1998) partly recognises perceptions of self as a part of the process of identity formation by explaining that identity is a nexus of our membership of multiple personal life and work-related communities of practice. In addition, Wenger states that "I am not trying to belittle the importance of categories, self-images, and narratives of the self as constitutive of identity, but neither do I want to equate identity with those reifications" (p. 151). However, Wenger (1998) also emphasises that "Who we are lies in the way we live day to day" (p. 151) and that:

> Identity in practice is defined socially not merely because it is reified in a social discourse of the self and of social categories, but also because it is produced as a lived experience of participation in specific communities (p. 151).

This suggests a novel insight indicating the value of a student recognising and appreciating that they can 'be themselves' while participating in practice and progressing on the trajectory towards *becoming* a doctor and developing their professional identity. For clinical educators, this finding suggests that it is important to adopt an individualised approach to supporting the participation of each student, while appreciating the value of student individuality and personality, and maintaining cognisance of clinical practice expectations and patient safety.

6.4 Conclusion

In relation to the main research question: 'How do medical students learn and form their professional identity during clinical placements through the lens of community of practice theory?', this discussion has revealed the importance of planning for and proactively supporting medical students' active participation in authentic clinical activities focused on patient care throughout the whole placement to aid their learning and PIF. Moreover, strategies such as encouraging students to be proactive in relation to participation, as well as helping them build and sustain positive relations with CoP members and patients, assume responsibility for practice, use the shared repertoire, have regular dialogue on the practice, life outside medicine and their future career aspirations can be helpful. Conversely, the evidence also shows that limited or negative experiences with participation can hinder student learning and their PIF, aligning with the views of Wenger (1998) on communities of practice: "Rather than idealizing or vilifying them in general terms, we must recognize them as a fact of social life" (p. 133), they "should not be romanticized: they can reproduce counterproductive patterns" and "are the very locus of such reproduction" (p. 132). Indeed, the findings clearly support Wenger's view that communities of practice are "important places of negotiation, learning, meaning, and identity" (p. 133), especially in clinical workplace settings.

The discussion responds to the need for greater insight into *how* medical students learn during clinical placement and the utilisation of CoP theory (Wenger, 1998). It seeks to address these by illustrating the value of utilising the panoply of CoP theory (Wenger, 1998) in a single study to develop a broad theoretical and pragmatic insight into the nature of medical student participation in practice during clinical placement, their learning and PIF. This study's findings, when combined with the review of existing literature and data collection tools, provide a rich, holistic evidence base for future practice enhancements and research.

In Chapter 7, I will summarise the key findings, explain the implications for education and research, as well as discuss the study's significance.

Chapter 7: Conclusion

7.1 Introduction

The research aims guiding this inquiry are designed to:

- understand *how* medical students learn and form their professional identity during clinical placements;
- use this knowledge to offer learning and educational practice suggestions primarily for medical students and educators;
- improve our understanding of community of practice (CoP) theory (Wenger, 1998) in the context of medical education.

To address these aims, the study is framed through the following research questions.

Main research question:	How do medical students learn and form their professional identity during clinical placements through the lens of community of practice theory?

Theoretically informed sub-questions (via CoP theory - Wenger, 1998)

Research question 1:	How does participation in social communities of clinical practice support medical students' learning?
Research question 2:	How does participation influence the formation of professional identity within these communities?

This chapter synthesises the study's theoretical and practical insights relating to all research questions. It then presents key reflections on the challenges of engaging with CoP theory (Wenger, 1998) and its future applications, before discussing the research's contribution to theory (sociocultural and CoP theory), the body of knowledge, and methodology and methods. The chapter concludes with evidence-based implications for educational practitioners and key stakeholders, along with recommendations and a roadmap for future research.

7.2 Key findings

Building upon Chapter 5 (Findings) and Chapter 6 (Discussion), this section presents the main findings from this research related to each research question.

7.2.1 Research question 1: How does participation in social communities of clinical practice support medical students' learning?

Participation in practice is fundamental to how medical students learn effectively during clinical placements. Students can learn through more passive participation, such as observation; however, for learning to be most effective, students should progress on a trajectory towards more active, sustained participation in authentic clinical activities focused on the joint enterprise of patient care, which helps them to participate at the edges of their comfort zone and is still safe. Along the trajectory of more active participation, student learning, confidence and feelings of legitimacy are supported through them successfully assuming greater responsibility and accountability for increasingly independent practice and through using the shared repertoire of the CoP. A student's participation can be influenced by numerous factors, such as the nature of the clinical environment and its culture, their own behaviour and attitude, the educators and/ or the CoP members, with a proactive approach from both students and educators being beneficial to student participation and their learning. Indeed, the social side of clinical placements is also important. For example, student participation and learning is supported when they are able to build rapport and sustain positive relationships with CoP members. Furthermore, regular dialogue with CoP members about the joint enterprise of patient care supports students' participation, their learning and use of the shared repertoire, as well as their confidence. However, it is important to note that limited or negative experiences with participation in practice can hinder student learning. These findings illustrate that active, supported participation in practice is central to effective medical student learning during clinical placement.

7.2.2 Research question 2: How does participation influence the formation of professional identity within these communities?

Participation in practice and the *'doing'* of the role of a doctor is fundamental to how medical students form their professional identity during clinical placements. Learning *about* medicine is perceived as interesting but less enabling of their professional identity formation (PIF). Passive participation in practice, such as observation, does influence a student's PIF. However, the formation of a student's professional identity is enabled most when they progress on the active participation trajectory explained in the previous practice section, and which involves an interrelatedness between students simultaneously acting individually and socially, both physically and mentally, subsequently increasing their self-awareness and perception of the formation of their PIF. Along this trajectory, when active participation is perceived as successful, this supports students to feel useful and helpful, which influences them to identify as more of a legitimate member of the CoP and this forms part of their PIF. Indeed, addressing a student using their name also helps them to feel more legitimate, which supports their PIF. A student's professional identity is supported when they feel increasingly competent, use the shared repertoire of the CoP and follow the same process of assuming greater responsibility and accountability explained in the previous practice section, which provides identity formation utility from which a student can actively support their PIF. When students participate in practice in their own individual way such as using the shared repertoire or through employing their own consultation style, they can perceive this as forming part of their own professional identity. Indeed, receiving feedback from doctors and patients, as well as the social aspects of participation, have an important influence on student PIF, similar to engaging with the relationship building process explained in the previous practice section. Positive interactions support a student's PIF and examples include regular dialogue between doctors and students which focuses on the joint enterprise and acknowledges the value of the student's viewpoint on this, as well as dialogue which covers life outside of medicine and future career aspirations. In addition, successful participation and working alongside role models helps students to think positively about their future professional self. However, similar to the previous conclusions for practice, it is important to note that limited or negative experiences with participation in practice can also hinder a student's PIF.

These findings demonstrate that students' participation in practice during clinical placement bridges both their learning and PIF, which resonates with Wenger (1998) who states that the components of CoP theory are "deeply interconnected and mutually defining" (p. 5), also indicating the importance of employing the full range of the theory's constructs to understand the phenomena.

7.2.3 Fundamental elements of practice during clinical placements which influence both medical student learning and their professional identity formation

Building upon the preceding findings, this section synthesises fundamental elements of practice which relate to *both* practice and identity as explained by CoP theory (Wenger, 1998).

Figure 7.1 - Fundamental elements of practice during clinical placements which influence both medical student learning and their professional identity formation

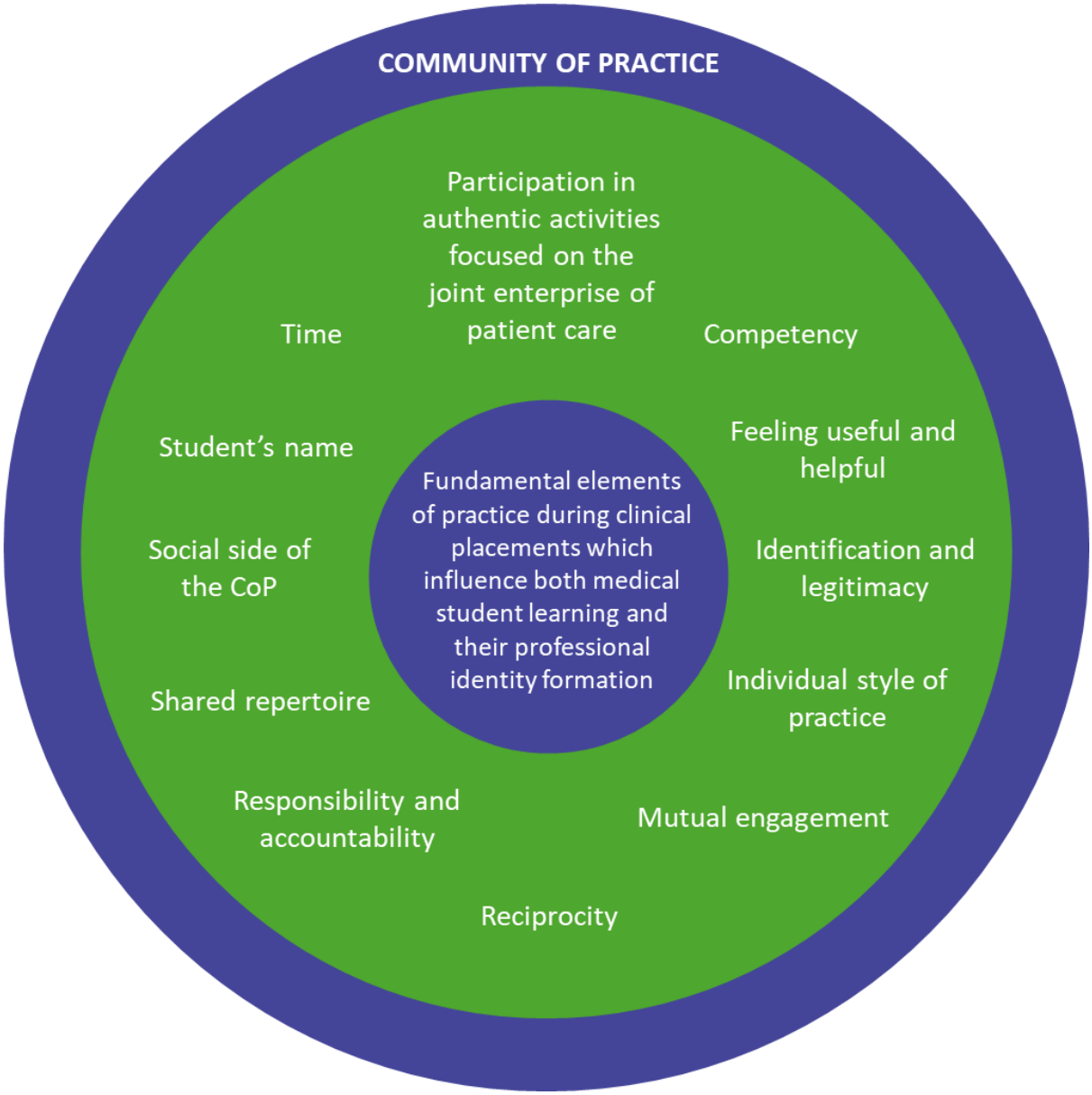


Table 7.1 Fundamental elements of practice during clinical placements which influence both medical student learning and their professional identity formation

Element of practice	**How it can influence medical student learning and professional identity formation**
Participation in authentic activities focused on the joint enterprise of patient care	Through access and participation in authentic activities that contribute towards the joint enterprise of patient care.

Competency	Successful participation in practice supports students' feelings of competency which then supports their PIF.
Feeling useful and helpful	Typically achieved through students successfully undertaking authentic activities which supports them to identify as more of a legitimate member of the CoP, which then supports their PIF.
Identification and legitimacy	Through identifying as more of a legitimate member of the CoP.
Individual style of practice	Through practising increasingly independently and working alongside a range of doctors helps students to develop their own style which forms part of their professional identity.
Mutual engagement	Through building and sustaining relationships and rapport supports a student's participation, learning and PIF.
Reciprocity	A reciprocal, proactive approach (from CoP members and students) to students participating in practice.
Responsibility and accountability	Through students assuming responsibility and accountability for increasing independent aspects of practice.
Shared repertoire	Through using the shared resources of the CoP.
Social side of the CoP	Through student involvement in the social aspects of the CoP.
Student's name	Through remembering and addressing the student using their name and including it within official work processes.
Time	Student learning and PIF happen over time.

The findings explained in Figure 7.1 and Table 7.1 have been formulated by an iterative process of analysing the study's data and identifying specific aspects which relate to both medical student learning and PIF. These fundamental elements of practice are clear examples that confirms Wenger's (1998) view of the profound, interrelated nature of both practice and identity. When presented together, these elements represent new knowledge and are fundamental to answer both research questions 1 and 2 because they relate to both practice and identity from CoP theory. Therefore, any answer to the study's main research question 'How do medical students learn and form their professional identity during clinical placements through the lens of community of practice theory?' should include all of these as fundamental elements of practice.

7.3 Reflections on the challenges of engaging with CoP theory (Wenger, 1998) and considerations about its future use

I was initially drawn to CoP theory because of my long-standing interest in how relationships and conversations relate to human potential development which, in part, was influenced by my previous writing relating to personal tutoring and academic advising. I was aware of the theory prior to undertaking this research. However, my most vivid memory of it was related to the concept of legitimate peripheral participation and learning from more experienced members of a CoP. After reading the work of Lave and Wenger (1991) and Wenger (1998), I realised that these memories are primarily related to the early work of Jean Lave and Etienne Wenger and their 1991 publication entitled: *Situated Learning: Legitimate Peripheral Participation*. I came to realise that Etienne Wenger developed the theory further through his seminal 1998 publication: *Communities of Practice: Learning, Meaning and Identity* (1998), as well as later publications which focus more on landscapes of practice and the boundaries between complex systems of communities of practice (Wenger-Trayner *et al.*, 2014). Table 2.1 in Chapter 2 (Theoretical framework) illustrates the process I followed to try to grasp the theory, which involved reading the 1998 text fully numerous times over a period of years. It is, as others state, a dense and complex theory (Smith, Hayes and Shea, 2017).

CoP theory (Wenger, 1998) has been useful to help understand the phenomena, both in terms of informing the methodology and data collection tools, as well as a framework for data analysis. My viewpoint is that CoP is a valid theoretical framework for medical education research, aligning with the views of Cruess, Cruess and Steinert (2018) and others (see Section 2.3 in Chapter 2, Theoretical framework), particularly because it conceptualises people working, learning and forming an identity in social groups, mirroring a medical student's experience during clinical placement. I found each theoretical construct and their inherent interrelatedness fascinating. However, it was difficult to conceptualise all of the parts as a whole theory. As mentioned previously, Smith, Hayes and Shea (2017) highlight that the theory can be challenging to comprehend and I feel that the occasional use of unique nomenclature for multiple constructs and their complex interrelatedness could either be difficult to fathom or off putting for those glancing at the theory, and with less time and inclination to immerse themselves. Others encountering similar challenges may provide one reason why Smith, Hayes and Shea (2017) state that few studies investigate all aspects of the theory comprehensively (Smith, Hayes and Shea, 2017). My belief is that it is important that research should consider using Etienne Wenger's theory from 1998 in full because the theoretical constructs are interrelated, designed to work together and each one represents how the phenomena works. As Wenger (1998) states, the components of CoP theory are "deeply interconnected and mutually defining" (p. 5), there is a "profound connection between identity and practice" (p. 149) and they are "inseparable" (p. 145). To illustrate this, Wenger (1998) presents the parallels between identity and practice as "mirror images of each other" (p. 149) in Figure 6.1 "Parallels between practice and identity" (p. 150) (also see Section 2.4.2.1 in Chapter 2, Theoretical framework). Wenger also explains that the strength of the conceptual framework of a community of practice "lies precisely in that it integrates" (p. 6) the components of the theory. These elements of the theory form a coherent whole because Wenger observes that any of the main components (meaning, practice, community, identity) could be swapped with 'learning' from the centre and the framework "would still make sense" (1998, p. 5). Therefore, only using certain constructs to explain learning and identity formation could lead to an incomplete or even misleading understanding, inhibiting the theory's explanatory strength. Hence, from a theoretical perspective, this is a reason why I advocate using the whole theory for research, where possible. Studies which use the panoply of the theoretical constructs will lead to greater

theoretical integrity, and a more holistic and comprehensive view. This will also improve the validity of the findings and the pragmatic implications for practice. This study illustrates that CoP theory is prevalent in medical education research which informs practice-based interventions in healthcare and Elbrink, Elmer and Osbourne (2024) explain that communities of practice are also increasingly utilised in healthcare for innovation and knowledge sharing. Therefore, using all of the theory's constructs could also lead to interventions which are more likely to produce the intended results, rather than leaving certain constructs out. Chapter 2 (Theoretical framework) provides an accessible interpretation of Wenger's CoP theory from 1998 to help future users engage with the majority of the theoretical constructs. In addition, the assertion that "The works of Lave and Wenger (1991) and Wenger (1998) are the most widely cited social theories" (Farnsworth, Kleanthous and Wenger-Trayner, 2016, p. 139) and are used in multiple fields, disciplines and sectors is also intriguing to me. Therefore, after this research, I aim to investigate how this study's use of the majority of the theory's constructs compares to studies from other fields and specific disciplines, particularly those where learning and identity formation through participation in practice is fundamental to human potential development.

The consideration of how power shapes knowledge and behaviour is pertinent in the hierarchical structure of medicine (Vanstone and Grierson, 2022) and CoP theory (Wenger, 1998) does not significantly consider this, which is a potential limitation of the theory. Vanstone and Grierson (2022) explain that hierarchies can create "a social order and expected rules for conduct" (2022, p. 93) which, when enacted by medical students, enables them to develop relationships with supervisors. A central theme of this study is the development of relationships but power does not receive significant attention. Indeed, Wenger addresses the notion of power directly by stating that he does not deny these broader political issues but focuses on issues of power related to "the negotiation of meaning and the formation of identities - that is, as a property of social communities" (Wenger, 1998, p. 189) and acting in accordance with the enterprises people pursue, and "only secondarily in terms of competing interests" (Wenger, 1998, p. 189). However, this study highlights that the negotiation of meaning through participation and reification and the formation of identities is directly influenced by the relationships within the CoP, meaning a consideration of power in relation to medical students on clinical placements is

warranted. Even with this potential limitation, my view is that CoP theory (Wenger, 1998) has much more potential, aligning with the views of Smith, Hayes and Shea (2017).

Wenger contends that CoP theory explains what learning *is*, not what it *should be* (Farnsworth, Kleanthous and Wenger-Trayner, 2016). My experience as a researcher using the theory is that, whilst I agree with this statement, I also believe that its application in research projects highlights important contextual, pragmatic considerations that can inform how CoP members can support their own learning and identity formation, as well as that of others, whether they be students or more experienced community members. My hope is that those practitioners and researchers who may not have utilised the majority of the theoretical constructs, look again and consider the potential that it has for helping advance our understanding of learning and identity formation when applied fully. This is especially important in medical and health professions education with the significant planned increase in student numbers over the coming years and workplace learning scholars estimating that practitioners "acquire over 80% of their knowledge "on the job"" (Dornan *et al.*, 2019, p. 1098), all underlining the essential importance of medical students learning effectively and forming their professional identity through participation in practice.

7.4 Contributions to the field

This section explains the key contributions of the research to our understanding of theory, the body of knowledge, and methods and methodology.

7.4.1 Contribution to theory

This study's application of CoP theory, synthesis of literature and the use of audio diaries as a data collection method informs our understanding of theory and provides guidance for future research.

7.4.1.1. Sociocultural learning theory

There is limited research which investigates how sociocultural learning theories inform medical educators' practice and these insights are important to more fully understand how

to support medical student learning in the clinical workplace (van der Zwet *et al.*, 2011), particularly the importance of social interactions, the physical environment and the social context (van der Zwet *et al.*, 2014). To address this requirement, this study's results extend existing knowledge by demonstrating the centrality of the social and cultural clinical environments, the development of social relationships between students, CoP members and patients, and having access to the shared repertoire and practice of the CoP for both student learning and their PIF. In addition, the findings underline the importance of considering the physical environment and how this supports or inhibits students' identification with a CoP and feelings of legitimacy, their ability to mutually engage and form their professional identity.

Collectively, these results support the perspective of Burgess and Mellis (2015a, p. 51) who explain that "Medical students' knowledge, thinking, and learning are grounded in experience, and are bound to the social and physical context" and the view of Stoffels *et al.* (2019) who believe that workplace learning is a social process that is highly influenced by the environment. Hence, this study underlines the crucial importance of sociocultural learning theories for understanding student participation, learning and identity formation in the clinical workplace, also aligning with the views of Hodson (2020). Moreover, this study reinforces the importance of the sociocultural nature of the clinical workplace, aligning with the view of Billett and Choy (2013), and how this can improve our understanding of the clinical environment for learning (Liljedahl, 2018).

Consequently, this study supports the view that training and examples are required for medical educators to appreciate the value of sociocultural learning to their practice (Mukhalalati *et al.*, 2022) because this would help facilitate the translation of this study's findings into practice. Brown and Horsburgh (2022) call for more social science and relationship-based research in medical education, particularly to improve our understanding of medicine's social context. In addition, Arnseth's (2008) view is that social practice should be a key locus of research and this study's insights underscore the value of using sociocultural learning theories to unlock what Dornan *et al.* (2014) refer to as a 'black box', and overcome our limited understanding of *how* medical students learn during clinical placement. This study directly contributes to this understanding.

7.4.1.2. CoP theory

Current literature highlights some key limitations regarding the use of CoP theory. For example, few studies apply CoP theory fully, with most only applying a few of the key concepts (Smith, Hayes and Shea, 2017) and there are limited studies which investigate the conceptual constructs of the theory (Terry *et al.*, 2020). It is important that future research uses CoP theory to enhance our understanding of student learning during clinical placement (McKenzie, Burgess and Mellis, 2020; Taylor, Anderson and Gay, 2023) and to gain deeper insight into how communities of practice influence student learning (Abigail, 2016; Kirtchuk and Markless, 2023). This study addresses these research recommendations through applying the majority of Wenger's CoP theory (1998) within a single study, examining the distinct, individual components and their interconnectedness (see Chapter 2, Theoretical framework) and exploring how these present in practice within the context of medical education. This research validates the viewpoints of numerous researchers (see Section 2.3 in Chapter 2, Theoretical framework) by confirming existing knowledge and demonstrating the utility of the theory for understanding medical student learning and PIF in clinical contexts. Hirshfield (2022) explains that medical education research has been critiqued for insufficient knowledge of social science theories. This research responds to this by providing future researchers with both a detailed, accessible theoretical interpretation of CoP theory (Wenger, 1998) (Chapter 2, Theoretical framework) and novel data collection tools mapped to the theory (Appendix 3 and 7). The research also provides a synthesis of relevant literature (Chapter 3, Literature review) and recommendations for future research (Section 7.7, Chapter 7, Conclusion). Taken either together or individually, these provide a platform for future research in both medical and healthcare education, particularly due to the relevance of this theory for health professions education because the delivery of healthcare typically takes place within a CoP (Durning and Artino, 2011; Cantillon *et al.*, 2016; Amery and Griffin, 2020). Utilising these in further research would help advance the field and address the view that the potential of both the theory (Smith, Hayes and Shea, 2017) and communities of practice (James-McAlpine, Larkins and Nagle, 2023) are still to be achieved.

Outside of medical and health professions education, the aforementioned theoretical interpretation and data collection tools could serve as a platform and catalyst for researchers in other fields to investigate learning and PIF due to the theory being

extensively cited (Burgess and Nestel, 2014; Consalvo, Schallert and Elias, 2015; Smith, Hayes and Shea, 2017) and the most widely cited social theory (Farnsworth, Kleanthous and Wenger-Trayner, 2016). While it is not within the remit of this research to investigate whether the majority of Wenger's (1998) CoP theory constructs have been used fully in individual studies in fields other than medical education, similar to this study, this is a focus of future planned work.

7.4.2. Contribution to the body of knowledge

Evidence for how participation in practice facilitates student learning is inadequate (Dornan *et al.*, 2014) and research is required into this "black box" (Barrett, Trumble and McColl, 2017, p. 1015). Chapter 5 (Findings) addresses this by providing a range of new empirical evidence which is structured thematically according to CoP theory (Wenger, 1998) and demonstrates the interrelated nature of aspects of participation, learning and PIF, resulting in a broad theoretical and practical picture of the phenomena. Furthermore, Chapter 6 (Discussion) and Section 7.2.3 in Chapter 7 (Conclusion) also address this need through providing empirical evidence that confirms existing claims about the phenomena but also provides a range of new evidence and knowledge claims. One example of new knowledge is the identification of the fundamental elements of practice as a combined group which influence both medical student learning and PIF (see Figure 7.1 and Table 7.1). In addition, the study was framed through a review and synthesis of medical education literature (see the search and analysis strategy in Appendix 1). The literature review highlights a significant difference in knowledge between what characteristics support an effective medical student during clinical placement compared with being an effective medical educator, with the latter receiving most attention. This study offers a clear insight into *how* medical students can learn more effectively in the clinical setting and thus provides evidence to help close this gap and support improved self-directedness towards their own learning, which is a requirement of them (General Medical Council, 2024).

The knowledge from this study matters because it provides a detailed insight into the learning experiences of medical students and it has immediate relevance to the field of medical education and the design of clinical placements. For example, to illustrate this point, I have summarised in Table 7.2 how I am already utilising the knowledge from this

research to directly inform the learning of medical students' and educator's practice at a university in the North of England where, at the time of writing, I work as an academic in medical education.

Table 7.2 Examples of the current application of this research on an undergraduate medicine degree, clinical educator staff development and a Postgraduate Certificate in Medical Education

Students - Supporting their participation in practice, learning and PIF	
Project	Explanation
Student workplace learning literacy	● Liljedahl *et al.* (2019) explain that medical students typically attempt to navigate the complexity of the clinical environments during placements without "any explicit 'map' of workplace learning" (p. 275). To address this need, I am leading a new curriculum innovation that aims to support students' transition from structured learning in the early years to make the most of clinical learning opportunities on placements and to support the formation of their professional identity throughout the course. This project also responds to Hirshfield's (2022) view of the importance in helping medical students to appreciate the value of social science content by engaging them with the evidence-base of learning and PIF via participation in the sociocultural clinical context. ● Students participate in a 'Workplace Learning Literacy' workshop which introduces effective evidence-based strategies for learning and PIF within the clinical workplace before they start their first longitudinal integrated clinical placement. During this placement and all future clinical placements throughout the undergraduate medicine course, students will be encouraged to engage with

	reflective practice via fortnightly audio diary recording supported by guided prompts (see Appendix 3). Subsequent years will experience a workshop at the beginning of the academic year, reflecting on their experiences so far and reminding them of the evidence-base. ● The aim of implementing this throughout the undergraduate medicine course is to help students to be more cognisant of their learning and PIF, and to support their self-directedness. ● This intervention is also being incorporated into the Masters in Physician Associates and undergraduate nursing courses. I aim for this to support all health professions students in the Faculty who undertake clinical work placements. ● This innovation will be evaluated to enhance the intervention, and to develop the knowledge base and disseminate the findings.
Clinical educators - supporting their practice	
Project	Explanation
Clinical educators' training programme	● The knowledge from this study is supporting the research-led nature of an existing project which includes a range of staff development workshops designed to build the knowledge and skills of clinical educators to effectively support medical student learning in the workplace.
Clinical placement providers - supporting their organisation of clinical placements	
Project	Explanation
Clinical placement guidance	● The aim is to utilise the knowledge from this study to provide guidance to:

	○ university staff who visit students on clinical placements to discuss their experiences; ○ placement providers, in order to support them in creating a welcoming, supportive learning environment and culture which values and actively supports student participation in practice, learning and PIF.
Postgraduate Certificate in Medical Education	
Project	Explanation
Postgraduate study in medical education	● The Postgraduate Certificate in Medical Education course aims to enhance the knowledge, skills and confidence of health professions educators and the Work Based Learning module focuses specifically on how to support effective learning in clinical workplace settings. ● The knowledge from this study will be utilised to further enhance the research-led nature of this module.

With a planned doubling of medical student places by 2031-32 (NHS England, 2023), this increase could exacerbate challenges with clinical placement capacity (Medical Schools Council, no date), highlighting the imperative of both an efficient and effective learning experience, underlining the timeliness of this research. The knowledge from this study is important because it provides an in-depth understanding of essential elements for ensuring clinical placements deliver an impactful learning experience and, by focusing on these central aspects affecting student learning and PIF, an efficient clinical placement design. Moreover, as described in Table 7.2, the knowledge from this study can be utilised to inform the workplace learning literacy of students and the professional development of clinical educators to enhance their practice, which will also contribute towards the students' learning experience.

It is not within the scope of this research to consider the value of the findings and research design to understanding learning and PIF in the clinical workplace for other healthcare roles.

However, due to the fact that the delivery of healthcare typically happens within communities of practice (Durning and Artino, 2011; Cantillon *et al.*, 2016; Amery and Griffin, 2020), it is proposed that this study's findings and elements of its research design could provide a framework for further research or educational advancement to help address the perennial issue of balancing service delivery and the education of students (Scholl *et al.* 2017; Fish, Gawne and Machin, 2022) by focusing effort and resource towards increasingly active student participation in *effective* healthcare practice. This will directly lead to effective patient care, *and* student learning and PIF *simultaneously* because, as this study illustrates, by their nature, they are interrelated and mutually-dependent.

7.4.3. Contribution to methodology and methods

Overcoming issues with participant recollection and collecting concurrent perspectives on learning is required in workplace learning research (Dornan, 2012), and this is a specific issue encountered via interviewing (Crozier and Cassell, 2016). In addition, Verma (2021) advocates for the under-utilised method of audio diaries as a useful data collection tool in healthcare education research. This study did not analyse audio diaries as a data collection method because it was beyond the scope to do so; however, the data analysis process highlighted the depth of insight into participant experiences over time that these provided, particularly when analysed alongside interview data, which aligns with the views of Crozier and Cassell (2016) who explain that these two methods complement each other. This study also indicates new knowledge in medical education research, for example, that the use of audio diaries as an initial data collection method supports the richness of discussion and collection of data in any subsequent interviews because participants are more conversant with the focus and language of the study's key concepts. Another interesting finding was the beneficial impact recording the audio diaries had on participant learning and their sense of achievement. This is illustrated through the following research participant quotes: "Even like doing the audio diaries, even though it's like a subconscious flow when you speak … sometimes hearing it out in the open is a good way of solidifying that belief in your head" [P4, Interview] and:

> It's quite helpful reflecting at the end of the week about how you feel placement has gone because I feel that helps me … especially for the weeks when I feel that I didn't

> do as great … and what's gone well … so that's actually really helped. If anything, I'm now trying to think of a way to mentally do that and make that something that I can continue because it helps me to see what I need to improve on more … so it's really helped in that sense. [P2, Interview]

> There was definitely a therapeutic effect that I felt when recording the reflections … maybe it was because I was doing it after a stressful day … it made me feel good, what sort of good or what sort of therapeutic, I'm not sure, it was a sense of achievement, maybe from the reflection or that I'm taking part in the study … maybe some alone time thinking, o yea I have done a lot of work this week on placement. [P5, Interview]

Hence, this study supports the utility of audio diaries as a data collection method in medical education research, particularly when used alongside interviews, as well as a reflective learning tool for students. The workplace learning literacy initiative (explained in Table 7.2) I am leading, which is currently in progress at a university in the North of England, will evaluate the utility of audio diaries as a reflective learning tool.

Moreover, due to the broad applicability of CoP theory (Wenger, 1998), the data collection tools, such as the audio diary prompts (Appendix 3) and interview schedule (Appendix 7) which is mapped against CoP theory (Wenger, 1998), offer data collection tools for future researchers to use or adapt in medical and health professions education or other fields and disciplines.

7.5 Limitations of the study

The findings from this research should be viewed in light of some limitations. The use of CoP (Wenger, 1998) as the theoretical underpinning for the research draws our attention to sociocultural and participatory aspects of learning but potentially diminishes other relevant aspects, such as direct instruction and more cognitive elements of learning. While areas such as the demonstration of practice and direct instruction did appear at times within the findings, a future study could adopt a greater focus on a cognitive approach to investigating the phenomena. This would provide a more complete picture by considering two important metaphors of learning as stated by Sfard (1998): acquisition *and* participation.

The study utilised data from six participants who self-selected and are arguably motivated to be part of the study. Moreover, the study took place with medical students from one year of a five year undergraduate medical degree, within one UK higher education institution (a Russell Group university in the North of England) and from placements within the South Yorkshire and North Derbyshire region. It is not possible to say whether the findings would have been significantly different if an alternative sampling strategy had been adopted, whether students from a different year of the course had been selected or if the study had collected data from participants from other regions of the UK or worldwide. Due to the perceived usefulness of the two data collection methods leading to a rich data set, it is my intention to replicate the same study in different countries via collaborations to develop insights into the phenomena that are more distinctive and specific to that region and context. Moreover, this will enable useful comparison *between* countries.

The study did not differentiate between the type of placements students had recently undertaken. Therefore, it is not possible to say with certainty whether the data collected focused on more community or hospital-based placements. This approach was intentional because the focus was to investigate how students learn and form their professional identity more generally during clinical placement and not compare data by placement type. Participants were also instructed that during the interviews they could provide data about their recent or any other experience of learning during clinical placement. Therefore, it is possible that each participant provided data which included experiences of both types of placements. To develop greater contextual insight into placement types and their influence on participation, learning and identity formation, it is my intention to undertake a study which utilises the same research design and specifically compares experiences between hospital and community based placements.

The study only collected data from medical students about their learning and PIF which may provide a potentially narrow viewpoint of the phenomena. Arguably a more comprehensive and nuanced understanding of how medical students learn and develop their PIF would include data from CoP members who support their learning during clinical placement in the analysis. It is my intention to investigate this as part of a future study, which I hope will provide a more extensive picture of the phenomena and greater insight into implications for educational practice.

7.6 Implications for educational practice

This study's results provide an evidence-based, theoretically informed insight into how medical students learn and develop their professional identity during clinical placements. These findings are important for a range of stakeholders, such as medical students, clinical educators, medical schools within universities, the National Health Service (NHS), local NHS trusts and clinical placement providers, professional standards bodies such as The Academy of Medical Educators, as well as regulatory bodies such as the General Medical Council. Table 7.3 illustrates how the study's findings can inform the practice of these key stakeholders. However, the key focus of this research is on medical students themselves, their learning and PIF, and those that directly support it day-to-day. Therefore, the meaning of the findings have been analysed to provide pragmatic guidance for medical educators' practice and how their students' participation in practice, learning and PIF can be facilitated during clinical placements. The importance of these insights are framed against plans for 22% (up from 7% in 2023) of all training for clinical staff in the NHS to be via an apprenticeship route by 2031-32 (NHS England, 2023) and a "targeted expansion of clinical educator capacity" (NHS England, 2025, p. 100).

7.6.1 Practice (Learning as doing)

To enable effective medical student learning, clinical educators should proactively plan for and facilitate active, sustained student participation in authentic clinical experiences, which are focused on the joint enterprise of patient care, throughout the duration of the placement. Planning for participation should involve clinical educators working with other CoP members prior to a student joining the placement to help create the necessary conditions for participation. These include, for example, creating a welcoming environment and culture which values student participation, providing an informative induction where the student meets other CoP members and is shown the physical environment, deciding a suitable place for the student to be based that is within the proximity of CoP members and discussions surrounding the practice of the CoP, and planning for appropriate participation in the wide range of normal day-to-day activities of the CoP.

To help build a positive, trusting relationship with the student, educators should proactively engage in regular, ongoing dialogue with them to explain the practice of their specific CoP and to find out about their students' past experiences of medical education, their confidence, motivation, knowledge and also to sensitively engage in dialogue about life outside of medicine. Educators should use these insights to tailor appropriate, individualised participation opportunities to help the student participate in practice at the edges of their comfort zone, so that they feel challenged but also safe. Student learning, motivation and confidence is enhanced when they feel responsible and accountable towards the joint enterprise and participate in practice increasingly independently. Therefore, where appropriate, educators should encourage students to assume responsibility and accountability to undertake practice more independently and facilitate this through strategies such as, being proactive in identifying these opportunities and encouraging the student to adopt the same approach; providing encouragement and demonstrating belief in their ability; facilitating access to suitable, authentic participation opportunities; providing constructive feedback on their practice and sharing positive and constructive feedback from patients; addressing them by their name, and including this within official work systems and processes, where possible.

Demonstration, observation of practice and direct instruction, for example, supports student learning. However, for learning to be enhanced further, particularly student memorisation and recall of information, students should move towards more active participation in the practice of the CoP. It is important that educators encourage and support students to be proactive, to participate and facilitate the building of positive, sustained relations with CoP members, which will help them learn the shared repertoire and about the joint enterprise. Equally, students should also be mindful of demonstrating these characteristics on placement. Positive relational experiences help build shared expectations and facilitate future student learning opportunities creating a virtuous cycle. Therefore, both the student and educator should work towards this. Educators should encourage students to use the shared repertoire in authentic clinical situations and with patients because this enables them to develop their own style of practice, improve their confidence and support them to feel more of a legitimate member of the CoP.

Clinical educators should be mindful that an absence of these positive experiences or perceived negative experiences can inhibit a student's learning. Moreover, it is logical that a medical student will interact with numerous CoP members and patients during their time on clinical placement. Therefore, it is important that clinical educators are cognisant of the influence these interactions can have on the student and that the educator implements strategies to ensure that CoP members recognise the significance of their interactions with the students, that they use behaviours which demonstrate they value the students' learning and adopt a similarly positive, proactive approach to their participation in practice.

7.6.2 Identity (Learning as becoming)

A student's professional identity is formed more through the *'doing'* of the role of a doctor than through simply learning *about* medicine. Therefore, to support the formation of a medical student's professional identity and the same as the previous suggestion for practice, clinical educators should proactively plan for and facilitate active, sustained student participation in authentic clinical experiences, which are focused on the joint enterprise of patient care, throughout the duration of the placement. Successful participation in practice can support a student to feel both useful and helpful, which influences them to identify as a legitimate member of the CoP and this supports their PIF. To continue the aforementioned tailored, individualised approach to student participation, the educator should discuss with the student what they believe may help them to feel both useful and helpful. To foster these feelings, educators should proactively encourage students to assume responsibility for and accountability to the joint enterprise and to undertake practice more independently. This provides experiences to support their PIF, which also helps them to feel trusted, positive about their future professional self and more of a legitimate member of the CoP.

Building positive relationships and rapport with CoP members and patients supports a student's PIF, which educators should proactively facilitate. In particular, working alongside a range of doctors supports students to develop their own individual style of practice, which they perceive as forming part of their professional identity. Students also value when their perceived personal identity can form part of their developing professional identity, again supporting the importance of educators adopting an individualised approach to

participation. Alongside these relational strategies, educators should also involve students in the more social aspects of the CoP, such as going for lunch, engaging in regular professional dialogue, using active listening and reflective back communication techniques, providing constructive feedback on their practice, sharing positive and constructive feedback from patients, and helping students to reflect on their increasing knowledge and competency. Using the shared repertoire of the CoP supports students to feel more legitimate and their PIF, and educators should proactively encourage and facilitate students to do so in authentic clinical situations. When students use the shared repertoire in their own individual way, they perceive this as forming a part of their own style of practice, which becomes a part of their own professional identity. Therefore, helping students become aware of this through dialogue will support this process.

An educator's clinical workload could hinder student participation opportunities, which the educator should be cognisant of because when these opportunities are regularly missed or prevented, this can lead students to feel marginalised from the CoP. Therefore, from an organisational perspective, it is important that clinical educators have sufficient time to undertake their educational role. CoP theory explains that a person’s imagination creates possible futures which result in a future extended identity. Therefore, facilitating positive experiences and feelings such as successful participation in practice, observation of practice, mutual engagement with role models and feeling like a legitimate member of the CoP helps students to think positively about their future professional self and hearing about personal career experiences supports them to think positively about working within a particular discipline.

Students value feeling and being recognised as a legitimate member of the CoP which supports their PIF. To enable students to identify as more legitimate, educators should, for example, demonstrate a welcoming approach; proactively support them to build and sustain positive working relationships with CoP members; involve them in practice focused on the joint enterprise, as well as the social aspects of the CoP; support them to assume responsibility and accountability, and practise independently where appropriate; affirm their strengths to build their confidence; and address them using their name and include it within work processes. Students can support their own feelings of legitimacy, for example, by proactively seeking participation opportunities and dressing according to the archetypal

norms of doctors. Students also possess agency with regards to their professional identity. Therefore, educators should make students aware of this and encourage reflection on their participation in practice, potentially using audio diaries to help them make sense of their changing self.

Clinical educators should be mindful that an absence of these positive experiences or perceived negative experiences can inhibit the formation of a student's professional identity. In line with the former suggestion for practice, it is logical that a medical student will interact with numerous CoP members and patients during their time on clinical placement. Therefore, it is important that clinical educators are cognisant of the influence these interactions can have on the student and their PIF, and that the educator implements strategies to ensure that CoP members also adopt a similarly positive, proactive approach to their participation in practice.

7.6.3 How the study's findings can inform the practice of key stakeholders

Sections 7.2.1 and 7.2.2 explain how students learn and form their professional identity during clinical placements. Sections 7.6.1 and 7.6.2 principally explain the implications for educators. In addition to supporting medical students' preparedness and approach to clinical placements, as well as the educational practice of clinical educators, the knowledge from this study can be utilised to inform the practice of other key stakeholders (see Table 7.3).

Table 7.3 - Examples of how the study's findings can inform the practice of key stakeholders

Stakeholder	**Examples of how the study's findings can inform the practice of key stakeholders**
National bodies in the UK, (for example, the General Medical Council)	● Inform professional standards guidance, such as the 'Guidance on undergraduate clinical placements' report (General Medical Council, 2022). ● Inform clinical placement guidance within the 'Promoting excellence: standards for medical

	education and training' report (General Medical Council, 2015).
NHS, local NHS trusts and clinical placement providers	● Inform workforce design, development and training strategies. At the current time, this is particularly important with the NHS having a stated aim of providing "… 22% of all training for clinical staff through apprenticeship routes by 2031/32, up from just 7% today" (NHS England, 2023) and with communities of practice being described as a "living curriculum" for those learning via an apprenticeship (Wenger-Trayner and Wenger-Trayner, 2015, para 12). ● Inform the educational leadership strategies of those that organise, administer and facilitate medical student placements. ● Inform strategies to support students' transition from more classroom-based learning to learning within clinical settings, and to support their ongoing learning and PIF as future doctors. ● Inform staff educational professional development provision.
Medical schools within universities	● Inform placement organisation, quality improvement processes and guidance for placement providers. ● Inform strategies to support students' transition from more classroom-based learning to learning within clinical settings, and to support their ongoing learning and PIF as future doctors. ● Inform clinical educators professional development provision.
Professional standards bodies such as The	● Inform refinements and updates to the professional standards framework. For example, Domain 2

Academy of Medical Educators	(Teaching and facilitating learning), element 'Active participation and learner engagement' describes "Actively seeks to incorporate learners into a community of practice" (The Academy of Medical Educators, 2022, p. 7) to achieve level 3 of the framework.

7.6.4 The novelty and practical contribution of the implications

The implications presented in the previous sections (7.6.1 - 7.6.3) build on the findings of this study to inform educational practice. This section briefly considers the extent to which these implications and recommendations are novel, how they relate to existing research, and their potential significance for practice. While previous studies have highlighted the importance of medical student participation in practice to enhance their learning and PIF, the implications developed here extend this work by drawing upon a more comprehensive application of Etienne Wenger's seminal CoP theory (1998) and by examining how the phenomena develops over time via longitudinal and cross-sectional data collection methods.

One novel aspect stems from the way that collectively, both the practice (learning as doing) and identity (learning as becoming) implications are informed by a more comprehensive application of CoP theory (Wenger, 1998) constructs, when compared with previous studies. While previous studies have often selectively used CoP theory (Wenger, 1998) constructs, this study adopts a more integrated, deductive approach, uniquely using the full theoretical framework (notable exceptions acknowledged in Section 4.5.2, Chapter 4, Methodology and methods) to guide both the collection and analysis of the data, and to inform the findings and recommendations for educational practice. For example, Cho *et al.* (2024) explain that as part of their theoretical framework, they use the participation and reification constructs from Wenger's CoP theory (1998), which is a duality that forms the negotiation of meaning and which contributes toward the understanding of both learning and identity formation through participation in practice. While the study's selective use of theoretical constructs generates valuable insights, it does not provide a comprehensive theoretical perspective. The study's partial application of the theory restricts the potential depth and applicability of

its practical recommendations because the absence of integral constructs restrict the translation of the theory into practice. Another example is Adema *et al.*'s (2019) study which focuses on how participation in practice and relationship building support medical students' PIF. However, the research selectively uses Wenger's (1998) modes of belonging (engagement, imagination and alignment), which is only one part of the broader identity component. Similar to Cho *et al.*'s (2024) study, this selective engagement with limited constructs provides helpful empirical insights but limits the potential strength and comprehensiveness of the study's practical recommendations. This study's comprehensive theoretical application (Wenger, 1998) enables a unique, more holistic understanding of the dynamic processes between the three main components of participation in practice, learning and PIF, rather than focusing on more isolated elements of the theory. As a result, the implications for educational practice extend existing research by demonstrating how the panoply of CoP theory (Wenger, 1998) constructs can be translated into practical implications for clinical workplace settings. These provide a coherent, evidence-based, theoretically informed framework through which medical educators can both understand and facilitate these learning and professional identity processes.

Another novel aspect of this study's implications for educational practice is in the way they emphasise the interrelated, evolving social processes through which medical student learning and professional identity forms over time. As a result, this temporal perspective frames the recommendations through emphasising the importance of supporting participation activities throughout the duration of clinical placements. A substantial body of existing literature has relied solely on cross-sectional methods, particularly interviews, which collect retrospective viewpoints and valuable insights but these may not fully capture the evolving nature of the participants' learning experiences. For example, Thyness, Steinbekk and Grimstad (2022) undertook a qualitative study using only semi-structured interviews with 22 medical students, investigating their learning experiences within the clinical environment. Similarly, Bransen *et al.* (2020) solely used semi-structured interviews with 11 students to understand their learning experiences in clinical environments. These methodological approaches provide useful insights for theory and practice but they limit the ability to capture how students' experiences develop over time and, as a result, the findings may reflect students' interpretations at a single point in time and the recommendations

may miss key developmental stages or transitions in their learning and PIF. By incorporating contemporaneous perspectives on learning and PIF, alongside the deeper, retrospective reflections, this study offers additional, unique insights into how these theoretical and practical processes occur over the length of a placement, informing implications for educational practice that place significant emphasis on supporting participation, learning and PIF throughout the duration of the placement.

By applying Wenger's (1998) theory comprehensively and combining longitudinal and cross-sectional data, this study is able to provide more comprehensive and detailed practical implications for practice. Using the majority of the theoretical constructs allows the recommendations to address the theoretically interconnected factors shaping medical student learning and PIF. In addition, the longitudinal data captures how learning and PIF happens over time, providing a holistic picture of the phenomena and potentially illustrating how student experiences evolve. Supported by reflective insights from the cross-sectional interviews, these recommendations provide a robust and nuanced understanding, leading to theoretically grounded and practically relevant implications for medical education practice.

Whilst the findings broadly indicate that participation in clinical communities of practice can be helpful in improving medical students' learning and PIF, several findings suggest that this is not always the case. For example, some findings suggest that participation within a CoP does not inevitably lead to positive participation experiences or desirable educational outcomes. A notable finding was that opportunities for participation were sometimes contingent upon contextual or relational factors rather than simply membership of the CoP. For example, clinical workload, dismissive attitudes from clinicians and limited dialogue with CoP members may restrict participation opportunities, potentially resulting in feelings of marginalisation. These findings complicate any taken-for-granted assumptions that newcomers to a CoP will automatically move towards more active participation in practice. In addition, the data suggests that students may remain in a state of non-participation, whereby limited opportunities to participate and mutually engage can be perceived as reducing useful opportunities to learn or to identify as a legitimate member of the CoP. Consequently, being on the periphery of the CoP did not always function as a route towards more active participation. For some participants, this became a source of frustration and

marginalisation. A related issue is that aspects of participation within the CoP created implications beyond just learning. For example, students who were not provided with meaningful responsibility, or who did not answer patient-related questions correctly, sometimes questioned their competence and future within the medical profession. Finally, in some cases, exposure to challenging workplace cultures and pressures influenced the participants' perceptions of their future career trajectories and professional identity as a future doctor. Collectively, these findings suggest that communities of practice should not be perceived as inherently beneficial contexts for learning in the clinical workplace and PIF. Instead, their effectiveness also appears dependent on, for example, the extent to which the doctors in particular, actively facilitate students' participation and recognise students as legitimate members of the CoP. Consequently, the findings also highlight that participation within communities of practice can be inhibited by organisational and relational factors that may inhibit, rather than enhance, learning and PIF in the clinical workplace. Therefore, whilst previous research has typically highlighted the benefits of communities of practice for workplace learning and PIF, this study's findings suggest that participation may also lead to experiences of marginalisation and negative influences on students' PIF, indicating that communities of practice can function as both enabling and constraining clinical workplace learning contexts. Alongside these practical insights, a consideration of the limitations of CoP theory (Wenger, 1998) for analysing these practical insights is also pertinent.

From a theoretical perspective, whilst the findings demonstrate that CoP theory (Wenger, 1998) is helpful in explaining the phenomena of medical student learning and PIF during clinical placements through participation in practice, it is less effective in explaining several of the study's findings, for example, confidence and motivation development, and issues surrounding power dynamics. First, the study's findings indicate that a medical student's confidence appeared to develop through supportive relationships with clinical role models, being trusted with authentic responsibilities and opportunities for independent interaction. Whilst CoP theory explains the dynamic social processes involved in students' learning and PIF through increasing participation within a clinical community, it pays limited attention to any psychological or emotional factors underpinning confidence, including trust, self-belief, independent practice and autonomy. Consequently, medical student confidence development during clinical placements may be better understood and explained by future

studies which integrate CoP theory with, for example, self-efficacy perspectives such as Bandura (1977). Second, CoP theory (Wenger, 1998) does not account for changes in medical student motivation. For example, the findings suggested that students' motivation may be influenced by positive experiences of collaboration within the CoP and meaningful patient interaction during placements. The theory does not account for the interpersonal factors underpinning motivation, including enjoyment, personal fulfilment or the emotional impact of patient interactions. Therefore, changes in medical student motivation may be more effectively understood through motivational perspectives such as Deci and Ryan's (2000) self-determination theory. Finally, Wenger's theory (1998) offers limited explanation of how power dynamics shape opportunities for mutual engagement and participation within clinical environments. For example, the findings suggested that student participation may be influenced by hierarchical relationships with doctors which could either facilitate inclusion or reinforce exclusion from participation in practice. Hence, the theory does not address how authority, hierarchy and power influences access to participation and learning opportunities. Therefore, these perspectives may be more comprehensively understood through additional perspectives that explain power relations and social hierarchy, such as Bourdieu's (1986) concepts of power.

7.6.5 Conclusion

The study's findings and these implications for educational practice demonstrate that communities of practice possess significant potential to enhance student learning and identity formation. However, they also contain the potential for the reproduction of negative behaviours and experiences which inhibit learning and identity formation, which aligns with the view of Wenger (1998). In conclusion, these educational practice insights underscore the value of medical students learning *via* participation in practice and reinforces Sfard's (1998) assertion that *both* the acquisition *and* participation metaphors of learning should be embraced. In particular, it is important that key stakeholders such as clinical educators, medical schools, the NHS, policy-makers such as the General Medical Council and also, importantly, medical students, recognise, learn about and promote widely the value of learning and PIF through participation within communities of practice during clinical placements.

7.7 Recommendations for future educational research

This research has revealed a range of new unanswered questions, as well as areas which warrant further investigation.

7.7.1 New research questions

CoP theory is complex and rich, yet challenging to comprehend (Smith, Hayes and Shea, 2017), which is one possible explanation for the limited research using all, or the majority of, the theoretical constructs within medical education research. This study addresses this by utilising the majority of the theoretical constructs of CoP theory (Wenger, 1998) in a single study within medical education. It demonstrates the utility of employing this theory, in its entirety, as a theoretical framework for understanding how medical students learn and form their professional identity as future doctors during clinical placements. Therefore, it is suggested that future studies use this study's research design to investigate the following.

- How placement type may influence the students' experience, learning and identity formation. This would provide useful areas for comparison and analysis between, for example, hospital and community based placements, hopefully leading to greater contextual insight into the factors which influence student learning and identity formation in each. In particular, this may provide additional insights for clinical educators and placement providers.
- How other health profession students learn and form their professional identity during clinical placements, for example, dentists, nurses, and other allied health professions. This would provide greater disciplinary insight and useful areas for comparison and analysis, potentially providing additional insights for interprofessional learning, clinical educators, placement providers, the NHS and discipline-specific professional bodies, as well as for students to develop their self-directed learning approach.
- How postgraduate medical trainees and other recently graduated health professions students learn and form their professional identity in the clinical workplace, and how qualified staff learn and form their professional identity when starting work in a new

team, department or discipline. This would provide useful areas for comparison and analysis, potentially providing insights to inform interdisciplinary working and NHS workforce development strategies.

- How medical students and other health profession students learn and form their professional identity during clinical placements in countries other than the UK. This would provide useful contextual insights for the local region but also allow for comparison and analysis between countries, potentially leading to the sharing of effective practice strategies.

7.7.2 Address study limitations

A limitation of this study is that data was only collected from students on Year 4 (out of 5) of an undergraduate medicine degree and primarily from their experiences of an individual placement. Therefore, it is suggested that future research uses this study's research design to collect longitudinal data, for example, for an entire year of placements or a single, longer placement to gain insight into additional possible changes in students' perceptions of their learning and PIF. However, this approach requires careful consideration of potential ethical, methodological and feasibility issues.

Another limitation of this study is the low number of participants, which was six. Therefore, it is suggested that future research could use the existing research design but collect data from more participants. This potentially could provide additional insights and examples for each of the theoretical constructs of CoP theory and potentially more insights on the implications for educational practice.

A further limitation of this study is that data was only collected from students studying at one university in the north of England. Therefore, it is suggested that future research could use this study's research design but collect data from other parts of the UK or within other countries and their health systems. This would provide useful insights into local practice and allow for useful points of comparison, and even the potential sharing of effective practice and collaboration.

Lastly, data was only collected from medical students within this study, which may narrow the viewpoint of the phenomena. Therefore, to create a more nuanced, comprehensive

understanding of medical student learning and PIF, it is suggested that future research also collect data from CoP members and patients themselves. In particular, this would enhance the identification of the implications for educational practice and guidance for how to support student learning and PIF.

7.7.3 Methodological research

Verma (2021) highlights the usefulness of using audio diaries as a data collection method in health professions education research. This study did not analyse audio diaries as a data collection method because it was beyond the scope to do so. However, the method did contribute towards the collection of a rich data set, and research participants commented on how recording them helped their reflections and learning. Therefore, it is suggested that future research investigate the use of audio diaries in medical education as a data collection method to understand its usefulness for collecting longitudinal data and when used alongside cross-sectional methods such as interviews, any practical implementation strategies, and whether and how these influence participant reflection and learning. As mentioned previously, a study evaluating the utility of audio diaries as a reflective learning tool is currently in progress (see Table 7.2).

7.7.4 Address gaps in medical education literature

The synthesis of existing literature highlighted a significant difference between the amount of research on the characteristics of an effective medical educator compared with the characteristics of an effective medical student during clinical placements, with guidance for educators being considerably greater. This was surprising, particularly with the requisite self-directed nature of future doctors (General Medical Council, 2024) and the importance of self-regulated learning of medical students (Lu *et al.*, 2023). Therefore, to address this gap and provide a more comprehensive evidence base, it is suggested that future research investigate further the characteristics of an effective medical student while they are undertaking clinical placements.

7.7.5 Practice-based research

Brown and Horsburgh (2022) explain the importance of social science theories being made accessible, particularly for medical educators. In addition, Mukhalalati *et al.* (2022) explain that more examples and training are required to support medical educators in appreciating the relevance of sociocultural theories to their practice. Indeed, it would also be valuable to understand how improving the 'literacy' of medical students with these concepts and work based learning principles influences their preparedness for placements, participation in practice, learning and PIF. Therefore, it is suggested that projects are undertaken to improve the knowledge of these social science concepts with both medical educators and students, as well as research to understand how these influences educators' practice, students' learning and students' PIF. As mentioned previously, initiatives which partly address this are currently in progress (see Table 7.2).

7.8 Conclusion

With the NHS being the "biggest employer in Europe and the world's largest employer of highly skilled professionals" (NHS, no date), the service facing challenging resource circumstances (Gawne, Fish and Machin, 2020), unprecedented change (Connor, 2019), the planned doubling of medical student places and 22% of all training for clinical staff via an apprenticeship route by 2031-32 (NHS England, 2023), the emphasis in the 10 Year Health Plan for England which underlines the importance of effective learning during clinical placement and students developing tacit knowledge enabling them to be fully prepared for work (NHS England, 2025), taken together these factors emphasise not only the critical significance of effective medical education of future doctors but also the timeliness and importance of this research. Existing evidence indicates that participation in practice during clinical placements supports medical student learning and PIF; however, our understanding of *how* it happens is inadequate, being referred to as a "black box" (Dornan *et al.*, 2014, p. 721) which requires further research (Barrett, Trumble and McColl, 2017, p. 1015). In addition, few studies investigate all aspects of CoP theory (Wenger, 1998) comprehensively (Smith, Hayes and Shea, 2017) typically leading to a helpful yet partial theoretical picture of the phenomena. This study seeks to resolve this by enabling us to shine a light and peer inside this black box to better understand the nature of the phenomena from a theoretical

perspective. The research illustrates the fundamental elements and interrelated nature of aspects of participation, learning and PIF which, when combined with the synthesis of existing literature (Chapter 3), provides a broad picture of the phenomena. This perspective also informs guidance for helping make clinical placements a positive experience and, by focusing on the fundamental factors influencing learning and PIF (Figure and Table 7.1), a more efficient one. Moreover, due to the relevance of CoP theory (Wenger, 1998) and the study's findings relating to participation, learning and identity formation, the knowledge from this study could also contribute to the development of current NHS staff, the culture of clinical settings and how they can function effectively as learning environments. The study's theoretical integrity is facilitated through employing the majority of Wenger's CoP theory (1998) (notable exceptions acknowledged in Section 4.5.2, Chapter 4, Methodology and methods) within a single study. The interpretation of the theory in Chapter 2 (Theoretical framework), the data collection tools (Appendix 3 and 7) and recommendations for future research (Section 7.7) provide a roadmap for future medical education research. Indeed, due to the widespread use of Etienne Wenger's CoP theory from 1998, this research design may provide a platform, and hopefully a catalyst, for researchers in other fields, disciplines and sectors to potentially look again and use the theory in full if not done so already, to advance our understanding of the dynamic, relational nature between participation in a community's practice, learning and identity formation.

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Appendices

Appendix 1 – Literature search and analysis strategy for the theoretical framework (Chapter 2) and literature review (Chapter 3) chapters

Stage 1 – initial search

This stage involved using the following databases and search terms:

Databases	
● Scopus ● Web of Science ● StarPlus (University library discovery)	
Search number	**Search terms used**
Search #1	"Community of practice" OR "Communities of practice" OR "COP" OR "Situated learning" AND Medicine OR Medical OR "Medical education" OR Health OR NHS
Search #2	"Community of practice" OR "Communities of practice" OR "COP" OR " Situated learning" AND "Medical student" OR "Medical students" Or Student OR Students OR Learning Or Placement Or Placements OR "Medical placement" Or "Medical placements"

Stage 2 – wider search

This stage involved using combinations of the following search terms and databases.

Database examples

● Google Scholar ● Google
Search term examples used
● Community of practice ● Communities of practice ● COP ● Situated learning ● Medical education ● Placements or medical placement ● Social participation ● Participation in the workplace ● Medical student attributes ● Clinical supervisor attributes

Stage 3 – literature analysis and rating

During this stage, I analysed the literature collected from Stages 1 and 2. This involved reading the text and highlighting the most relevant information. After the analysis of each literature item, I rated each one using the following rubric.

Rating	Description
#1	Relevant and useful article. Very likely to use
#2	Possibly has some relevant and useful information. Likely to use some of it, but not very much
#3	Hardly any relevant and useful information. May have a few points of interest
#4	Not relevant or useful

Stage 4 – citations trawl in references sections

For every literature item rated #1 and #2 in Stage 3, I reviewed the titles of all citations within the references section to identify potentially relevant literature. For literature items identified as potentially useful from the title, I read the abstract and, if suitable, I analysed and rated it as per stage 3.

Stage 5 – additional citations trawl within references sections

During the study, I also found and analysed literature from the following sources in an ongoing manner.

- Recommendations from database email alerts, for example, Scopus and Web of Science.
- Recommended items from related reading suggestions in databases.
- Recommendations from colleagues and supervisors.
- Searches on Google and Google scholar.
- Continued review of titles within reference lists.

Total amount of literature rated

The total amount of literature items rated is reflected in the following table. These were predominantly journal articles.

Rating	
#1	110
#2	121
#3	116
#4	74
Total	**421**

Additional sources of literature were also analysed but were not typically rated in this way. This literature was normally online news articles and books.

Total amount of literature reviewed

Approximately, the total amount of literature items analysed is 491

Appendix 2 – Participant information sheet

1. Research project title

A study investigating how social participation supports the learning of medical students on clinical placements.

2. Invitation to participate

You are being invited to take part in a research project. Before you decide whether or not to participate, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part. Thank you for reading this.

3. The project's purpose

The purpose of this study is to develop a detailed understanding of whether and how social participation in clinical practice supports the development of learning for medical students on clinical placements. This research project forms part of a Doctorate in Education at the University of Sheffield.

4. Why have I been chosen?

The study's criteria for inclusion are that potential research participants:

- are current students on the undergraduate medicine course (also referred to as the 'MBChB') at the University of Sheffield.
- are undertaking a clinical placement(s) as part of their year's study.

5. Do I have to take part?

It is up to you to decide whether or not 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) and you can still withdraw at any time without any negative consequences. You do not have to give a reason.

If you wish to withdraw from the research, please contact the Principal Investigator Andrew Stork (astork1@sheffield.ac.uk).

Please note that that by choosing to participate in this research, this will not create a legally binding agreement, nor is it intended to create an employment relationship between you and the University of Sheffield.

6. **What will happen to me if I take part? What do I have to do?**

Semi-structured interviews

Research participants will undertake one semi-structured interview (approximately lasting between 45-75 minutes) to reflect upon their learning experiences on a clinical placement(s). The interview will primarily include answering open style questions.

Audio diary recordings

Research participants will endeavour to record one audio diary recording weekly (approximately lasting between 2-3 minutes) while undertaking their clinical placement(s) to reflect upon their learning experiences. The audio diary recordings are intended to capture your ongoing thoughts and feelings about your experiences of learning while undertaking a clinical placement. In order to ensure the security of the device you use to record your audio diary recordings and that you are sharing these recordings securely with the Principal Investigator, the following guidance must be followed:

1. The mobile device you use must have a pin or biometrics protected lock screen.
2. The device must be supported and have all Operating System/ Android updates applied (as up to date as possible, subject to the model).
3. Any applications must only be installed from a trusted app store (For example, App Store / Google Play store).
4. Ensure your audio diary recordings are uploaded to the individual Google Folder the Principal Investigator has set up for each participant. The only people that will have access to the individual Google folder will be the research participant themselves and the Principal Investigator. These individual Google folders will be situated within

the overall password protected research folder, which only the Principal Investigator will have access to.

5. It is advised to also undertake the Cyber Safety Training provided by the University. Please follow the link here to complete it: https://infosecurity.shef.ac.uk/training_courses/online/cyber-safety-2021

The audio diary recordings will be analysed to better understand how medical students learn on clinical placements. The audio diary recordings are not assessed and the recording of them will have no bearing on your placement, course progress or your place on your university course. In this way, the audio diary recordings are different to the types of reflective writing pieces you may complete during your studies on the undergraduate medicine course (MBChB), that typically aim demonstrate that you have met a specific learning outcome(s).

Related to both research methods

Within either the semi-structured interviews or audio diary recordings, the research participants are specifically requested to not mention the names or make reference to any individual non-participant, such as a specific medical student, tutor, colleague and/or patient. However, if data is collected which could identify other people not involved in the research, research protocols are in place to ensure that all identifiable data will be anonymised.

Information will be sought on your experiences of learning on a clinical placement. In particular, the information sought will be related to the key themes of community of practice theory. These include:

- learning as experience (also referred to as 'meaning')
- learning as doing (also referred to as 'practice')
- learning as belonging (also referred to as 'community')
- learning as becoming (also referred to as 'identity') (Wenger, 1998, p. 5)

This information is important to help understand more about how medical students learn on clinical placements.

7. What are the possible disadvantages and risks of taking part?

The research has limited potential for you to experience psychological distress from taking part. For example, you will be expected to reflect upon, record and/ or discuss your learning experiences with the Principal Investigator. These may include examples of ineffectual or stressful learning experiences while undertaking a clinical placement(s). Therefore, there is limited potential for you to feel psychological distress when recounting these experiences either within an audio diary recording or semi-structured interview.

8. What are the possible benefits of taking part?

While there are no immediate benefits for those participating in the project, it is hoped that by reflecting upon your learning experiences, you will enhance your ability as a reflective practitioner and use this new knowledge to improve your learning on future clinical placements and in your future career as a medical practitioner.

9. Will my taking part in this project be kept confidential?

All the information that we collect about you during the research will be kept strictly confidential. For example, any data collected will only be accessible to members of the research team. All digital research data will be stored securely within a password protected folder within the University of Sheffield Google Drive. Within this folder, all research participants will be assigned a numerical ID, with the key linking personal and pseudonymised data kept in a separate, encrypted folder. Specific anonymisation research protocols are also in place to ensure that, if any identifiable information is collected from the audio diaries or semi-structured interviews, that pseudonyms or replacements are used instead. An anonymisation log of all pseudonyms or replacements will be made, which will be securely stored separately from the semi-structured interview and audio diary data files.

You will not be able to be identified in any reports or publications unless you have given your explicit consent for this. If you agree to us sharing the information you provide with other researchers (e.g. by making it available in a data archive) then your personal details will not be included unless you explicitly request this.

10. What is the legal basis for processing my personal data?

According to data protection legislation, we are required to inform you that the legal basis we are applying in order to process your personal data is that 'processing is necessary for

the performance of a task carried out in the public interest' (Article 6(1)(e)). Further information can be found in the University's Privacy Notice https://www.sheffield.ac.uk/govern/data-protection/privacy/general.

11. What will happen to the data collected, and the results of the research project?

We aim to disseminate the results of the research with people inside and outside the University of Sheffield, for example, in academic journals, conferences and published reports. You will not be identifiable in any publication. We may quote comments that you make from the data collection methods, but we will remove any information that could identify you.

Due to the nature of this research, it is very likely that other researchers may find the data collected to be useful in answering future research questions. We will ask for your explicit consent for your data to be shared in this way.

12. Who is the Data Controller?

The University of Sheffield will act as the Data Controller for this study. This means that the University is responsible for looking after your information and using it properly.

13. Who has ethically reviewed this project?

This project has been ethically approved via the University of Sheffield's Ethics Review Procedure, as administered by the School of Education.

14. What if something goes wrong and I wish to complain about the research or report a concern or incident?

If you are dissatisfied with any aspect of the research and wish to make a complaint, please contact Andrew Stork (astork1@sheffield.ac.uk) in the first instance. If you feel your complaint has not been handled in a satisfactory way you can contact the Head of the School of Education, Professor Rebecca Lawthom (r.lawthom@sheffield.ac.uk). If the complaint relates to how your personal data has been handled, you can find information about how to raise a complaint in the University's Privacy Notice: https://www.sheffield.ac.uk/govern/data-protection/privacy/general.

If you wish to make a report of a concern or incident relating to potential exploitation, abuse or harm resulting from your involvement in this project, please contact the project's Designated Safeguarding Contact Andrew Stork (astork1@sheffield.ac.uk). If the concern or incident relates to the Designated Safeguarding Contact, or if you feel a report you have made to this Contact has not been handled in a satisfactory way, please contact the Primary Research Supervisor Dr Louise Kay (louise.kay@sheffield.ac.uk) and/or the University's Research Ethics & Integrity Manager (Lindsay Unwin; l.v.unwin@sheffield.ac.uk).

15. Contacts for further information

If you have any other questions about this project, please contact:

- Andrew Stork – Principal Investigator and Designated Safeguarding Contact (astork1@sheffield.ac.uk)
- Dr Louise Kay – Primary Research Supervisor (louise.kay@sheffield.ac.uk)

You may keep a copy of the participant information sheet and a signed copy of the consent form

References

Wenger, E. (1998) *Communities of practice: learning, meaning and identity*. Cambridge: Cambridge University Press.

Appendix 3 – Audio diary participant information sheet

[First page]

Audio diaries are simply just voice recordings of you reflecting upon aspects of your learning. They are not intended to be formal and they do not require careful planning. It also does not matter if your ideas change as you talk or if you hesitate, pause or are silent for a brief while.

Please aim to record at least **one diary entry a week for the length of your placement**, however, you can record more if you wish to. Diary entries might typically be between 2-3 minutes, however, longer entries are also fine.

Please start with creating a test recording explaining:

- Your name
- Your phase
- Your next placement
- What you find interesting and challenging about learning on clinical placements
- Anything else you wish to mention about your background

Please send this test recording to me as soon as you are able. See guidance overleaf on how to do this.

Afterwards, please record diary entries to capture your ongoing thoughts about your learning while on clinical placement.

Below are areas you might wish to consider to provide a focus for your recordings. However, any thoughts relating to any aspect of your learning on clinical placement is also welcome.

1. Reflecting on when something helped or hindered your learning.
2. Reflecting on when something helped or hindered your feeling of 'becoming a doctor' *(in other words, your professional identity formation)*.
3. Whether you have been able to actively participate in the clinical work and if you have been able to be included in the 'matters of what needed to be done'.
4. Feelings of responsibility and/ or accountability to the key activities of the placement.
5. Whether you have been able to take part in the everyday life and community of the placement.
6. Your understanding and engagement with the placement's practices and processes, for example, these might be formal or informal, such as systems, forms, machinery, language used, break times, conventions, etc.
7. Your understanding and engagement with the placement's repertoires, for example, the tools, stories, the way of doing things, the routines, gestures, language, symbols, etc.

Within both the audio diary recordings and semi-structured interviews, you are specifically requested to not mention the names or make reference to any individual non-participant, such as a specific medical student, tutor, colleague and/or patient. However, if data is collected which could identify other people not involved in the research, research protocols are in place to ensure that all identifiable data will be anonymised.

Once I have received all recordings, I will transcribe them and all diary entry recordings will be destroyed at the end of the research study. As a reminder, all the information that we collect about you during the research **will be kept strictly confidential**.

Thank you for participating in this research study.

You may keep a copy of this participant information sheet and a signed copy of the consent form

[Second page]

How to create an audio diary recording	
iPhone	**Samsung**
If you have a different phone model to an iPhone or Samsung, it is likely that the process will be similar	
1. Select the 'Voice Memos' app. You can also use the phone's search option to search for this app. 2. Within the app, press the red circle button to begin recording audio. Once you have finished, press the red square stop button. 3. Click on the 3 dots in a circle next to the recorded file and click 'Edit Recording' to rename the file. Click on the title of the file and rename with the date it was recorded (e.g. 16.10.2023). 4. Click on the 3 dots in a circle next to the recorded file again and select 'Save to Files', then click 'Save'. You are now ready to upload the recording to your secure folder (see below).	1. Select the 'Voice Recorder' app. You can also use the phone's search option to search for this app. 2. Within the app, press the red circle button to begin recording audio. Once you have finished, press the square stop button. 3. You will be automatically asked to title the recording. Rename the recording with the date it was recorded (e.g. 16.10.2023) and press save. 4. If you wish, you can select the recording and click 'Move' to move the file to a folder on your phone. You are now ready to upload the recording to your secure folder (see below).

How to upload an audio diary or test recording to your secure folder

1. Download Google Drive from your app store provider and input your University student account details.
2. Within the Google Drive App, click on 'Shared'.
3. Select the folder that I have shared only with you. This folder will titled with a unique numerical identifier which I will provide to you by email). *As a reminder, the only people that will have access to the individual Google folder will be the research participant themselves and the Principal Investigator. These individual Google folders will be situated within the overall research folder, which only the Principal Investigator has access to.*
4. Click on the coloured plus button, click 'Upload' and click 'Browse'.
5. Click on the audio diary or test recording file you wish to upload. After that, there is nothing else to do.

What happens if the technology does not work or allows me to upload my recording?

Please contact me (Andrew Stork) on astork1@sheffield.ac.uk and I will try to resolve this issue with you.

Recording device security

To ensure the security of the device (e.g. a mobile phone), please adhere to the following advice:

- Have a pin or biometrics protected lock screen.
- Have all operating system/ Android updates applied (as up to date as possible, subject to the model).
- It is advised that applications should be installed from a trusted app store (e.g. App Store / Google Play store).
- It is advised to also undertake the Cyber Safety Training provided by the University. Please follow the link here to complete it: https://infosecurity.shef.ac.uk/training_courses/online/cyber-safety-2021

I have a question…

If you have a question about any aspect of the research study, please email astork1@sheffield.ac.uk (Andrew Stork - Principal Investigator and Designated Safeguarding Contact)

Appendix 4 – Consent form

[First page]

Please write or type Yes or No in the appropriate boxes	Yes	No
Taking Part in the Project		
I have read and understood the participant information sheet dated 25/08/2023 or the project has been fully explained to me. (If you will answer No to this question, please do not proceed with this consent form until you are fully aware of what your participation in the project will mean.)		
I have been given the opportunity to ask questions about the project.		
I agree to take part in the project.		
I understand and agree that taking part in the project will include: participating in an interview and recording audio diaries.		
I agree that whilst I am participating in this interview audio recordings will be made. I agree to being audio recorded and for transcripts of these anonymised audio recordings to be used in the research.		
I understand and agree to participate in the creation of weekly audio diary recordings where I reflect upon my learning experience on a clinical placement. I agree for these anonymised audio diary recordings to be used in the research.		
I understand and agree to follow the guidance relating to device security and the sharing of audio diary files provided in Section 6 'What will happen to me if I take part? What do I have to do?' on the participant information sheet dated 25/08/2023.		
I understand and agree that, either within an interview or audio diary recording, that I should make every effort to not mention the names or		

make reference to any individual non-participant, such as a specific medical student, tutor, colleague and/or patient.		
I understand that by choosing to participate as a volunteer in this research, this does not create a legally binding agreement nor is it intended to create an employment relationship with the University of Sheffield.		
I understand that my taking part is voluntary and that I can withdraw from the study at any time; I do not have to give any reasons for why I no longer want to take part and there will be no adverse consequences if I choose to withdraw.		
How my information will be used during and after the project		
I understand my personal details such as name, phone number, address and email address, etc will not be revealed to people outside the project.		
I understand and agree that my words may be quoted in publications, reports, web pages, and other research outputs. I understand that I will not be named in these outputs unless I specifically request this.		
I understand and agree that other authorised researchers will have access to this data only if they agree to preserve the confidentiality of the information as requested in this form.		
I understand and agree that other authorised researchers may use my data in publications, reports, web pages, and other research outputs, only if they agree to preserve the confidentiality of the information as requested in this form.		
So that the information you provide can be used legally by the researchers		
I agree to assign the copyright I hold in any materials generated as part of this project to The University of Sheffield.		

Name of participant [printed]	**Signature**	**Date**

Name of researcher [printed]	**Signature**	**Date**

[Second page]

Project details for further information

Andrew Stork (Principal Investigator and Designated Safeguarding Contact), The School of Education, The Wave, Faculty of Social Sciences, 2 Whitham Road, Sheffield, S10 2AH – astork1@sheffield.ac.uk

Dr Louise Kay (Primary Research Supervisor), The School of Education, The Wave, Faculty of Social Sciences, 2 Whitham Road, Sheffield, S10 2AH - louise.kay@sheffield.ac.uk

Professor Rebecca Lawthom (Head of the School of Education) - r.lawthom@sheffield.ac.uk

You may keep a copy of the participant information sheet and a signed copy of the consent form

Appendix 5 – Data management plan

Plan Overview

A Data Management Plan created using DMPonline

Title: A study investigating how social participation supports the learning of medical students on clinical placements

Creator: Andrew Stork

Principal Investigator: Andrew Stork

Data Manager: Andrew Stork

Project Administrator: Andrew Stork

Affiliation: The University of Sheffield

Template: Postgraduate Research DMP (The University of Sheffield)

Project abstract:

This research study is part of a Doctorate in Education programme (EdD) undertaken through the School of Education within the University of Sheffield.

This study will investigate the learning experience of medical students who are undertaking clinical placements as part of their undergraduate medical degree at Sheffield Medical School. Learning on clinical placements through social participation in practice and undertaking authentic workplace activities is fundamental for medical students to become capable, confident doctors. This study utilises community of practice CoP theory (Wenger, 1998) as the key theoretical framework to understand the phenomena. CoP theory emphasizes learners as members of social groups, rather than purely as individuals, which reflects the real, day-to-day nature of medical practice. The research participant's will provide reflections upon their learning experience related to aspects of CoP theory, namely:

- learning as experience (meaning)
- learning as doing (practice)

- learning as belonging (community)
- learning as becoming (identity)

With medical student numbers increasing and limited space on clinical placements, there is a requirement for a detailed understanding of how medical students learn on clinical placements to advance both theoretical knowledge (Research question 1) and empirical knowledge and practical guidance (Research question 2). This study seeks to address this through investigating the following research questions:

Research question 1: How does social participation support the development of learning for medical students on clinical placements?

Research question 2: What are the implications for medical educator's practice and medical student's approach to learning?

This study will use semi-structured interviews (SSIs) and audio diaries to collect qualitative data about the student's learning experience. SSIs are particularly beneficial for investigating the research participant's lived experience and to develop an in-depth, detailed understanding of the student's thoughts, opinions and feelings about their learning. Prior to the SSIs, a selection of participants will complete audio diary recordings. These provide a concurrent perspective on their experience and help overcome a time-lag between having an experience and recreating it within a SSI. The study will recruit a small sample of participants (for example, between eight to ten) and will use purposive sampling using the criterion of convenience, particularly to ensure the feasibility of the project in relation to the resources available. The data will be transcribed and analysed thematically using NVivo.

ID: 126469

Start date: 16-10-2023

End date: 01-10-2025

Last modified: 31-08-2023

Grant number / URL: Not applicable

A study investigating how social participation supports the learning of medical students on clinical placements

Defining your data

- What digital data (and physical data if applicable) will you collect or create during the project?
- How will the data be collected or created, and over what time period?
- What formats will your digital data be in? (E.g. .doc, .txt, .jpeg)
- Approximately how much digital data (in GB, MB, etc) will be generated during the project?
- Are you using pre-existing datasets? Give details if possible, including conditions of use.

Research method - Semi-structured interviews

I will create digital recordings of semi-structured interviews. These are likely to be between 45 - 75 minutes in length and will be recorded after the research participants have completed a clinical placement. All research participants will be expected to undertake a semi-structured interview. I aim to recruit approximately between 8-10 research participants. The interviews will preferably be undertaken face-to-face and the recording will be made on a digital recording device, such as a mobile phone and/or laptop. Prior to commencing, I will liaise with the University IT Services Team to ensure that the digital recording device I use is secure. The file format is likely to be MPEG-4. The interviews will be held virtually using Google Meet if it is not practical for the research participant and researcher to meet face-to-face. In this instance, the interview will be recorded using Google Meet and the recording will be downloaded and stored in the password protected research folder.

Research method - Audio diary recordings

Prior to undertaking the SSI's, all participants will be invited to participate in creating weekly audio diary recordings. Each recording is likely to be between 2 - 4 minutes in length and will be recorded each week while they are undertaking a clinical placement. In order to ensure the security of the devices the research participants are using and that they are sharing their recordings securely, the following guidance (Guidance provided by the IT Services Information Security Team specifically for this research method and project) will be provided to the research participants:

1. The mobile device must have a pin or biometrics protected lock screen.
2. Devices must be supported and have all Operating System/ Android updates applied (as up to date as possible, subject to the model)
3. Any applications must only be installed from a trusted app store (For example, App Store / Google Play store)
4. Ensure your audio diary recordings are uploaded to the individual Google Folder the Principal Investigator has set up for each participant (The only people that will have access to the individual Google folders will be the research participant themselves and the Principal Investigator. These individual Google folders will be situated within the overall password protected research folder, which only the Principal Investigator will have access to.)
5. It is advised to also undertake the Cyber Safety Training provided by the University. Please follow the link here to complete it: https://infosecurity.shef.ac.uk/training_courses/online/cyber-safety2021

Clinical placement length varies, however, they are typically between 6 - 10 weeks long. The recordings will be made on a digital recording device, such as a mobile phone and the format file is likely to be MPEG-4.

Within both the audio diary recordings and semi-structured interviews, the research participants will be specifically requested to not mention the names or make reference to any individual nonparticipant, such as a specific medical student, tutor, colleague and/or patient. If data is collected which could identify other people not involved in the research, I have developed protocols to ensure that all identifiable data will be anonymised. The

research protocol I will follow is detailed on the ‘Anonymisation Protocol’ document attached in Section F of the online ethics application.

Research participant's personal details

Personal details (such as research participant's full name, their university course and year of study) will be collected from research participants once they have read the participant information sheet and signed the consent form. The research participants will be assigned a numerical ID, with the key linking personal and pseudonymised data kept in a separate, encrypted folder. The research data will be stored for 3 years after publication after which it will be destroyed.

Data organisation

The folders where the audio diary recorded data will be stored will be called: Data collection/ Audio diary recordings. The file format for saving audio diary recordings will include the date of the recording, a descriptive identifier and the participant's numerical ID. An example of this is: 20230801 Audio diary recording - Participant #1.

The folders where the semi-structured interview recorded data will be stored will be called: Data collection/ Semi-structured interview recordings. The file format for saving semi-structured interview recordings will include the date of the recording, a descriptive identifier and the participant's numerical ID. An example of this is: 20230801 - Semi-structured interview recording - Participant #1.

It is anticipated that no physical data will be collected or created during the research.

A 'README' document on a plain text file will be created to ensure the data is understandable and usable. I will follow a similar format to the Open University README file template (provided as an exemplar within the DMP Online system) and will provide details relevant to this research.

Looking after data during your research

Where will you store digital data during the project to ensure it is secure and backed up regularly? (E.g. University research storage, or University Google drive)

How will you name and organise your data files? (An example filename can help to illustrate this) If you collect or create physical data, where will you store these securely?

How will you make data easier to understand and use? (E.g. include file structure and methodology in a README file)

Will you use extra security precautions for any of your digital or physical data? (E.g. for sensitive and/or personal data)

Data storage

The research data will be stored on the University of Sheffield Google Drive. The research folder will also be password protected. The research participants will be assigned a numerical ID, with the key linking personal and pseudonymised data kept in a separate, encrypted folder.

Data organisation

The folders where the audio diary recorded data will be stored will be called: Data collection/ Audio diary recordings. The file format for saving audio diary recordings will include the date of the recording, a descriptive identifier and the participant's numerical ID. An example of this is: 20230801 Audio diary recording - Participant #1.

The folders where the semi-structured interview recorded data will be stored will be called: Data collection/ Semi-structured interview recordings. The file format for saving semi-structured interview recordings will include the date of the recording, a descriptive identifier and the participant's numerical ID. An example of this is: 20230801 - Semi-structured interview recording - Participant #1.

It is anticipated that no physical data will be collected or created during the research.

A 'README' document on a plain text file will be created to ensure the data is understandable and usable. I will follow a similar format to the Open University README file template and will provide details relevant to this research.

Extra safety precautions

Where possible, the digital research folders and files will be password protected, along with being stored on the University of Sheffield Google Drive.

Storing data after your research

- Which parts of your data will be stored on a long-term basis after the end of the project?
- Where will the data be stored after the project? (E.g. University of Sheffield repository ORDA, or a subject-specific repository)
- How long will the data be stored for? (E.g. standard TUoS retention period of minimum 10 years after the project)
- Who will place the data in a repository or other long-term storage? (E.g. you, or your supervisor) If you plan to use long-term data storage other than a repository, who will be responsible for the data?

Long-term data storage

Following the completion of the research project, the data (e.g. participant's signed consent forms, audio diary recordings and interview recordings) will be stored in the online research data (ORDA) repository at the University of Sheffield.

The research data will be stored for a minimum of 10 years after the completion of the research project (The standard University of Sheffield data retention period).

I (Andrew Stork) will place the data in the ORDA repository following the completion of the research.

Sharing data after your research

- How will you make data available outside of the research group after the project? (E.g. openly available through a repository, or on request through your department)
- Will you make all of your data available, or are there reasons you can't do this? (E.g. personal data, commercial or legal restrictions, very large datasets)
- If there are reasons you can't share all of your data, how might you make as much of it available as possible? (E.g. anonymisation, participant consent, sharing analysed data only)
- How will you make your data as widely accessible as possible? (E.g. include a data availability statement in publications, ensure published data has a DOI)
- What licence will you apply to your data to say how it can be reused and shared? (E.g. one of the Creative Commons licences)

Sharing data after research

The raw data (e.g. audio diary recordings and interview recordings) will not be made available outside of the research group because this could lead to research participants being identified.

The aim is for the research and its findings to be published within peer-reviewed journal articles, conference presentations and reports. The information sheet and participant consent form will state that anonymised data will be used in future publications, for example, peer-reviewed journal articles, conference presentations and reports.

Putting your plan into practice

- Who is responsible for making sure your data management plan is followed? (E.g. you with the support of your supervisor)

- How often will your data management plan be reviewed and updated? (E.g. yearly and if the project changes)
- Are there any actions you need to take in order to put your data management plan into practice? (E.g. requesting University research storage)

Who is responsible for ensuring that the data management plan is followed?

I (Andrew Stork) am responsible for making sure the data management plan is followed. I will be supported to ensure my data management plan is followed by my research supervisors (Primary Research Supervisor: Dr Louise Kay; Secondary Supervisor: Linda Wilkinson).

I (Andrew Stork) am responsible for the :

- Data collection
- Data quality
- Organising the data storage and archiving

Data management plan review and updates

I will review my data management plan following any updates to the research strategy. Updates will be made to the data management plan if any significant changes are made. I (Andrew Stork) will discuss any changes to the research strategy with my supervisory team prior to them being made.

Putting the data management plan into practice

I (Andrew Stork) need to request research storage in the ORDA service.

Appendix 6 – Anonymisation protocol

1. **Research project title**

A study investigating how social participation supports the learning of medical students on clinical placements.

2. **Potential anticipated problem**

During the data collection process there is potential for people beyond the research participants and the research team to be affected by the research activities. For example, the research participants may mention the names or make specific reference to an individual non-participant, such as a specific medical student, tutor, colleague and/or patient, either within the audio diary recordings and/or semi-structured interviews. This situation could lead to someone being able to identify a data subject from data.

3. **Research design to address the potential anticipated problem**

    a. Access - The research data will be stored on the University of Sheffield Google Drive. The research folder will only be available to the Principal Investigator. The research folder will also be password protected. The research participants will be assigned a numerical ID, with the key linking personal and pseudonymised data kept in a separate, encrypted folder.

    b. Research participant guidance - The research participants will be specifically requested to not mention the names or make specific reference to any individual non-participant, such as a specific medical student, tutor, colleague and/or patient. This request is explained within the Participant Information Sheet and Consent Form – both dated 25/08/2023. This point will also be emphasized during interactions between the Principal Investigator and the research participants, for example, prior to undertaking the semi-structured interview and in the audio diary prompts.

i. However, if data is collected which could identify other people not involved in the research, the Principal Investigator will follow the steps detailed in point 4 below.

4. Anonymisation protocol steps to address the potential anticipated problem

a. At the time of transcription, the Principal Investigator will search for potential classification information within the data. Some examples include:

i. Direct identifiers: Names, address, IP address, national insurance number

ii. Indirect identifiers: Age, date of birth, gender, specific job title, income, ethnic background, religion

iii. Sensitive variables: criminal history, sexual preferences and behaviour, political affiliations

The Principal Investigator will use pseudonyms or replacements for the classification information detailed in point 4.a. An anonymisation log of all pseudonyms or replacements will be made, which will be securely stored separately from the semi-structured interview and audio diary data files.

Appendix 7 – Interview question schedule

Opening question: Could you tell me a little bit about your recent placement?

1. What was the workplace's common purpose? How did you come to understand it?

   Can you give a specific example(s) when you experienced a sense of responsibility and accountability to this common purpose?

2. Can you tell me about a time when you actively participated? Did anything ever hinder your ability to actively participate?

   - How did active participation support a feeling of 'becoming a doctor'?

3. What helped you sustain active involvement in the day-to-day conversations and work? Did anything hinder this?

4. Did you recognise yourself as a legitimate member of the CoP? Did you feel recognised as a legitimate member of the CoP by other members? What helped or hindered these feelings?

5. Are there any examples that made you feel 'inside' or 'outside' the CoP? How did that affect you?

6. Were you able to influence the viewpoints and practice of the members of the CoP? If so, how?

7. Can you give specific examples of engaging with or using the workplace's tools, resources or processes, for example, things like using a stethoscope, or analysing patients forms, or discussing a patient's management plan schedule with your supervisor. What helped you to know how to engage with or use these?

   Were there any specific examples of particular language or jargon that members of the community of practice (CoP) used? What helped you to learn about and use these?

   - Did using any of these support a feeling of 'becoming a doctor'? If so, how?

8. Can you tell me about a time(s) when you experienced the broader social interactions of the workplace? For example, social interactions which were when you or others were not directly providing healthcare to patients. Did this affect your ability to participate in the workplace? If yes, how?
    - Did this influence a feeling of 'becoming a doctor'? If yes, how?
9. Do you have examples of experiences which helped you envision your future identity as a practicing doctor? For example, engaging in stories of past and future practice, discussions about your future goals with your supervisor, etc.

Wrap up questions:

- What attributes make for an effective medical student on clinical placement?
- What attributes make for an effective clinical educator on clinical placement?
- Is there anything else you would like to tell me, or you feel you've not had an opportunity to explain, regarding learning in the workplace?
- If after this interview I need to ask you a few more questions, would you be ok with this? [Helps with if I'm missing anything]

A table demonstrating the link between each interview question (Column A) and a component of a social theory of learning (Column B), and a specific concept(s) within that broader component and/or a specific study research question (Column C)

Column A	**Column B**	**Column C**
Question	Component of a social theory of learning	Link to a specific concept(s) within that component of a social theory of learning OR a specific link to a research question
Opening question		
1	Community (Learning as belonging) + Practice (Learning as doing)	A joint enterprise

	Identity (Learning as becoming)	Modes of belonging – Engagement + identification
2	Meaning (Learning as experience) + Practice (Learning as doing) Identity (Learning as becoming)	Participation + 'Taking part' The profound connection between practice and identity + non-participation Modes of belonging – Engagement + identification
3	Community (Learning as belonging) + Practice (Learning as doing) Identity (Learning as becoming)	Mutual engagement Modes of belonging – Engagement + identification
4	Identity (Learning as becoming)	Identification
5	Practice (Learning as doing)	Boundary
6	Identity (Learning as becoming)	Modes of belonging – Alignment + identification Negotiability
7	Meaning (Learning as experience) + Practice (Learning as doing) Community (Learning as belonging) + Practice (Learning as doing) Identity (Learning as becoming)	Reification A shared repertoire

		Reification Modes of belonging – Engagement + identification
8	Meaning (Learning as experience)	Linked more towards the social practice of participation
9	Identity (Learning as becoming)	Modes of belonging – Imagination + identification
Wrap up questions		

Appendix 8 – Data collection statistics

Audio diary submissions

Key

X = submitted

Numerical identifier	P1	P2	P3	P4	P5	P6
Audio diary submission tracker						
Week 1 - w.c. Monday 15 Jan	x	x	x	x	x (combined diary for weeks 1 +2)	x
Week 2 - w.c. Monday 22 Jan	x	x	x	x	x (combined diary for weeks 1 +2)	x
Week 3 - w.c. Monday 29 Jan	x	x	x	x	x	x
Week 4 - w.c. Monday 5 Feb	x	x	x	x	x	x
Week 5 - w.c. Monday 12 Feb	x	x	x	x	x	x
Week 6 - w.c.	x	x	x	Chasing email sent 26.02.24	x	x

Monday 19 Feb						
Week 7 - w.c. Monday 26 Feb	x	x	x	Chasing email sent 04.03.24	Chasing email sent 04.03.24	x
Week 8 - w.c. Monday 4 Mar	x	x	Agreed doesn't need to submit	Chasing email sent 11.03.24	Chasing email sent 19.03.24	x

Interview completion

Numerical identifier	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
Interview tracker						
Date arranged for / online or face-to-face	Thursday 14th March, 3pm - 4:30pm / Online in Google Meet	Wednesday 13th March, 1:30pm - 3pm / Online in Google Meet	Wednesday 20th March, 4pm - 5:30pm / Online in Google Meet	Thursday 21st March, 1pm - 1:30pm / Online in Google Meet	Wednesday 13th March, 10am - 11:30am / Online in Google Meet	Friday 22nd March, 11am - 12:30pm / Online in Google Meet
Interview accepted	x	x	x	x	x	x
Interview completed	x	x	x	x	x	x

Appendix 9 – Reflective diary

Listed below are range excerpts from my reflective diary that I kept through the research process.

- It helps being so 'into' the topic and theory (14.06.24)
- It's nice that over time I am more able to think theoretically and practically at the same time as I interrogate the data. Feel like you have different lenses to see the same thing (14.06.24)
- Some bits of data are just incredibly useful and span many different concepts - feel like you've found a golden nugget (14.06.24)
- You are in the research individually and influence the results because I choose what to code and not code and sometimes I don't always know but I make a choice and that influences the end result (16.06.24)
- There is a quote I read in a table which states: "The researcher is positioned as active in the research process; themes do not just 'emerge' (Table 2 - 15 point checklist for a good thematic analysis) - through doing this analysis I realised why this is true i.e. what you choose to select or ignore, how your experience and competence at the analysis develops over time and how this then affects what you select/ don't select (20.06.24)
- Have faith in the process with your lit and data analysis - particularly if you believe in your system/ process - the trees begin to part and you start to see where you're going (27.06.24)
- CoP theory
    - Because Wenger has developed his own language and terms which have very specific meanings it can be a bit impenetrable for those who are just trying to get a general understanding - it takes time and effort to understand (05.07.24)
    - Due to the above, my view is that CoP theory has been scantly applied and has much more potential (05.07.24)

- I liken choosing quotes for the analysis chapter as to what I imagine panning for gold would be like…. “Oooh that’s a beauty!” (10.07.24)
- Your quotes should only really be selected by looking at your whole data set holistically because there can be overlap and useful quotes may sit in multiple codes (07.07.24)
- Writing a doctorate feels how I imagine making art would be. A large piece of art, like a giant sculpture (19.07.24)
    - It’s a long labour of love (maybe hate at times?)
    - You’re bringing something new into the world, which you then show to the world
    - You refine it, put bits in, take bits out
    - You think about it from multiple perspectives e.g. how you view it, how others might view it, what does it mean to you and others?
    - You’re emotionally invested in it
- Research can be really exciting. I feel like I’m discovering something new that is useful and can help educators and patients and the healthcare system (08.08.24)
- I’m almost nervous to start writing the discussion chapter for fear of writing something ‘wrong’ or ‘badly’ - I think because it is so much my own voice (01.10.24)
- Getting started with writing the discussion can be difficult and maybe a bit scary but once you do and it starts flowing you really start to feel like a researcher because you are putting your own, evidence-based viewpoint on a subject, which is also exciting (11.10.24)
- I think I like straight(ish) lines and following a process. Wandering around, going backwards and trying to find my way makes me anxious and hinders my motivation (12.11.24)

- I think to have a clearer mind I used this diary a bit like Dumbledore uses the pensieve in Harry Potter i.e. to store and reflect on thoughts and memories (12.11.24)
- Using fairly consistent language within chapters and across them when discussing the same concepts helps you when you cross reference to check that your findings align with your discussion, your implications for practice and research, and your conclusions (21.11.24)
- I used to think of analysing and writing about data is a bit like doing a jigsaw but I've realised that you are also making and designing the jigsaw as well, at the same time as putting it together (28.11.24)
- Initially I found aspects of methods and methodology less interesting than the subject theory, however, I did find the methods, methodology and positionality more interesting in hindsight and when writing it up. I suppose it's a little like Steve Jobs' famous quote that was something like "You can't connect the dots looking forward; you can only connect them looking backward" (30.12.24)
- Pretty much, all of a sudden, things just start to come together and you start to see the jigsaw as it might be, instead of individual pieces and an outline (This happened somewhere around the Discussion chapter) (03.01.25)
- For me, the end has only just started to feel like it is coming into view when I'm writing the draft abstract and acknowledgements (07.05.25)

Appendix 10 – A transcript example illustrating the ongoing and iterative coding and analysis process

Participant 4 [P4] Audio Diary Transcript

Key - analytical theme and description colour coding

Practice [A]. Participation [2].

Practice [A]. Participation [2] and reification [3].

Practice [A]. Mutual engagement [4].

Practice [A]. Joint enterprise [5].

Practice [A]. Shared repertoire [6].

Identity [B]. Participation [8].

Identity [B]. Participation [8] and reification [9].

Identity [B]. Mutuality of engagement [10]

Identity [B]. Accountability to an enterprise [11].

Identity [B]. Negotiability of a repertoire [12].

Identity [B]. Imagination [15].

Identity [B]. Identification [17].

Participant data	Analytical theme [code]. Theme description [code].	Coding rationale
Test recording		
Hi, this is [participant name removed], this is just a test recording.		
Clinical placement - week 1		
So this is my first recording, week one. I've had a really good week actually just obviously getting into things. I've definitely found quite a few things that have helped with my learning. I wanted to start kind of saying about getting onto System One which is the software they use as a GP and I feel like setting that up and like getting to grips with that has definitely helped me feel more part of the team. Erm, has like almost given me an identity as a GP and I found that the GP practice I'm at, the doctors themselves are quite like	Identity [B]. Identification [17].	**Identity**: feeling "more part of the team" reflects a developing sense of belonging and membership in relation to the team/CoP. **Identification:** using the same systems and practices as the GPs facilitates identification with the team/ CoP.

informal and quite laid back and I think for me that definitely helps me feel more at ease, it's less kind of authoritarian, less like hierarchical. You don't feel intimidated, you get it like a bit more of a human experience. One of my doctors even has like tattoos on his arms and like I just think even little things like that, even in your subconscious, just make you feel more at ease and then you're in like in a more comfortable environment to learn in. I found having my own clinics has really helped. Something I was quite nervous about at the start but being able to like actively participate in like clinical work has helped. And like getting things wrong as well you know there's only so much as a student that we can now know, or like do even and it's good to get things wrong and have to go back to the doctor and like maybe discuss your answers and it wasn't what you thought it was. And I found that kind of, it helps you engage more because you go away and you read up on things, so being a bit out your depth I guess, being a bit out of your comfort zone, like I was this first week kind of with my own clinics, I feel like has	Identity [B]. Identification [17]. Practice [A]. Participation [2] and reification [3].	**Identity:** illustrates increased comfort with the practitioners in the community and their personal characteristics e.g. tattoos. **Identification:** similarity or some alignment with the CoP members supports identification. **Practice:** engagement with shared clinical work; learning through doing. **Participation:** "actively participate in like clinical work"; having direct, active involvement in authentic CoP activities. **Reification:** "getting things wrong", learning through interaction with established clinical expectations.

pushed me to kind of get into a routine of going away and checking on things, and yeah.		
Clinical placement - week 2		
It's [participant name removed] here, week 2. Just finished, had another really good week. Some of the things I've kind of picked up on, I'm starting to like build a good like personal rapport with the doctors that I'm with. I think what I've noticed that you know on some other GP placements I've been on you kind of get put with like new doctors all the time and I think that now that even after like two weeks I've been given the chance to kind of build a bit more of like a personal relationship with some of the doctors and it's just been really nice, I think it's helped my learning. It doesn't feel so kind of student-teachery, it feels a bit more friendly which has really benefited me. I think you feel more comfortable asking questions. I think as well the doctor probably feels more at ease when they're leading consultations and I definitely feel more at ease leading	Practice [A]. Mutual engagement [4].	**Practice:** Ongoing interaction with doctors within day-to-day clinical practice. "Tips and tricks" and sharing clinical knowledge. **Mutual engagement:** "personal rapport", "personal relationship", "friendly relationship", sustained relationships with doctors; trust and reciprocal engagement supports learning.

consultations with them in the room. I also think they're more inclined to kind of open up about like tips and tricks that can help you if you know you have like a more friendly relationship with them. I've had a few like doctors that I'm not with that have kind of called me in to see some good pathology. I think that's really useful, that kind of like including other students if there's good good pathology to see. So that's been really nice. Going out to certain calls, so I had to go and verify a death, which is not really something that med students do a lot and getting those opportunities has been really nice to kind of broaden like the scope of my learning and also again just getting me out my comfort zone a bit. Again being given kind of more responsibility, having my own patients, getting to do a bit more with them, slowly just getting better at consultations on my own. Kind of building that framework in my head of how to run a consultation and it's really good. I've had like some good critical feedback this week and I think for me I like being told where I'm going wrong. I don't know if that's just kind of a	Practice [A]. Participation [2]. Identity [B]. Participation [8]. Practice [A]. Participation [2]. Practice [A]. Joint enterprise [5]. Identity [B]. Negotiability of a repertoire [12].	**Practice:** exposure to shared clinical practice. Learning from authentic cases. **Participation:** "called me in to see", invited into ongoing learning opportunities; "really useful", learning value coming from participation. **Identity:** undertaking tasks associated with the doctor role. **Participation:** direct involvement in clinical work activities beyond normal student activities. **Practice:** exposure to a wider range of authentic clinical experiences. **Participation:** "getting those opportunities", access to learning opportunities through involvement in CoP activities. **Practice:** developing consultation skills through clinical experiences. **Joint enterprise:** "given kind of more responsibility", "having my own patients", responsibility for own patients and accountability for patient care. **Identity:** confidence and personal understanding stemming from feedback; comparing self to others. **Negotiability of a repertoire:** "building that framework", "critical feedback", creating a consultation framework,

personal thing, some people don't like criticism. I also like being praised for the things I've done good and I think the doctors I'm with the minute are very good at telling me what I've done well and also giving me a little bit of, you know, constructive criticism, that then I can take into my next consultation and that's definitely helped me feel a bit more like I'm doing the job right, a bit closer to being a real doctor, if that makes sense. And, I think going back to kind of comparing to other placements, I don't know if it's relevant to the study but I've definitely noticed that just being included more, kind of asking for your opinion in the consultation, because I haven't had that in the past and you just feel kind of like your sat in the back observing, twiddling your thumbs, feel a bit like a spare part, feel a bit like you're not kind of worthy of doing your job because you haven't been given the responsibility, so you seem almost like because you haven't been given that responsibility, it's because you're kind of not capable of doing the job that they're doing. And I think, them trying to bring you up to	Identity [B]. Participation [8]. Practice [A]. Joint enterprise [5]. Identity [B]. Accountability to an enterprise [11].	comparing self with others and adapting practice through feedback. **Identity:** "closer to being a real doctor", indicates a developing identity through participation in practice. **Participation:** feedback informs future consultations; learning occurs through clinical activity involvement and interaction. **Practice:** "being included more", active involvement in consultations. **Joint enterprise:** "asking for your opinion in the consultation", included in shared work and decision making related to patient care. **Identity:** "not worthy of doing your job", not being given responsibility negatively affects perception as a capable medical student/ future doctor. **Accountability to an enterprise:** how responsibility, or the lack of, signifies whether the student is identified as a legitimate contributor to the CoP and its shared aim.

their level, or them dropping down a bit and meeting you in the middle kind of helps you feel like you're capable, so kind of you know at the end of the consultation they might say, oh have you got any questions to ask because you know like everyone thinks slightly different and the doctor might, they might have asked things that I would have already thought of, or there might be something that's in the back of my mind that they may be missed and it just allows you to kind of feel a bit more like part of the consultation, and also it's nice when they ask for your opinion on kind of treatment plans, management plans, what do you think we should do [participant name removed], kind of things like, that it really it gets you thinking, A, and, B, just makes you feel a bit more involved which has been really really good.	Practice [A]. Participation [2]. Practice [A]. Participation [2].	**Practice:** learning through discussion of clinical work. **Participation:** invited to ask questions and more active engagement with the consultation process. **Practice:** learning through involvement in the consultation process. **Participation:** feeling actively included and a part of the authentic clinical activity.
Clinical placement - week 3		
Hi there, it's [participant name removed], it's the end of week three. Another really good week. Kind of been thinking about some things and reflecting on certain things that have		

helped me learn and one of them being having different doctors with you observing or you observing them, not to the kind of extent that you know you have a new doctor every clinic, but maybe having like two or three doctors across your week. And it just allows you to kind of compare different consultations styles, compare how different doctors related to different patients and it's nice to be able to kind of take a bit of their style into your style, and having that range also allows you to see maybe if there's doctors that have a similar personality to you, how they approach different patients and it becomes a bit more relatable. Another thing I've noticed this week is that if I'm having say my own consultation and I kind of formulate a management plan and discuss that with my supervisor, being challenged on that really helps because, A, it helps you develop your own reasonings for your decisions as a doctor so you can back yourself in the future and not just you know kind of doing it because it's say so, or because the textbook says that's right, kind of understanding it makes you understand	Identity [B]. Participation [8] Identity [B]. Mutuality of engagement [10] Practice [A]. Participation [2] and reification [3].	**Identity:** "take a bit of their style into your style", developing their own personal consultation style and negotiating who they are becoming. **Participation:** "compare how different doctors related to different patients", learning through observation (more passive participation) of different doctors and patient interactions. **Identity:** "doctors that have a similar personality to you", seeing this supports consideration of how their own personal characteristics can influence their future professional self. **Mutuality of engagement:** "bit more relatable", this relatability strengthens engagement with CoP members. **Practice:** learning clinical reasoning through managing patient cases. **Participation:** discussing management plans with the supervisor. **Reification:** "being challenged on that", the challenge tests reasoning against clinical practice standards.

why you're making certain decisions. It also kind of when they challenge your decisions, it also makes you think what else could I have done, or what could I have done differently and I think that kind of allows for lateral thinking maybe, it makes you go a couple steps back and think well what if I did it that way and like how would the consultation have ended differently and I think it's good to just challenge your own reasoning. Praise as well, I think like being praised by doctors, debriefing as well at the end of sessions, kind of question time going over things that didn't go so well, things that did go well, having like a professional opinion on some of your own decisions, and yeah like it just instills that confidence and like making mistakes is fine but then at least you learn from them. And kind of the same as last week, just again having that kind of colleague feel, that you don't feel just like a student sat in the back because anyone could do that, and getting involved having your own patients, I think I'm just becoming more confident in my own consultations, and I'm even picking up on my own mistakes, which is	Practice [A]. Mutual engagement [4]. Identity [B]. Identification [17] Practice [A]. Participation [2].	**Practice:** learning through reflection on clinical decisions and mistakes. **Mutual engagement:** “debriefing as well at the end of sessions”, “question time”, shared relational process and discussions with supervisors which supports learning. **Identity:** feeling more of a colleague than “just like a student” reflects a developing sense of professional identity. **Identification:** “colleague feel”, indicates identifying more as a legitimate member of the CoP. **Practice:** learning consultation skills through experience of managing patients. **Participation:** “getting involved”, “having your own patients”, demonstrates active involvement in patient care.

helping me learn a lot. And being able to formulate management plans for patients has just completely boosted my confidence, and all that gratification from patients when something goes well that then you can take into a different consultation really really helps. And I think it just makes you feel like a doctor, it is building that professional identity and just instilling confidence, just it's kind of exponential like it you literally as soon as you start getting more comfortable if you're doing consultations, it just gets easier and easier and easier and you just feel like part of the team and it's really nice.	Identity [B]. Accountability to an enterprise [11]. Identity [B]. Identification [17].	**Identity:** "feel like a doctor", "building that professional identity", directly references the process of forming a professional identity. **Accountability to an enterprise:** "gratification from patients when something goes well", patient responses demonstrate contributing effectively to the shared goal of patient care. **Identity:** growing confidence within their professional role. **Identification:** "feel like part of the team", identifying with the CoP and feeling a sense of belonging.
Clinical placement - week 4		
So yeah this is [participant name removed], week 4, another really good week. I was only in two days this week, usually I'm in three, we had some meetings so not as much to kind of talk about but I think this week we got we got the chance to sit in some kind of departmental meetings for the doctors and nurses and I think that was quite useful in helping us	Practice [A]. Participation [6].	**Practice:** learning about the wider work of CoP members. **Participation:** attending departmental meetings allows for interactions with CoP members. **Identity:** "what doctors do like admin wise besides seeing

kind of get some sense of what doctors do like admin wise besides seeing patients and just like understanding how the the Trust operates and I think that was really helpful and like learning about maybe like the less practical side of being a doctor and like the logistical side, and understanding like their roles within kind of like a work system and not just as an individual treating a patient, so that was nice. Also got the chance to do some intimate examinations, so I think I've realised that over these like past few weeks that if there's ever like a good opportunity that a doctor maybe like down the hall in their room has like in terms of pathology that they come and get you and say like oh yeah we've got this patient with like, for example, with a murmur or something good to examine, then I think that really has helped me learn kind of about different pathologies and just seeing them and I always think that being able to like contextualise you're learning or put a name or put a face to kind of a condition and remember things helps me learn a lot. For example, like a certain condition you remember oh yes that patient had	Identity [B] Participation [8]. Practice [A]. Shared repertoire [6]. Practice [A]. Participation [2] and reification [3]. Practice [A]. Participation [2] and reification [3].	patients", useful understanding of doctors' wider roles which broadens their understanding of what it means to be a doctor. **Participation:** involvement in broader professional activities and processes. **Practice:** learning about the practical and organisational aspects of clinical work. **Shared repertoire:** "admin wise", "logistical side", "work system", understanding shared systems and processes. **Practice:** "helped me learn about different pathologies", learning through examining patients and encountering different pathologies. **Participation:** "they come and get you", CoP members actively involve students in patient-based learning. **Reification:** murmurs and pathologies are encountered. **Practice:** learning through exposure to authentic patient cases. **Participation:** "that patient", authentic patient encounters. **Reification:** "put a name or put a face to a kind of a condition", conditions are brought to life

that condition and it just helps you remember things about that condition. I think it helps you like recognise patterns as well because I think a lot of treating patients especially in general practices like pattern recognition and I think like being able to see more will obviously just develop that skill a lot more so that's been really useful.		through real patient encounters, illustrating the duality of participation and reification.
Clinical placement - week 5		
You alright, it's [participant name removed], week 5. Another really good week, got to see lots of good pathologies this week, got to listen to some really good murmurs and also this week I got to kind of so we can't refer as students, we can't write referral letters, or send them off, we can't actually physically do the referrals ourselves but I've been able to kind of do like the lower-level stuff that leads to that, so kind of writing tasks to do referrals or maybe like writing the referral letter for the doctors that they can send off, or developing management plans and then like writing that as a task to the doctor and I think that's	Practice [A]. Participation [2] and reification [3]. Identity [B]. Accountability to an enterprise [11] Identity [B].	**Practice:** learning from exposure to a range of clinical cases. **Participation:** involvement in patient interactions and examinations. **Reification:** connecting clinical concepts (e.g. murmurs) to real patient presentations. **Identity:** developing an understanding of the wider professional role and responsibilities. **Accountability to an enterprise:** "writing the referral letter", contributing to the shared clinical work and taking responsibility for tasks. **Identity:** explicit description of professional identity and feeling closer to being a doctor. **Participation:** placement experiences help the student actively participate and

really helped me like develop a sense of professional identity, kind of being able to feel a little bit closer to being a doctor when you're not one, and kind of just yeah being given more responsibility definitely helps you learn, I think it gets you out your comfort zone and pushes you a bit more, and it's like just bordering on the things that you can't do like, like that we're not qualified to do and it just allows you to feel like you're still helping do those things, and like you feel like you have slightly more involvement in patient management and I think that's just really aided my learning a lot. And as well it just gets you used to kind of how to do a referral letter and I think it's useful like there's always that saying like to see one, do one, teach one, or I think that is just like obviously quite a big generalisation of most things, but I think fundamentally that's kind of is how it works in medicine, that you, someone will just show you something then you go and do it yourself and then after doing that a few times like you can do it enough to teach someone else how to do it, and I think that principle just applies	Participation [8]. Practice [A]. Joint enterprise [5]. Practice [A]. Participation [2].	identify as a legitimate member of the profession. **Practice:** learning through increasing participation in clinical work. **Joint enterprise:** "given more responsibility", "more involvement in patient management", given more responsibility and contributing to the shared goal of patient care. **Practice:** Learning emerges from participation in practice, not simply instruction. **Participation:** "see one, do one, teach one", progression from seeing to doing illustrates increasing levels of participation. **Practice:** learning through undertaking authentic tasks.

throughout a lot of medical things and I've just found it useful to be able to just be shown how to do something on the system or with a patient and then you just kind of, you go away and do it and you get to like do it yourself in your own style and slowly you kind of just develop your own like professional identity, isn't it, so. Yeah I think that's been really useful. Being able to do more intimate examinations this week as well obviously, that's something that like yeah can be uncomfortable, and it's something that we need to do as doctors, and I think like the way there's a very like correct way to be able to like show a student how to do things like that, and I think just finding like patients that are like happy with those doing it with them, for example, like prostate examinations I did did some of those this week, and I think just the doctors took a very light kind, caring approach to kind of me and it was very patient-led, and you know, I think it's just really nice seeing how a doctor deals well in that situation with the patient because that's something that you know like it can be uncomfortable and I	Practice [A]. Shared repertoire [6]. Identity [B]. Negotiability of a repertoire [12]. Identity [B]. Imagination [15].	**Shared repertoire:** "shown how to do something on the system", learning and using shared tools and ways of working. **Identity:** developing individual ways of working and references professional identity explicitly. **Negotiability of a repertoire:** "do it in your own style", demonstrating personal interpretation of shared practices into their own way of working. **Identity:** "seeing a doctor do that well", valuing a doctor's approach contributes to future professional practice. **Imagination:** "future practice", explicit reference of how the student is envisioning how current observations will inform their future role and practice.

think seeing a doctor do that well has been really useful for me to kind of take away from that for like future practice.		
Clinical placement - week 6		
This is [participant name removed], week 6, this week. Just finished on palliative care, so a different week from my usual placement so we have a week out in palliative care and it's been really really insightful, kind of a quick view, a lot, a lot more tools to deal with kind of the holistic side of patients and it was really nice to see that aspect of medicine and it feels like it is a completely different side of medicine to hospital medicine. And you know it is completely holistic you know you're not looking at treating patients medically as much and you're more looking at kind of their wishes as a person and as an individual and making them comfortable and it was really nice to see doctors being able to do that in like in a medical way but in the sense it was less about their medical needs more about the personal needs and I think that's really aided my learning in kind of how to deal with	Identity [B]. Imagination [15].	**Identity:** student refers to observing holistic care and explains how it may be applied to a future role. **Imagination:** the student envisions applying approaches learned in one setting to potential future settings.

patients that maybe wouldn't be in a palliative care setting, in a holistic way and you can kind of take the holistic bits from palliative care and kind of employ those in general medicine, hospital medicine, things like that. It was nice seeing kind of doctors with different roles, kind of doctors not doing what you kind of expect doctors to do, and it was really useful to see that. We spent some time in the morgue, kind of examining bodies which I guess was kind of useful in learning about the process after death, like legally and medically. We also got a chance to kind of chat with patients and their families and kind of do like longer like interviews with patients, which helps us understand kind of like patient experience, kind of their journey through the healthcare system, and like their journey personally with like the disease that they've kind of encountered, and like it's just really nice to be able to be part of that journey. And I think as a med student it's definitely like really important that we get to see kind of like that side of things because it's just, we	Practice [A]. Participation [2] and reification [3]. Identity [B]. Imagination [15].	**Practice:** learning through exposure to post-death medical practice. **Participation:** "examining bodies", direct involvement in learning activities. **Reification:** "process after death, like legally and medically", engagement with formal professional processes and procedures. **Identity:** developing an understanding of the future role and responsibilities of a doctor. **Imagination:** "we will have to deal with it", envisioning future practice and preparing for the responsibilities as a qualified doctor.

will have to deal with it and I think being equipped with that for when you become a doctor is really important.		
Clinical placement - week 7		
Hi, this is [participant name removed]. End of week seven now, so I'm back on GP. Had another nice week and I guess kind of just reiterating some of my earlier points, I think I've really kind of solidified some of my learning points this week as we're coming towards the end of the placement and kind of being allowed to reflect on the past experiences through this placement and and kind of thinking about some of the things that have really helped me learn and the way in which I learnt and yeah I think again just being able to kind of have your own patients, deal with things on your own, I think being shown how to do things that are kind of outside your comfort zone and then being given a chance to do them yourself and kind of get to grips, and kind of not being babied too much and I think it's important as a student you're not, babied, in the sense that you're giving the	Practice [A]. Joint enterprise [5]. Practice [A]. Participation [2] and reification [3].	**Practice:** “reflect on past experiences”, “own patients”, indicates learning through reflection on clinical experiences and patient management. **Joint enterprise:** “have your own patients, deal with things on your own”, indicates participation in the collective work of patient care and for taking responsibility for authentic activities. **Practice:** learning though undertaking challenging or unfamiliar tasks. **Participation:** “being given a chance to do them yourself”, opportunity to perform tasks independently. **Reification:** “being shown how to do things”, learning established processes before using them independently.

opportunities like in a safe environment. Obviously to be able to kind of explore and find your way around doing things because at the end of the day when you become a doctor like you'll have your own personal way of doing things in your own like style, and it's nice that you can kind of see a doctor do it or multiple doctors do the same thing, and kind of take from it what you will, and think yeah I like the way they do that or I want to use that, or I want to say that thing, and I think having that exposure and opportunity to do those things is really important. I think there's been a few times where you kind of sit in the back and watch a, like observe a doctor, and I think that compared to, I think that is important, especially in the early stages as a med student and because you're not kind of qualified or equipped with the right tools do things alone, but I think it gets to a point and I think it's obviously different for different people but it gets to a point where, you need to just go out and do those things on your own, like have your own patients on your own, and kind of be right like referring people, or like ringing	Identity [B]. Imagination [15]. Practice [A]. Participation [2]. Practice [A]. Joint	**Identity:** "your own personal way of doing things", "your own style", indicate the formation of a distinct professional identity. **Imagination:** "when you become a doctor", imagining future practice by observing multiple doctors and incorporating aspects into their future professional self. **Practice:** learning through more independent practice. **Participation:** "and do those things on your own", increasingly active participation and responsibility. **Practice:** learning occurs through participation in authentic clinical activities. **Joint enterprise:** "have your own patients", "referring people", assuming

patients and taking bloods, and things like that, and it's important for your own like development that you have the confidence to do that on your own, even as like a student. And I think like this week it's been nice to like I'm getting really comfortable with my own consultations and dealing with patients in my own way, and I think it is just, it just takes time to develop that, but it's definitely necessary like in developing a professional identity as a doctor.	enterprise [5]. Identity [B]. Participation [8] and reification [9].	responsibility and involvement in the shared aim of patient care. **Identity:** "developing a professional identity as a doctor", explicitly states the professional identity formation process through more independent patient-care. **Participation:** "my own consultations", increasing confidence through undertaking their own consultations. **Reification:** "dealing with patients in my own way", suggests moving past, for example, copying others and using their understanding of accepted practice to develop their own style.

Example of the iterative, deductive coding and analytical development process using Wenger's CoP theory (1998)

The following examples illustrate the ongoing process of how transcript excerpts were analysed deductively and iteratively over time using Etienne Wenger's CoP theory (1998). Although the coding was guided by Wenger's theoretical constructs (Table 4.2, Chapter 4, Methodology and methods), the analytical process was ongoing and interpretive. Multiple excerpts sometimes aligned with several CoP theoretical constructs, requiring an ongoing process of consideration and reconsideration of alternative coding possibilities leading to a refined analytical interpretation.

Transcript extract	Initial coding	Potential alternative coding	Refined analytical interpretation	Ongoing analytical development process
"I've had a few like doctors that I'm not with that have kind of called me in to see some good pathology. I think that's really useful, that kind of like including other students if there's good good pathology to see"	Practice [A]. Mutual engagement [4]; Identity [B]. Engagement.	Practice [A]. Participation [2].	Practice [A]. Participation [2], with some relevance for mutual engagement [4].	Initial coding focused on collaborative engagement with the CoP, where opportunities for learning were shared collectively amongst the clinicians, rather than being restricted to formal supervisory relationships. Further analysis suggested the excerpt also reflected participation because the student was actively included in the learning opportunities, seemingly going beyond their allocated educational supervision. Consequently, the

				active taking part was judged to be the most important analytically.
“feel a bit like you're not kind of worthy of doing your job because you haven't been given the responsibility, so you seem almost like because you haven't been given that responsibility, it's because you're kind of not capable of doing the job that they're doing”	Identity [B]. Accountability to an enterprise [11].	Identity [B]. Non-participation [13]; Identity [B]. Imagination.	Identity [B]. Accountability to an enterprise [11], with some relevance to identity [B], non-participation [13].	This was initially interpreted as limited responsibility and accountability within clinical practice and pursuing the joint enterprise of patient care. Further reviews suggested the participant was also describing being left out from potentially meaningful participation and the influence this may have on their potential identity as a future doctor undertaking these activities. The responsibility and accountability was interpreted as the most compelling aspect of this excerpt.
“being challenged on that really helps … it helps you develop your own reasonings for your decisions as a doctor”	Identity [B]. Accountability to an enterprise [11].	Practice [A]. Participation [2] and reification [3].	Practice [A]. Participation [2] and reification [3], with some relevance to identity [B], accountability to an enterprise [11].	The excerpt initially appeared to focus on developing reasoning processes underpinning clinical decision-making. The participant described transforming their knowledge into personally meaningful professional reasons, also describing themselves as the doctor when they are not yet one. Further analysis appeared to reflect participation and reification through supervisory discussion. The active taking part in the authentic process of clinical reasoning was judged to be the most important aspect analytically.
"debriefing as well at the end of sessions … going over things that	Practice [A]. Mutual	Identity [B]. Identification	Practice [A]. Mutual	Initial coding focused on collaborative discussion and feedback. Further reviews

didn't go so well, things that did go well, having like a professional opinion on some of your own decisions”	engagement [4].	[17]; Practice [A]. Joint enterprise [5].	engagement [4], with some relevance to practice [A], joint enterprise [5].	suggested the debriefing process also reflected collective negotiation and the participant’s investment in their own professional assessment with the clinical practice. The relational and dialogic aspects were interpreted as more compelling.
“writing tasks to do referrals or maybe like writing the referral letter for the doctors that they can send off …I think that's really helped me like develop a sense of professional identity, kind of being able to feel a little bit closer to being a doctor when you're not one ”	Practice [A]. Shared repertoire [6]; Identity [B]. Participation [8].	Identity [B]. Accountability to an enterprise [11].	Identity [B]. Accountability to an enterprise [11], with some relevance to practice [A], shared repertoire [6].	The excerpt was initially interpreted as contributing to the clinical routines through using the tools of the CoP, as well as the participatory aspect. Further analysis suggested identity formation through participation in the joint enterprise of authentic, administrative clinical processes. The taking of responsibility for authentic, clinical activities was perceived as the more important aspect.