

**THE ROLE OF INFORMAL LEARNING IN THE SMALL TO MEDIUM
ENTERPRISE CONSTRUCTION WORKPLACE**

by

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DECLARATION

By submitting this thesis electronically, I declare that the entirety of the work contained therein is my own, original work, that I am the owner of the copyright thereof (unless to the extent explicitly otherwise stated) and that I have not previously in its entirety or in part submitted it for obtaining my qualification.

Signature: **L.D. Mareka**

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ABSTRACT

Construction organisations in Namibia rely on people to achieve their work outcomes. Subcontractors are an integral part of the construction workforce that carry out project operations in many construction SME companies. However, the lack of research into workplace learning in construction SMEs has left these organisations operating without clear learning strategies, with potential negative consequences to business success. The aim of the study was to understand the role of informal learning in a construction SME workplace, based on the perceptions and the experiences of the local subcontractors who are established communities of practice in construction. To explore the role of informal learning in the construction workplace, a case study methodology based on an interpretivist paradigm, is adopted. Observations and semi-structured interviews were the main forms of data collection methods. Data were collected from a sample of a community of practice made up of four subcontractors and three main contractor management members. The findings indicate that informal learning in the construction SME workplace is influenced by the organisational culture. Learning in this construction SME workplace depends on the work processes, the scope of work activities and the interaction relationships of mutual trust. Work processes such as meetings; daily interactions such as conversing, discussing, observing, listening, networking and sharing of information with others, facilitate collaborative participation and learning opportunities in this construction workplace. The findings have implications for how an organisation can provide appropriate management support that can promote and harness this learning for individual and organisational development.

KEYWORDS: Informal learning, workplace learning, Small and Medium enterprises (SME), collaborative communities of practice, situated learning.

DEDICATION

I DEDICATE THIS WORK TO:

My children: Nokukhanya Khoetage Khethiwe Mareka, Samkelo Mavuso Mareka and Noluthando Zendulo #Khitago Mareka – I love you. Thank you for your love and patience with mommy. May this inspire you and may you find your own paths in this life.

My husband: Bruno Martin Mareka, thank for the love, support and patience throughout the journey.

My parents, the late Ignatius Mavuso Mdhlozini who, despite a lot of challenges in his life, never stopped believing in the strength and the resilience of his “inkosazana, umafungwase”. To my mother, Joan Nyakazile Ngema-Mdhlozini, for setting a very strong example of being a woman, a courageous overcomer and a high achiever. Despite starting off as a factory worker, never gave up on her belief in herself and her dream to be educated. At 49 years of life, with four children received a Nursing Science degree, so that her children would have a standard and a tangible example of education.

*'Into a daybreak that's wondrously clear
I rise
Bringing the gifts that my ancestors gave,
I am the dream and the hope of the slave.
I rise
I rise
I rise.'*

(Still I Rise - Maya Angelou, 1978)

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CHAPTER 1

ORIENTATION TO THE STUDY

1.1 INTRODUCTION

The workplace provides learning opportunities for workers and organisations. Current global changes place considerable value on learning throughout life, as a development strategy for individuals and organisations (Tynjälä, 2013). Studies show that a major part of learning in the workplace is informal (Livingstone, 2001; Marsick & Watkins, 2001; Ellinger, 2004; Cunningham & Hillier, 2013). This means that people and organisations derive learning from naturally occurring experiences in the workplace. Literature indicates that contemporary organisations such as the construction small and medium enterprises (SMEs) prefer informal forms of learning, rather than formal training (Coetzer, Kock & Wallo, 2017). SMEs, therefore, need to understand the opportunities which they can derive from workplace informal learning practices.

The decision to investigate the role of informal learning in a construction SME workplace was initially influenced by my observations (as a practitioner in the same company) of the work activities and interactions amongst workers, suppliers and clients. These activities and interactions were closely aligned to the idea of Ubuntu, which puts a high premium on learning informally from contextual experiences (Lekoko & Modise, 2011; Merriam & Kim, 2008). The study was subsequently influenced and underpinned by Lave and Wenger's (1991) notion of situated learning in communities of practice (elaborated on in Chapter 2, section 2.2.), along with the broad spectrum of relevant literature of informal learning in the workplace.

1.2 MOTIVATION FOR THE STUDY

Workplace informal learning is identified as important for SME businesses, yet it remains relatively under-researched (Keith, Unger, Rauch & Frese, 2016). Workplace learning in SMEs has received even less scholarly attention in Namibia. This is ironic, considering that internationally workplace learning has maintained its pre-eminence as a strategic link between learning, as well as knowledge and skills that sustain individuals and business (Vaughan, 2008). Most organisations continue to invest money in formal training compared to workplace informal learning (Noe, Clarke & Klein, 2014).

Even though formal training programmes make important contributions to the learning process of workers, constraints such as time, budget constraints and fragmented work structures make it difficult for construction SMEs to utilise off-site training (Raidén & Dainty, 2006). One of the ways to address these difficulties is to study and understand the unique learning circumstances within SMEs. Watkins (2017) points out that informal learning can be an invaluable resource for the individuals and the organisations. She argues that learning in organisations can ‘empower the very creativity needed to build future capacities’ (Watkins, 2017:222). Ultimately, informal learning in SMEs has the potential for more meaningful learning experiences than formal training (Noe, Clarke & Klein, 2014:248). For this study, this means that the construction SMEs need to comprehend the nature of informal learning so as to support this learning and for individuals to derive benefits from their organisational experiences.

There are, however, no conclusive numbers with regards to the overall percentage of informal learning which occurs within the Namibian construction SME workplaces – partly because informal learning is difficult to measure.

The Namibian Training Authority attests to the value of practical learning in construction organisations (Construction Skills Sector Plan, 2014). However, the information gleaned from the Namibian Employers Federation (2018) suggests that, 78% of SMEs in Namibia (total respondents consisted of 62 large enterprises and 35 SMEs) state that they had the ability and opportunities to train employees. However, 64% of those SMEs in Namibia actually provide vocational learning. These results might suggest that informal learning is preferred by SMEs; however, may require better definition if it is to be supported within small to medium enterprises.

The construction organisations in Namibia rely on people to achieve their work outcomes. Subcontractors are an integral part of the construction workforce that carry out project operations in many construction SME companies (Construction Industry Development Board, 2013). Working relationships between subcontractors and contractor organisations appear to have implications for contextual learning and the development of knowledge and skills for individual and business performance. Eraut and Hirsch (2010:69) argue that informal learning has the potential to contribute

meaningfully to organisational development, if managers and experienced workers are prepared for it. This study makes a case for understanding the role of informal learning in a SME construction workplace context, to illustrate its potential for individual and organisational development.

1.3 RESEARCH PROBLEM

Knowledge and skills are key performance motivators in the construction industry. A number of studies show that how organisations access and sustain knowledge is crucial for individual development and organisational survival (Bartsch, Ebers & Maurer, 2012; Di Vincenzo & Mascia, 2012; Mataboee, Venter & Rootman, 2016). Despite this argument, the lack of focussed inquiry into the learning processes of construction SMEs in Namibia indicates a contextual knowledge gap in this sector.

In Namibia, Shifidi (2012:25) calls for studies to explore opportunities of interaction ‘between small building companies and between them and larger contractors’ so as to understand how the managerial skills in this sector could be enhanced. Despite this call, recent studies in the Namibian SME sector, have focused on (1) the implementation of quality management practices within SMEs from a customer service perspective (Chakraborty, Mutingi & Vashishth, 2019); (2) the reasons for SME failure from a financial angle (Kambwale, Chisoro & Karodia, 2015; Mukata & Swanepoel, 2015); and (3) the role of SME employment creation in economic growth (Jauch, 2010). All these studies have missed the opportunity to explore informal learning in construction SME workplaces, similar to that named by Shifidi.

The construction SMEs are important to the economy of the country, so too, are they providers of work opportunities to a large population of people in the country. According to Links and Haimbodi (2011) the construction industry, of which the SMEs are part, in 2008 contributed around 4 % to Gross Domestic Products (GDP). On the other hand, the Namibia Statistics Agency’s (2018) labour force survey state that the construction industry employed about 9.3 % of the total workforce, many of which are either semiskilled or unskilled. The lack of research on workplace learning in construction SMEs may mean that these organisations continue operating without any evidence informing their training practices, which may jeopardise their business success and ultimately affect the livelihood of many people. It is, therefore, my

contention that with improved understanding of workplace learning practices in construction SME workplaces, organisations may have a chance to cultivate managerial support for this learning.

This study thus poses the following question:

What, if any, is the role of informal learning in a construction SME workplace?

The following sub-questions were formulated to help answer the main question:

- a) What is the nature of learning in a construction workplace?
- b) What are the local subcontractors' experiences of the workplace informal learning in a construction workplace?
- c) What work activities/practices, if any, contribute to the informal learning of knowledge and skills?

1.4 AIM OF THE STUDY

The aim of the study was to understand the role of informal learning in a construction SME workplace, based on the perceptions and the experiences of the local subcontractors.

1.5 BACKGROUND TO THE STUDY

The site of the study was a medium-sized construction company based in Windhoek, Namibia. This construction company specialised in civil construction services. The company was established in 2007. The company, which is the main contractor, offered road and building construction, as well as maintenance services to a wide clientele, which included government institutions and private sector organisations. As an appointed contractor, this company had the ability to assemble and manage a supply chain made up of subcontractors and/or specialist suppliers to achieve the client's project objectives (Moody, Riley & Hawkins, 2008).

The company collaborated with a number of small subcontractors who were engaged to implement specialist project activities. The appointed subcontractors were local artisans and vocational college graduates. They were appointed directly as domestic subcontractors, which means they were fixed trade subcontractors appointed directly by the main contractor. Construction Industries Development Board (2013:3-4) define

domestic subcontractors as those hired by the contractor to perform specific tasks. Domestic subcontractors are typically relatively new to the industry, with little business, managerial and financial skills. The specialist areas of collaboration with these subcontractors were; plumbing, electrical, carpentry and project operation supervision. The work setting in this company was well suited to this study because the collaborative practices presented a mutual informal learning opportunity that could be studied.

The main contractor construction SME realised that their business performance and survival depended on a knowledgeable and a skilled workforce. This construction SME therefore wanted to understand the learning opportunities and continuous improvement that might have been historically overlooked within its practice. Since there was already a history of a collaborative community of subcontractors working with the main contractor in which active information exchanges took place, the case was thus designed to understand the role of the ongoing informal interactions to learning and development of the construction SME. The case was then the role of learning within the main contractor community of practice in this construction SME workplace.

1.6 DEFINITION OF KEY CONCEPTS

This section defines the key concepts used throughout this study.

1.6.1 Situated learning

Situated learning is understood as an integral and an inseparable aspect of human activity that allows engagement with others in an ongoing practice (Lave & Wenger, 1991; Gherardi, Nicolini & Odella, 1998). Situated learning has its roots in the idea that knowledge is definable in relation to specific situations or contexts (Dewey, 1938). Therefore, in this study, situated learning is viewed as a creative and integral part of worker learning and productivity in the workplace.

1.6.2 Workplace learning

Fenwick (2008:18) points out that a *workplace* can take on many forms – it can be a small or large organisation, a website, a kitchen table, even a car. Based on this argument, the workplace is more than a physical location. The workplace is a space

of work relationships with common meanings, ideas, behaviours and attitudes (Matthews, 1999). In this study, the workplace is defined as a distinct site of informal learning that highlights the importance of continuous learning and development of individuals and organisations.

1.6.3 Informal learning

Informal learning in this study refers to any learning activity related to the pursuit of understanding, knowledge, or skills that are outside the curricula of educational institutions (Livingstone, 1999) that may modify the learner's perception of self and as a member of a work group. Schugurensky (2000) distinguishes three types of informal learning based on the criteria of awareness and intentionality. Schugurensky's taxonomy of informal learning identifies learning as either; self-directed, incidental and socialisation. This study usefully refers to Schugurensky's informal learning framework as a basis for understanding the types of learning that may be applicable in this construction workplace.

1.6.4 Collaborative community of practice

Collaborative working through partnering facilitates joint workload and knowledge sharing across a community of practitioners. Literature suggests that collaboration in construction largely occurs between clients and main contractors, however, there is increasing recognition that the principles of collaboration also apply to relationships between contractors and subcontractors (Bresnen & Marshall, 2000). For the purpose of this study collaboration is used broadly to represent all collaborative and participatory work processes amongst a community of practitioners in a construction workplace. The community of practitioners, in this case, is understood as interdependent relationships formed in various construction projects and project stages.

1.6.5 Small and Medium Enterprises – SME

There is no single definition of Small and Medium enterprise (SME), however, what appears universal is the importance of SMEs in the economic development the world over (ILO, 2015). In developing countries, SMEs operate in the formal and informal economy. Informality is largely determined by a lack of government regulation and/or formal business enrolment (ILO, 2015). Micro, and to a certain extent, small

enterprises are more likely to be classified as 'informal' businesses. SMEs in Southern Africa are usually defined by characteristics such as the number of employees and the financial turnover. The Namibian definition for example, states that:

- a *micro* enterprise employs 1 to 10 employees and/or generates an annual turnover of up to N\$300 000;
- a *small* enterprise employs 11 to 30 employees and/or generates an annual turnover of between N\$300,001 to N\$3,000,000; and
- a *medium* enterprise employs 31 to 100 employees and/or generates an annual turnover of between N\$3,000,001 to N\$10,000,000 (National Policy on Micro, Small and Medium Enterprises in Namibia, 2016:7).

The term medium-sized enterprise when used in this study refers to the above definition and additionally to privately owned construction organisations that typically have more diverse management functions compared to small enterprises.

1.7 RESEARCH DESIGN AND METHODOLOGY

The research design and methodology employed in this study will be discussed in greater depth in Chapter 3. To explore my research topic, an interpretive case study approach was adopted. The case study approach was chosen because it allows a detailed exploration of a phenomenon within its natural context (Rule & John, 2015). By using the case study approach, I planned to understand the role of informal learning in a construction workplace context through uncovering the unique learning opportunities embedded in everyday practices in a medium-sized construction company. Additionally, the interpretivist epistemology in this study enabled the understanding of the complex nature of informal learning in a social practice context through taking into consideration the realities of the subcontractors and the main contractor. Semi-structured interviews and observations were the main forms of data collection methods that served to supplement, as well as complement, each other to provide rich situational data.

1.8 CONCLUSION AND STUDY OUTLINE

This study aimed to understand the role of informal learning in a construction SME workplace based on subcontractors' perceptions and experiences. Based on a situated learning theory, the investigation planned to explore the work practices,

activities, as well as experiences that were salient to the construction workplace for contextual knowledge and skills. The inquiry set out to use the research participants' responses to develop a rich understanding of informal learning and its possible benefits to the individuals and the organisation.

The literature review, in Chapter 2, outlines the theoretical foundation of this inquiry. From this foundation, this chapter elaborates on the workplace informal learning from a situated learning theoretical learning, which guided the data analysis process throughout the study. Chapter 3 discusses the research design and methodology used in investigating the research problem. Chapter 4 presents and discusses the results based on collected data and the analysis of such data.

Finally, chapter 5 concludes and presents possible recommendations and implications that the results may have for practice.

The next chapter focuses on the literature studied and presents what was considered relevant for the purpose of answering the main questions posed by this study.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

The research question explores the role of workplace informal learning in a medium-sized construction company. Based on this question, the purpose of this chapter is to review relevant workplace learning literature to illustrate the nature of situated learning and its implications for knowledge and skills development in organisations. The review firstly presents a theoretical framework which guides the inquiry. This is done in order to give a perspective about learning in a dynamic construction work setting. The chapter concludes by showing the implications of this review towards answering the main question posed by this research study.

2.2 INFORMAL LEARNING: A SITUATED LEARNING THEORETICAL LENS

The theoretical consideration that informs the framework of this inquiry is learning as participation in a situated community of practice (Lave, 1991). Situated learning theory provides an opportunity to study and interpret learning that occurs within its authentic context of daily practice. A situated theory of learning has its roots in the idea that knowledge is definable in relation to specific situations or contexts (Dewey, 1938). What works in a given work setting is accepted as "true" in that given setting (Tyre & Von Hippel, 1997). Lave and Wenger (1991:67) posit that situated learning focuses on 'social practice in the lived-in world and emphasises relational interdependency of the agent and the world, activity, meaning, cognition, learning, and knowing'. Based on situated learning theory, learning is integral and an inseparable aspect of human activity that allows engagement with others in an ongoing practice (Lave & Wenger, 1991; Gherardi, Nicolini & Odella, 1998).

Unlike a cognitive approach to learning, situated learning proffers practice and participation as key elements to the development of knowledge and skills. For Gherardi et al. (1998), practice provides a medium and a resource for participation that establishes member identity and develops knowledge and skills relevant for practice. Clancey (1995), moreover, views participation as representing ways of knowing, including ways of talking, authoritative views, and peculiar stories which people tell. A key rationale presented in this study is that adopting a situated learning

perspective provides a coherent social basis for understanding informal learning which is beyond individual learning but incorporates a view of learning as a collaborative exercise, which involves learner interest, intentions and capacity (Billett, 2014). Two considerations which are of interest to this study are: 1) because learning is a social process, the social and cultural context will affect both how and what organisational actors learn; and 2) the learning process depends on the workplace setting in which actors find themselves (Tyre & Von Hippel, 1997).

Situated practice-based learning research in construction management appears useful for understanding the intricacies of practice and learning in the workplace. Kokkonen and Alin (2015) advocate for more research to address practice-related managerial problems in construction projects. Gherardi and Nicolini (2002:218), based on their study of site foremen and site managers of a main contractor medium-sized building company in Italy, point out that a situated learning approach was useful for understanding that learning and knowledge in organisations are inherent dimensions of work practices, which means that knowledge can be found in the process of interaction. These definitions and arguments above formed the basis for review and analysis of workplace informal learning in a social context.

The following section aimed to review situated informal learning and did not intend this to be an exhaustive exercise but focused on literature to answer the question posed by this study.

2.2.1 Situated informal learning in the workplace

Traditionally, informal learning has been defined and interpreted as learning that occurs outside a formal curriculum, such as that found in educational institutions. The nature of learning in the workplace is deeply connected to occupational practice. Billett (2013:126) claims that across human history learning through practice is the most important process for developing individuals' occupational competence, which serves both the needs of society and employees.

Nevertheless, informal learning remains largely invisible and is considered the 'iceberg' of adult learning at work (Livingstone, 1999). Informal learning in the workplace is an inter-subjective and a deeply relational endeavour, in which work is

the primary focus that provides the structure for this learning to take place (Marsick, Watkins, Scully-Russ & Nicolaides, 2017). The workplace provides the structural unit within which the joint contributions of people, activities and cultural artefacts establish a learning environment that not only shapes the workplace environment but simultaneously shapes the individuals in the workplace (Billet, 2014). Thus, to study informal learning empirically, Livingstone (1999:5) suggests that the research focus should be on those things that people can identify for themselves as actual learning projects or deliberate learning activities.

Naturally, informal learning is marred with blurred terms and overlapping ideas that are used interchangeably. Informal learning in the workplace is described as self-directed, incidental or a socialisation or enculturation process of workers in specific work contexts. Schugurensky's (2000) typology of informal learning presents a useful framework for identifying this learning based on the criteria of awareness and intentionality (see Table 1). Clear distinctions between learning that is self-directed, incidental and socialisation may not always be possible since boundaries between the various forms of informal learning are blurred and terms are used interchangeably. Even so, Schugurensky's typology is pertinent for this study as it helps make informal learning discernible to learners and researchers for identification and possible management. More importantly for this study, is that the 'taken-for-granted' work actions are illuminated as more than doing work, but a contribution to learning that, if its utility is identified, can support the development individuals and organisations.

Table 1. Modes of informal learning

Mode of learning	Intentionality	Awareness
Self-directed	Yes	Yes
Incidental	No	Yes
Socialization	No	No

(Schugurensky, 2000:3)

The conception of informal learning as self-directed positions workers as active agents who consciously immerse themselves in work learning opportunities by participating in their jobs and using their experiences to increase their competence. Self-directed learning draws on the ideas of andragogy (Knowles, 1980), which views adult learners as intentional and self-determined thereby directing their interests, motivation and

commitment to development for rapid adaptation to work demands (Noe, Tews & Maranda, 2013). By engaging in self-directed learning, individuals interacting with others, diagnose learning needs and locate needed resources to draw from to support their learning and performance at work (Eraut & Hirsch, 2010). Thus, self-directed work experiences form the basis of learning incidences in which the intent and awareness of learning is evident to the individual and/or the workplace.

Marsick and Watkins (2001) argue that a significant amount of workplace learning results from work incidences that are not always planned nor easily recognisable. These authors illustrate that incidental learning is a by-product of other activities, such as attempting a challenging assignment or solving work problems. Knowledge, accumulated as a by-product of work, is embodied and has a transformational effect on the workers' conception of work and their attitudes towards tasks and skills needed for performance (Billett, 2014). It is, however, the workers' ability to critically reflect on their experiences at work that enhances their overall awareness of learning, thereby developing appropriate insights on the job and organisational norms and values (Eraut & Hirsch, 2010; Schugurensky, 2000). Important for this study are questions about the subcontractors' reflection on their learning from participation in everyday activities, which may shed light onto the elements of workplace informal learning experiences that provide opportunities for worker knowledge and skills.

Workplace informal learning as socialisation, involves internalisation of values, attitudes, beliefs, behaviours and skills, that occur during everyday work practice (Schugurensky, 2000:4-5). Ratković-Njegovan and Kostić (2014) suggest that workplace socialisation increases not only the workers' professional adaptation in the organisation, but importantly also, their social competence and skills. These authors put forward a useful argument that with heightened social competence and social skills, workers improve their social and interpersonal communication and interaction which, in turn, can improve business results (Ratković et al., 2014). This argument is useful to this study as it suggests that informal work relations and engagements can have a meaningful role to play in the adaptation of workers within the social work environment. Questions around what and how the exposure to work interactions could have contributed to learning and competence of local subcontractors, formed part of the interviews conducted as part of this study (refer to Appendix A - Table 3).

2.2.2 Informal learning in a SME workplace

To be able to analyse the role of informal learning in a construction SME workplace, it is necessary to focus on how such learning is understood to take place in this workplace.

Workplace informal learning is preferred by SMEs for its ease of access and utility over formal training (Coetzer, Kock & Wallo, 2017). Formal training refers to structured learning activities usually in an educational setting to develop knowledge and competences associated with professional certification (Kyndt, Gijbels, Grosemans & Donche, 2016). Workplace informal learning, on the other hand, caters for workers' job-related competencies that are essential for effective practice. Workplace informal learning happens in communities of practice (CoP), which are the longest existing knowledge-based structures known to humankind (Lave & Wenger, 1991). Communities of practice are defined differently by various authors; however, Lave and Wenger (1991) define them as groups of people who, based on shared interests and goals, share information that develop their personal and professional knowledge.

As self-organising informal learning structures, CoPs have been recognised in management literature as influential channels by which knowledge is created, stored, and transferred (Brown & Duguid, 1991; Roberts, 2006). Gherardi (2009) proposes that the focus of CoPs should be the practice of the community, rather than community of practice. She argues that focussing on practice provides a useful emphasis on activities (engagement) being the generators of the community within which people, artefacts and social relations exist. In this context, knowledge is seen as an activity, and the activity constitutes practice (Gherardi, 2009:121). This means that knowledge and skills produced in practice are effectively social work-related actions demonstrated in everyday practice, referred to by Brown and Duguid (1991) as learning-in-working.

The idea of learning-in-working (Brown & Duguid, 1991) is a compelling proposition of the CoPs (Gherardi, 2015). Learning-in-working means that knowledge creation and transfer constitute practice, hence, through participation, workers are exposed to opportunities to work and learn with and from others. For construction SMEs, joint knowledge sharing and the ability to increase member contribution to projects across organisation boundaries is a crucial aspect for business development and

sustainability. By studying the practices of a community (including participation, interactions and relationships) it may be possible to identify elements of learning through action that contribute to relevant contextual knowledge. Sub-questions 2 and 3 of this study seek to explore this aspect of informal learning.

Lave and Wenger (1991) posit that learning in communities of practice is enacted through legitimate peripheral participation in workplace practices. Legitimate peripheral participation is a means by which newcomers learn skills that move them closer to centre of a community of practice. Tynjälä (2013) suggests that learning through legitimate participation in peripheral activities guided by more experienced others, allows newcomers or new practitioners an opportunity to gradually develop understanding of practice and over time be entrusted with more responsibilities. For Whitelaw, De Beer and Henning (2008), social relations that workers encounter are not only relationships, but knowledge that individuals take hold of which assist them to function and relate to others in the workplace. Chan's (2013:371) study of bakers is similar in that learning trajectories in work are constituted by a series of roles and experiences that perhaps afford modelling, scaffolding, encouragement and affirmation from more experienced others. She indicates that learning, with and through others, provides the requisite skills, knowledge and also dispositional attributes of the trade, along with problem-solving abilities. In other words, learning and being competent may be referenced by the worker's understanding of workplace practice and his/her ability to contribute to the community of practice.

To understand learning that transpires from work, it is worthwhile to gain insight into the social relations in a SME workplace. The workplace defines the frames of what constitutes meaningful participation in a community of practice (Wenger, 2011). According to Lave and Wenger (1991) the context is to be grasped in its entirety, including traditions and history that are still alive. They argue that 'to take a decentred view of the master-apprentice relations leads to an understanding that mastery resides not in the master but in the organisation of the community of practice of which the master is a part' (Lave & Wenger: 1991:94). Le Clus and Volet (2008) found that the workplace environment plays an important function in facilitating or constraining learning. Their findings suggest that the support afforded to newcomers by managers and established workers provides them access to workgroup practices, procedures

and workplace culture. Sub-question 1 of this study aims to collect information which will illustrate the work context of the case study company.

The review above attempts to paint a picture of informal learning in the workplace as a means of answering the question posed by this study. What is salient, is that the social relations in a workplace may not be random factors, but that these relations are the main source of informal learning in the workplace. The review now focuses on learning in construction practice.

2.3 LEARNING IN CONSTRUCTION PRACTICE

In this section, the review shifts focus to what literature says about learning of people in a construction practice. The review particularly attempts to provide examples of activities, processes and practice that provide critical learning in the construction workplace.

A major part of subcontractor knowledge is formed within a complex contractor-subcontractor collaborative work environment, which seeks to deliver high quality projects at the best possible price. Subcontracting, in the construction industry, is pivotal to project performance (Hartmann & Caerteling, 2010). Subcontractors in this social construction context, interact with knowledgeable others such as engineers, clients and other suppliers to achieve successful project outcomes. Christensen, Wandahl and Ussing (2011) point out that subcontractor knowledge and overall learning are embedded in construction project practice. Subcontractor learning can be viewed as a matter of day-to-day operational experiences in construction work, which provides opportunities to acquire knowledge and skills relevant to their respective construction communities.

Construction workers gain most of the knowledge and skill in construction tacitly which means learning manifests over time in relation to specific requirements of a particular construction setting. Löwstedt and Räisänen (2012) found that formalised career path in construction organisations (and in the industry as a whole) follow successive progression from working on construction sites to higher levels in the hierarchy. They claim that managers at all levels are seldom recruited outside of construction spheres but are fostered in building projects several years before they acquire legitimacy for

promotion. The integral and inseparable connection between work and learning is indicative of the close relationship between learning and identity in the construction work environment.

Construction vocational experiences are not only important for matching formal learning to practical experience, but also assist individuals to gain identities as construction workers (Löwstedt & Räisänen, 2012). The norms and workplace practices such as policies and procedures; rules and industry knowledge through construction language, routines and behaviour with others, are critical for identity formation and membership as a construction practitioner (Pathirage, Amaratunga & Haigh, 2008). Based on Löwstedt and Räisänen's (2012) study, a strong collective sense of pride related to construction craftsmanship is typically illustrated by participation and the understanding of construction norms which are embedded in the collective construction industry wisdom. Billett (2014) calls this active participation in organisational norms and practices, mimesis. He argues that through a process of mimesis (that is, practice, observation and imitation of knowledgeable others) occupational knowledge is made accessible to workers. Thus, subcontractor learning of knowledge and skills may be understood within the context of acquired construction norms that may essentially be a gateway to legitimacy as members of a construction community.

The contributions of collaborative social partners in construction suggest the importance of organisational learning factors that provide space for subcontractor learning in a construction organisation. By leveraging learning through natural communities of practice in the organisation, the development of knowledge and skills increasingly become a matter of collaborative practice among peers (Marsick, 2003; Fu, Lo & Drew, 2006). Dainty, Briscoe and Millett (2001) found that subcontractor learning is greatly supported by an integrative culture which engendered an inclusive attitude. For Styhre, Josephson and Knauseder (2006) the subcontractor learning is not inhibited by the lack of formal documents, plans, other written instructions and information but rather by the lack of full verbal instruction denoted by relational interaction at the beginning and during the course of the project. Specifically, close relationships of trust bind people towards common goals and serve as sources of identification (Manu, Ankrah, Chinyio & Proverbs, 2015). Conversely, a culture

characterised by a lack of trust inhibits integration and is therefore, problematic for learning (Dainty et al., 2001). Hence, it may be concluded that effective learning of subcontractors is influenced by their social interactions and participation in the 'hustle and bustle' of work situations.

Lave and Wenger's (1991) notion of legitimate peripheral participation, a means by which novices gain access to contextual knowledge and skills, appears to be a useful framework to view the learning of subcontractors. As eloquently illustrated by these authors, learning through legitimate peripheral participation refers to the development of knowledgeably skilled identities in practice; however, rather than participation being merely a condition for membership, it 'is itself an evolving form of membership' in communities of practice (Lave & Wenger, 1991:53). The association and participation with others in the workplace are the actual substance of learning. Thus, legitimate access to spheres of activity in a workplace promotes learning.

Additionally, extrapolations from studies in project-based organisations illustrate that knowledge sharing in and amongst collaborative project team members, such as subcontractors, is facilitated by legitimate access to workplace social interactions and participation in a collaborative environment (Hartmann & Dorée, 2014; Di Vincenzo & Mascia 2012). Gherardi and Nicolini (2002), take a view that learning in construction practice is tied together by relations and interconnected practices in communities of practitioners. Table 2 below, therefore identifies the key learning activities and processes from workplace interactions and participation in construction gleaned from construction management literature and juxtaposed with categorisation of informal learning of professionals in business, engineering and healthcare sectors (Eraut & Hirsch, 2010:25; Raidén, Dainty & Neale 2004:462-463; Barlow & Jashapara, 1998:94-95). What this demonstrates is the ubiquity of informal learning and the importance of legitimate participation in work practices as a connected process of working and learning in a construction workplace. Hence, being fully immersed in construction practice through executing everyday activities on site, increases opportunities for subcontractor practitioners to learn within and beyond their immediate community.

Table 2. Learning in construction workplace

Work Processes with learning as a by-product	Learning Activities located within work or learning processes	Learning Processes at or near the workplace
<ul style="list-style-type: none"> - Participation in construction project team processes - Working alongside others - Tackling challenging project tasks and roles - Problem solving - Trying things out - Working with clients 	<ul style="list-style-type: none"> - Asking questions - Getting information - Locating resource people (inter or intra-organisationally) - Listening and observing - Learning from mistakes - Giving and receiving feedback - Use of mediating artefacts (design plans, programme outlines and budget) 	<ul style="list-style-type: none"> - Being supervised - Being coached - Being mentored - Being inducted - Job Shadowing - Visiting other sites - Independent study

(Adapted from Eraut & Hirsch, 2010:25; Raidén, Dainty & Neale, 2004:462-463; Barlow & Jashapara, 1998:94-95)

The value of the preceding review serves to frame the concept of the role of informal learning in construction practice. This conceptual framework is applied in the analysis of the role of informal learning of subcontractors which is based on the socio-cultural construction SME environment. Local subcontractors, as new practitioners, rely on construction workplace processes provided by the scope of work activities and the interaction relationships with other co-workers and managers, for their learning and rapid adaptation to construction work (Choy, Kemmis & Green, 2016). The discussion in this section illustrates that subcontractor learning may be influenced by the organisational interactional relations which provides a scope for both their development and the organisation with which they collaborate. Whilst some of the knowledge gained through informal learning may be explicit, a major part of this learning is implicit with considerable influence on individual and organisational performance. The activities and processes in Table 2 above tie in with the review in section 2.2.1 that indicates that informal learning in the workplace is largely incidental, which means it is often a by-product of doing work. This workplace pedagogy (Billett, 2002, 2011) provides a frame that may be understood to encapsulate learning of subcontractors in a construction workplace. Even so, Table 2 may be a point of departure as conceptual framework for explaining subcontractor informal learning experiences in a collaborative construction setting. Thus, this argument provides a framework for conducting research into aspects of informal learning in a construction workplace.

2.4 CONCLUSION

The literature suggests that subcontractor learning in the workplace is an informal process characterised by interactions during the course of work. The interaction of subcontractors and knowledgeable others in communities of practice is an important source of learning of relevant knowledge and skills as well as general identification of individuals in the construction workplace (Choy, Kemmis & Greene, 2016). The foregoing review in section 2.3 above, indicates that construction practice tends to be pragmatic in its approach (Barlow & Jashapara, 1998) and therefore, participation and engagement of subcontractors in work situations allow them access to knowledge that is hidden and not readily accessible outside of being involved in construction projects. This argument may be indicative of the role of informal learning in a construction workplace that opens chances for subcontractors to learn, adopt and understand construction nuances that are important for the development of context specific knowledge, skills, attitudes and habits. The context specific knowledge, skills, attitudes and habits seem critical for performance and adaptation to contemporary changes in the business environment.

In summary, the literature review above provides a conceptual framework for conducting research into aspects of informal learning of subcontractors in the medium-sized construction workplace.

The following chapter presents the methodological framework for an inquiry into the role of informal learning in the workplace. Chapter 3 explains the rationale for and practicalities of gathering data to answer the main research question, as well as the first, second and third sub-questions.

CHAPTER 3

RESEARCH DESIGN & METHODOLOGY

3.1 INTRODUCTION

Babbie and Mouton (2001) suggest that a researchers' primary goal is to describe and understand the human action from the perspective of the social actors themselves. The aim of this study was to explore the role of informal learning in a construction SME workplace, based on the perceptions and experiences of subcontractors. Construction organisations and projects are dynamic as well as complex and invariably consist of interdependent, social interactive relationships among human enterprises that can be understood in terms of communities of practice (Love, Holt & Li, 2002). Thus, research into the human social interaction in construction required a research design that could reasonably capture and draw understanding out of this dynamic environment.

Henning, Van Rensburg and Smit (2011:32) argue that a research genre or design type provides a roadmap which describes the way a study is developed and will be presented based on the methodological requirements of the research question. A case study research design was used to study a group of local subcontractors in a single construction SME workplace. The following sections render the research design process for this study in detail, including the data collection methods and techniques employed to answer the research question.

3.2 RESEARCH DESIGN AND METHODOLOGY

The research design is a comprehensive strategy for answering the research question as thoroughly as possible. Gillham (2000) states that a research design ensures that the evidence obtained enables the researcher to answer his/her main question as unambiguously as possible. Even though there is no absolute blueprint for planning research, the chosen research design must be 'fit for purpose', because the research design and the overall methodology are connected to a particular worldview that the researcher chooses (Cohen, Manion & Morrison, 2007:4).

The term paradigm is defined by Kuhn (1962:109) as "providing scientists not only with a map but also with some of the directions essential for map-making". Accordingly, social scientists draw on specific paradigms implicitly or explicitly to make sense of the

research information. Paradigms give direction about “how research analysis might be patterned, reasoned and compiled” (Morrison, 2007:12). As a thinking framework for my research, the research paradigm adopted in this study anchors my research design and has provides a systematic investigation process that could best answer the main question posed by the study (Guba & Lincoln, 2005). Thus, the worldview or the interpretivist research paradigm adopted here shapes the design, data collection methods and the final analysis of data.

An interpretive paradigm regards the individual’s experiences as central to meaning construction and understanding of a social phenomenon. The ontological and epistemological position of an interpretive researcher is different from a researcher from a positivist paradigm whose stance is of distance and independence from human subjects (Phothongsunan, 2010). An interpretive paradigm stresses the value of respect for the person or people involved in research. In a way the individual’s experience is best understood from the standpoint of the social context of that individual(s) (Garrrick, 1999). An interpretive paradigm further allows the researcher to co-create meaning with the research participants in order to distinguish patterns of meaning (Henning et al., 2011). Based on this literature, from an interpretivist perspective, I sought meaning of the subjective experiences of the participants within their contextual workplace environment.

To explore the role of informal learning in the construction workplace, a case study methodology was adopted. There is a lack of agreement in literature about the definition of a case study, what general purpose it serves and whether findings can be generalised or not.

For Yin (2009:18), a case study is an empirical study to investigate some contemporary event or events (which are) fluid renditions of the recent past and the present. Yin argues that a case study methodology is ‘hard’ and therefore needs customized, predefined, theory-based procedures that will identify and define the case, whose findings can be generalised to a larger population. Yin’s view of a case study methodology directs attention to the level of meticulous planning required for this methodology. However, with an epistemological stance that views knowledge as

socially constructed by people in their social practice, the researcher must account for the unique context-related situations.

Stake (2010:14) argues that a case study enquires about the particular uniqueness and complexity of a single case in which a researcher may not have a predefined plan, apart from the main question of the study. The dependency on a single case exploration is usually one of the main criticisms of a case study methodology (Yazan, 2015). Abma and Stake (2014:1152), however, refute this criticism – instead claiming that a case study may not, necessarily, be about what works in general but about how the particular phenomenon works in certain situations, certain contexts, certain times and certain people. Similarly, Thompson (2010:578) advocates that non-generalizability is at the centre of a case study in that the participants' experiences are heard and viewed in context, thus making exemplary knowledge a representation of particular practical wisdom (phronesis) in that context. For Flyvbjerg (2010) contextual knowledge produced by a case study is crucial for expertise and competence development. This argument is noteworthy in the context of this study that seeks to collect data to understand the role, if any, of informal learning on knowledge and skills development in a construction workplace.

The influence of the researcher in a case study research process is crucial. This point is particularly relevant in light of Stake's (2003:136) argument that a case study is both a process and a product of that inquiry. A case study involves how a researcher goes about investigating his or her case and collecting data, as well as the final write up of the findings and analysis of the data. For Rule and John (2011:13-14), the researcher's familiarity and access to a case, otherwise referred to as an intrinsic case, can be an important aspect of case selection and examination. These authors point out that the role a researcher has in defining what a 'case is a case of' in their study cannot be overstated. In other words, the researcher actively formulates and/or imagines a case and determines what the case study will include or exclude. As a bounded object by time and activity, *the case* could be an event, a person, a process or an institution (Rule & John, 2011). Knowing what *the case is of*, aids the selection and sampling process of cases suitable for the research purpose (see section 3.2.2 for detailed discussion on sampling).

For this study, the consideration of the case was based on my position, as a human resource practitioner in construction and the desire to understand the role of informal learning activities in this construction SME workplace (described in section 1.5). The case study here involved a main contractor construction SME that realised that their business performance and survival depended on the knowledgeable and skilled workforce. This construction SME therefore wanted to understand the learning opportunities and continuous improvement that might have been historically overlooked within its practice. Since there was already a history of a collaborative community of subcontractors working with the main contractor in which active information exchanges took place, the case was thus designed to understand the role of the ongoing informal interactions to learning and development of the construction SME. The case which was the 'unit of analysis' (Rule & John, 2011:17) was then the community of practice within this construction SME workplace.

The subcontractors operated in different trades and were generally spread across projects; however, as is the norm, every start of project all subcontractors involved in the project come together for a start-up and/or handover meeting in which they all jointly discuss specific project needs and expected outcomes. The subcontractors knew each other as they formed the core trades that worked with the main contractor. Thus, these subcontractors' historical work relations with the main contractor spanned over a period of up to four years. Characteristic of a community of practice, these subcontractors and main contractor (main contractor members particularly the site staff members such as the foremen and site agents) all shared the joint subject and enterprise of executing construction projects for specific clients (Wenger, 2011). With this as a primary goal, they all worked to accomplish project goals and experienced similar problems and issues.

As with all communities of practice, the subcontractors and the main contractor had developed a common language related to project practice and had somewhat common understanding of construction procedures. Despite the different trades, their project work experiences, issues, and concerns were similar, thus giving them the ability to discuss these with co-members. This collaborative construction practice appeared to be the social glue that enabled legitimate peripheral participation of these community members in construction projects, including the project start-up meetings.

The general assumption that the experiences of participants provide a useful repertoire of what is salient in their lives (Cunningham & Hillier, 2013) gave this study a departure point for its research design and methodological choice and ultimately for its data collection approaches. Therefore, it is my contention that conducting research using a case study approach provided the appropriate fit that enabled greater flexibility and understanding of the role of informal learning processes in the chosen construction SME workplace based on the views and perception of the community of subcontractors.

The following section provides a research method and data collection rationale.

3.2.1 Research Methods and Data Collection

Research methods are the tools and techniques for doing research. Using the right sets of methods for research enables a researcher to reach a convincing conclusion about the soundness, trustworthiness or believability of the final conclusions (Anney, 2014).

As people tend to make sense of their surroundings using their current understanding of the world, distortion and misperception of reality can occur (Marsick, 2003). In a study of learning such as this one, it may be difficult to receive straightforward feedback which can be used fruitfully as data. Triangulation of data is, therefore, important if such data is to be viewed as robust. Triangulation reduces bias through cross-examination of the participants' responses (Anney, 2014). The three major triangulation techniques espoused by Denzin and Lincoln (2005) include: investigator triangulation, which uses multiple researchers to investigate the same problem; data triangulation/informants triangulation that uses different sources of data or research instruments, such as interviews, participant observation, or utilising different informants to enhance the quality of the data from different sources. The third is methodological triangulation, that uses different research methods (Denzin & Lincoln, 2005). Triangulation can refer to the use of multiple qualitative methods (Denzin, 2012). Marsick (2003) for example, suggests triangulation by combining survey data with observations of work performance and/or interviews with co-workers or supervisors. This study utilised a combination of data and methodological triangulation. For example, the study used semi-structured interviews and

observations as data collection methods (discussed in detail below). Applying multiple research methods as a data collection strategy served the purpose of ensuring the robustness of the data and contributed to trustworthiness and believability of the data presented in the next chapter.

Trustworthiness of data and overall research can be developed through the criteria of (1) credibility ('truth' of data), dependability (replicable data findings), confirmability (representation of responses without bias), transferability (results' relatability to others in similar contexts) and authenticity (expressed feeling and emotion of participants' experiences) (Lincoln & Guba, 1985; Guba & Lincoln, 1994). These authors argue that the research process should demonstrate that data were collected and represented truthfully, taking care to avoid bias. The use of a combination of data collection methods in this study sought to address researcher bias that can inadvertently be part of this research process. Rule and John's (2015) suggestion of reflexive questioning has been applied through written notes and voice notes that sought to promote my reflection as a researcher working as a practitioner in construction. Additionally, a content analysis strategy (discussed in section 3.3 below) provided a systematic process to interpret the data and draw conclusions (Bengtsson, 2016).

The foregoing section has discussed the basis for sampling which is discussed next.

3.2.2 Sampling

The selection of an appropriate sample ensures a holistic investigation and enhances rigour of the inquiry process. Henning et al. (2004:71) state that selecting the most suitable people for the study is vital for the research journey. The sampling procedure for this study was purposive sampling. Purposive sampling relies on the researcher's judgement in choosing the research participants in an effort to obtain insight into a phenomenon (Onwuegbuzie & Leech, 2007). In this case the sample was pragmatic in that it took into account the typical subcontractor and main contractor workforce that would be involved in a short-term contract of between one to three months project.

The population of the local subcontractors in the organisation, at the time of the study, was a total of five; made up of plumbing, electrical, waste management and two engineering technician subcontractors. Because the aim of the study was to

understand the role of informal learning in a construction organisation based on the perceptions and experiences of the subcontractors' learning of knowledge and skills from informal learning activities, the decision to purposefully select subcontractors who had worked with the company for at least a year was pertinent to the study. The ubiquitous nature of informal learning in a workplace (Lave & Wenger, 1991) gave me the confidence to assume that any member of the population had engaged in informal learning. The sample was drawn from local subcontractors who had worked with the company on repeated projects. Babbie and Mouton (2001) point out that selecting from only one group or career profile may result in unbalanced opinion and observation that may be misleading. To counteract this, members of the construction medium-sized company management team, which included the Contracts Director, Site Foreman and the Health and Safety Officer, formed part of the sample for a well-rounded view of the learning in a construction workplace.

The sample was drawn from subcontractors and the main contractor management members, based mainly on two new building construction projects for a large private oil company in Namibia. The targeted group for the investigation were five subcontractors and four managers/supervisors from the medium sized main contractor company. However, out of the five subcontractors invited to participate only four responded positively thus giving the research appropriate consent to include them in the study. All participant subcontractors had worked with the main contractor before on previous construction projects. These subcontractors all obtained their vocational certificates in their field and half (i.e. 50 %) of the subcontractors had pursued, or were planning to pursue, further studies beyond their vocational certificates towards a national diploma in construction and BTech degrees in construction engineering. As these participant subcontractors were the core subcontractors who have worked with the organisation on previous construction projects, it was envisaged that through data generated, their perceptions and experiences would provide a broad and rich understanding of learning embedded in the processes of construction work in this case study. Furthermore, the sample size was typical of short-term construction projects in this medium-sized construction company, in this case, three months.

Semi-structured interviews and observations were the main forms of data collection methods that served to supplement, as well as complement, each other to provide rich situational data.

3.2.3 Observation

Participant observations were employed as a research data collection method in this inquiry. Observations can be structured or unstructured. Structured observations are usually associated with a positivist paradigm in which the researcher remains an objective observer from a distance (Mulhall, 2003). Structured observations are typically a systematic data collection method, which uses experiments or simulated events in a controlled environment wherein the researcher has a predefined observation schedule to guide the observations (Cohen, Manion & Morrison, 2007). Unstructured observations, on the other hand, are associated with practitioner research and an interpretivist paradigm. Literature at times likens unstructured observations to naturalistic observations which studies the interaction of people in their natural setting so that their behaviours and words are put into context (Abma & Stake, 2014). The choice of structured or unstructured observations depends on the research design and the paradigmatic position of the inquiry (Mulhall, 2003).

Moreover, the decision to conduct observations, either as a participant or non-participant observer, is embedded in the design of the inquiry. Non-participant observers are detached from the people under study, whereas participant observers participate, albeit very minimally (Angrosino, 2016). Angrosino explains that, participant observers are usually insiders to the social setting under observation. In a construction environment, Pink, Tutt, Dainty and Gibb (2010:648) illustrate that participant observations may offer a route to a deeper understanding of the social practices, relationships and knowledge that inform the ways construction workers perform on site. However, being a participant observer does not imply a lack of systematic data collection. Angrostino (2016) insists that participant observations must be conducted so as to carefully and precisely take notes that can be efficiently retrieved and organised for analysis.

My involvement was that of a participant observer, which allowed me the opportunity to collect data that could adequately describe the construction project's social setting

in which informal learning occurred. The construction environment is known to be dynamic and characterised by its on-site pragmatic actions and solutions, therefore, participant observations were instrumental in establishing the situations in which learning took place, and how the people involved perceived their and other people's actions (Cohen et al., 2007). The aim of my observations in this case study was to understand the site processes where learning in practice occurred in the community of practice during the project phase. As a participant observer I participated in site processes such as induction, record keeping of all site members who were 'trained' on site requirements like health and safety. I was also involved in signing work engagement contracts with temporary workforce members. My participation in both the start-up meeting and the progress meeting had a particular situational focus on the informal learning phenomenon. This meant that my attention was directed at the 'situation' aimed at a particular description delimited in time and space (Gherardi & Nicolini, 2002:199). the site start-up and progress meetings, each lasted up to ninety (90) minutes. The start-up meeting was subsequently followed by a one-hour site safety induction which I observed. The participant subcontractors represented trade specialities that were needed at differing stages of the construction project; therefore, these meetings were the mutual platforms in which all collaborating partners were involved. The field observations were recorded by means of hand-written notes however, parts of the start-up meeting were video recorded with permission, in order to accurately capture the essence of the actions and discussions on site.

3.2.4 Semi-structured interviews

Interviews, in contrast to observations, enable the meanings attached to experiences in working contexts to surface through dialogue and probing questions (Collin, 2010). The purpose of the interviews, in this case study, was to understand the research participants' actions by obtaining information about the meanings they gave to learning in the construction work setting (Kvale, 1996, Seidman, 2013). Semi-structured interviews were conducted with research participants, the subcontractors and the management team of the medium sized construction company. These interviews were conducted in a dialogic manner to create rapport. Dialogue in this context was important as a means of sharing power in order to allow space for authentic discussion with the subcontractors to voice their thoughts and experiences of informal learning in the company (Kvale, 2006:481). As far as possible, these semi-structured interviews

were held at the construction site. Even though the observations were carried out on-site with all participants, two of the interviews were held telephonically at the main contractor offices at the request of the participants. Due to incompatible time schedules as well as the timeframe within which the data were to be collected, the decision to conduct telephonic interviews was pragmatic. The interviews, with each participant, were audio recorded and lasted approximately 45 minutes to an hour.

The interview was divided into three sections. A semi-structured interview schedule was utilised to ensure the consistency of the interview data collection process (see Table 3 – Appendix A). The interview questions used an open-ended design to enable researcher-participant dialogue which permitted the participants to elaborate on their answers. Additional probing questions, where appropriate, were employed to clarify the answers.

In the first section, I started off by thanking the research participants for availing their time. This was followed by an outline of the purpose of the interview and my role in the research process. My role was defined as that of a curious inquirer who wanted to comprehend the participants' learning experiences in construction communities of practice. Thus, the opening questions were to establish rapport, to clarify and confirm consent and to establish a brief outline of the respondents' backgrounds. There were two main questions in this area:

- *Tell me about yourself and the type of work that you do?* and
- *How did you learn to do this work?*

Even though these questions were specifically posed towards the subcontractor participants, matters related to rapport, consent and background were applicable to all participants.

In the second section, the research participants were asked to provide examples of all aspects of informal learning. The third section was designed around the general framework of informal learning in communities of practice of learning through participation: learning with and alongside experienced others, peer relationships, construction work practice (what they actually perform in the workplace) and identity. Guided by the aim of this inquiry and the situated theoretical framework espoused in Chapter 2, a construction context-specific interview schedule was formulated. Rule

and John's (2011:63) case planning template was adapted to incorporate the interview questions designed for data collection from all the participants in this inquiry (Table 3 – Appendix A). All interviews were audio recorded, with permission from the participants.

Interviews and field data were combined, to avoid any ambiguity (Silverman, 1993) in section 4.3 in the next chapter.

3.3 DATA ANALYSIS

To answer the main question posed by this study, data was collected from study participants using observations and semi-structured interviews. In keeping with the conventional content analysis process, the data utilised for analysis were generated directly from the study participants (Hsieh & Shannon, 2005).

The coding process as described by Saldaña (2013) was applied. Saldaña (2013) argues that coding is one of the significant steps taken that assists the researcher to organize and make sense of textual data. I immersed myself in the data (from observations and interviews) firstly by transcribing the data and by reading it repeatedly over a period of a month. During this iterative process I assigned codes and subsequently categorised data (Hsieh & Shannon, 2005). Coding and categorisation meant breaking down phrases in the transcripts into concepts so as to find meaningful interpretation of the collected data. During this process, however, I attempted to stay as close as possible to data phrases used by the participants. The coding process enabled me to categorise and interpret data concepts that illustrated situated informal learning within this case study construction practice, presented in section 4.3.

3.4 ETHICAL CONSIDERATIONS

This study presented complex ethical issues, particularly those raised by my position as a practitioner at the company where the research took place (Costley and Gibbs, 2006). Breen (2007:163) states that “insider-researchers are those researchers who choose to study a group to which they belong, while outsider researchers do not belong to the group under study.” The implications of being an insider/outsider researcher in this study is contestable.

According to Breen (2007), distinguishing the researcher position as either being an insider or outside may be simplistic. She contends that such conceptualisation may not adequately capture the magnitude of the researcher's level of involvement. However, the position of insider-outsider is acknowledged as an important one for consideration during the inquiry. Houtbeckers (2017) points out that insiderness-outsiderness determines access to participants and access is a requisite feature for rich data. The position of insider-outsider was important in this study due to the nature of the question and the research setting from which data were to be collected. How subcontractors perceived my inquiry position could have either promoted dialogue or compromised the study.

Brass and Burkhardt (1993:444) point out that power resides in the position and not the incumbent. Whilst my position came with the potential to use the position power to achieve my goal, my behaviour as myself, an incumbent ordinary researcher, meant that I actively ensured that the interactions I had with the research participants demonstrated respect through politely asking, acting humbly, taking my position as a seeker of knowledge seriously and by acting in a friendly manner at all times, making the participants feel appreciated and important. Additionally, by meeting research participants for interviews and observations, at their chosen meeting or working places, further reinforced the intention to minimise the influential power of my position.

An additional ethical consideration for this study included participant consent and confidentiality. The participants' privacy was maintained by reporting data anonymously (even though the participants were known to me) (Henning, Van Rensburg & Smith, 2004:73-74). Written consent was obtained from all participants prior to conducting the study. Each participant received a letter with detailed information about the aim of the study, the participants' expectation, the research process and about my details in relation to my academic pursuit (Appendix C). The signed consent forms were for the participants' and researcher's records.

All collected and transcribed data were securely kept at a lockable private office. The data report was made available to the research participants for verification and validation. Additionally, ethical clearance from the Stellenbosch University REC

Humanities Ethics Committee was sought and obtained prior to commencing with the study, the ethical clearance project number: CUR-2017-0478-592 is attached as Appendix B. Permission to conduct the study in the construction organisation was also obtained from the Contracts Director of the medium-sized construction company where the study was conducted (see the attached letter, Appendix D).

3.5 LIMITATIONS OF THE STUDY

Given that the present study was an exploratory study within a Namibian context, there was limited context specific literature. However, the study drew from a broad and rich literature, where possible from similar contexts, such as construction organisations in South Africa and other construction-based case studies. This study was designed as an interpretive study based on a small sample of subcontractors in a medium-sized organisation in Windhoek, Namibia. The findings were not intended to be generalised to a population beyond the case study, but to offer empirical insights to clearly understand the role of informal learning in a construction workplace.

One of the limitations of the study is perhaps based on cultural differences and language. All the research participants were male Oshiwambo speaking (except for one) and even though English is an official language of communication during observation on site, certain explanations were done in Oshiwambo thus, limiting full understanding. It is for this reason that interviews were of utmost importance to gather more detailed data and clarification. The interviews allowed me access to a one-on-one dialogue with each participant, thus enabling deep probing into each of their experiences. The interview process was critical for achieving the aim of this study i.e. to understand the role of informal learning based on the participants' perceptions and experiences of the participants.

3.6 CONCLUSION

This chapter has detailed the research design and methodology adopted for this study of the role of informal learning in a construction workplace. An interpretive case study design was applied to the study. Conventional content analysis was used in order to interpret data from the participants/respondents in a construction company. The data gathering and analysis section has shown the cognitive and reflexive process that was applied to establish how participants made meaning of informal learning by analysing

their perceptions, understanding and experiences. The chapter has provided the roadmap for the study, even though this was not cast in stone. The chapter established a foundation that guided the process of data collection, analysis and finally the findings as will be discussed in Chapters 4 and 5 below.

CHAPTER 4

DATA COLLECTION AND FINDINGS

4.1 INTRODUCTION

The previous chapter provided the methodological roadmap that guided the data collection and analysis process. Chapter 4 presents findings based on the original question and sub-questions posed in this study. The main aim of this study was to understand the role of informal learning in the construction workplace based on the views and experiences of subcontractors. The chapter begins with an explanation of the study population followed by the data analysis process, then the findings and finally the conclusion.

4.2 STUDY POPULATION

In the sample section 3.2.2 the target group was community of four local subcontractors who have historically worked collaboratively with the main contractor company for a period of between one to four years. These subcontractors were typically categorised within the SME profile, with employee complements of between 1 to 10 employees and a turnover of between N\$300 001 to N\$3 000 000 per annum (Namibian National Policy on Micro, Small and Medium Enterprises in Namibia, 2016:7).

The participant subcontractors and three managers/supervisors from the medium-sized main contractor company represented a typical subcontractor complement for a three-month short-term building project in this medium-sized construction company. It was envisaged, therefore, that this sample would provide a broad and rich understanding of learning which is embedded in everyday practice, in this context.

The participants are referred to by descriptor acronyms and the following section presents their biographical data:

- Electrical subcontractor (EKAS): After completing his Grade 12, he enrolled for an engineering course. He was later forced to discontinue his studies due to financial difficulties. He subsequently received a government bursary which allowed him to enrol at the Namibia Institute of Mining and Technology (NIMT), where he eventually graduated with an N4 electrical trade certificate. He later

furthered his studies at a Cape Town-based college where he graduated with a N6 electrical wireman license.

- Plumbing subcontractor (MPSP): Completed his Grade 12, and thereafter enrolled and eventually graduated with a N4 trade certificate from NIMT.
- Engineering technician (BETA): Was awarded a study bursary from one of the construction companies in Namibia after passing Grade 12. He studied and completed an engineering certificate. He continued his studies and obtained a diploma in construction.
- Engineering technician (PETS): He was awarded a government bursary after passing Grade 12. After being awarded a diploma in civil engineering, he later enrolled for a BTech degree in civil engineering, whilst working as a subcontractor.

For triangulation, the supervisory management of the main contractor company, made up of the Contracts Director (OMCD), the Site Foreman (SASF), and the Health and Safety Officer (CHSO) were interviewed separately. The main contractor personnel were selected as they were best placed to provide authoritative insights into the informal learning aspects in this organisation. The data discussed in this section were generated from participant observations and semi-structured interviews.

The aim of my observations in this case study was to understand the site processes where learning in practice occurred amongst the community of practice members during the project phase. My role in the meetings as a participant observer was to actively participate in site processes such as induction, record keeping of all site members who were 'trained' on site requirements like health and safety. I was also involved in signing work engagement contracts with temporary workforce members. This was an opportunity to observe first-hand the activities of the community of practice on site during the project phase. My participation in both the start-up meeting and the progress meeting had a particular situational focus on the informal learning phenomenon. This meant that my attention was directed at the 'situation' aimed at a particular description delimited in time and space (Gherardi & Nicolini, 2002:199).

The findings section that follows is a descriptive presentation of data based on the sub-questions that supported the comprehensive answer to the main question. Given

that informal learning is marred with blurred terms that are used interchangeably (section 2.2.1), clear distinctions in this analysis was not always achievable. Therefore, the descriptions of data may include overlapping ideas related to the participants' activities and the meaning they ascribed to their experiences.

4.3 FINDINGS AND DISCUSSION

The situated learning theoretical lens, presented in Chapter 2, and the methodology laid out in Chapter 3, informed the analysis and findings.

4.3.1 The context of learning in the case study construction workplace

Typically, the construction site operations for a building project similar to this case study involves a number of actors that come together to implement a project within time and budget and approved specifications.

For every site activity the staff members present include the Site Foreman, as a member of the community of practice, is overall in charge of workforce supervision (workers and subcontractors), project performance in terms of quality and timely delivery, as well as day-to-day communication with of all members of the community on site and off site. Those that he communicates to include, the local subcontractors, the client, engineers, consultants and architects on behalf of the main contractor.

Generally, at the start of each day on site, the site community, made up of the workforce members of various trades, the Site Foreman, labourers and local subcontractors, attend a toolbox talk. A toolbox talk is an informal group discussion that focuses on a particular safety issue. These talks are held daily to promote a safety culture as well as to facilitate health and safety discussions on sites. Toolbox Talks are brief discussions of between 10 to 15 minutes of relevant safety issues in which any member of the workforce may lead the discussion. These talks do not, however, replace formal safety training. Toolbox Talks can be used for safety incident communications, pre-task planning and as on-site informal hands on training. Immediately after this talk the Site Foreman will usually address/instruct the site team on the activities that must be achieved for the day.

Prior to the official project start, the main contractor holds a start-up meeting, to set out plans and adequately to prepare all members for the upcoming project. These plans are related to project needs, timeframes, specification and overall manpower and the induction of project community members on site health and safety rules and regulations. The site induction on site, in this instance, provided all the workforce members with a deep understanding of the main contractor's overall policies and procedures, with particular attention to the specific aspects of the current project. At the outset the induction programme exposed the community members on site to the health and safety philosophy of the company, which is 'do no harm to people and the environment' coupled with the ethos of 'zero fatalities' on-site. The induction programme sought to entrench this culture by providing active demonstrations of safe acts (through videos and actual site practice). The programme sought to entrench the culture also through active dialogue with all site members about what health and safety was, why it was important for everyone (on-site and company-wide) and how it might affect everyone, not only physically, but emotionally and financially as well. In attendance at the induction were members of management (Contracts Director, Human Resources Director, Health and Safety Officer, Foreman) who formed part of this informal yet well-structured dialogue. Site members had the opportunity and with management. An example of one of the learning interaction was from a member of staff (a labourer) who asked the Contracts Director 'I have been working without gloves for a long time and I am fine, why must it be a problem now?'. The response from the Contracts Director was '...we practice safety because we value life, we value you...'. This statement highlighted the safety culture that was being discussed. At the induction session particularly, the subcontractors' recommitted to safety through resigning policies and procedures of the company.

The project start-up meeting, which I observed, occurred on site in the Oshana region, in the northern-central part of Namibia. The capital city of the Oshana region is Oshakati, which is known for its dense population, relative to Windhoek, the capital of Namibia. The project discussion entailed the building of a new fuel service station, which included the installation of fuel pumps, tanks and canopies, the construction of the retail building, as well as the installation of heating ventilation and an air conditioning system. The main contractor in this case study was contracted to construct the retail building, including external civil works such as the roads, the

courtyard paving, the water and sewer reticulation, the storm water drainage, and all the electrical installations.

The project start-up meeting was attended by the community of practice made up of subcontractors and members of the main contractor workforce i.e. the Contracts Director (a project manager), the Site Foreman, and the Health and Safety Officer. The nominated subcontractors were also part of the meeting (nominated subcontractors are appointed by the client but are supervised by the main contractor throughout the duration of the project). The aim of the start-up meeting it appeared was to ensure that the scope of work and all related project expectation were discussed in detail. This discussion it appeared wanted to produce alignment of intent and purpose to accomplish high quality project outcomes. The meeting proceedings focused on elaborate communication on approved project specifications and timeframes for clear understanding and to achieve, according to the Contracts Director, 'smooth collaborative processes' throughout the project. This was done through the Contracts Director's translation of design specifications into daily, weekly and monthly activities through a project programme.

The programme was central to the discussion about the scope of work as it set out, visually, the sequence of activities that were for timely delivery of the project. The bill of quantities and project drawings were two other artefacts that were core to the interactions during the meeting. The Contracts Director referred everyone to the bill of quantities and project budget as the important guides for resources such as building materials procurement and the overall financial performance of the project. Whereas the programme was about the correct sequencing of work, the bill of quantities was the estimated quantities of the project activities. A set of building drawings were discussed at length. These artefacts in this community were integral to the practice of construction project operations and outcomes.

The drawings, for example, were a source of much debate. What appeared crucial at that stage was the ability of the community members to accurately read and understand the project drawings. This debate included asking questions, information exchanges around the table, and pointing at areas in the drawings that needed more information, and special engineers' approvals.

Interestingly, throughout the start-up meeting, there were periodic shifts between serious talk about project objectives and budgets, and impromptu construction jokes, which were followed by laughter. It may be hard to tell whether this was a random act. Other observations on site and further probing suggested that the act of telling jokes and bursts of laughter were an indication of camaraderie. These participants statements suggest this:

I prefer to work with the main contractor that you used to work with because if you are working with a person who knows you, he will call you and will inform you before something happens. (EKAS)

...you have to get along because at the end of the day a union works only when there is mutual respect.... (BETA)

This sheds light on the nature of working with others in construction project practice that requires a level of mutuality to facilitate working and learning in a community (Wenger, 2010).

The progress meeting, on the other hand, was attended by all the participant subcontractors, the Site Foreman, Health and Safety Officer, Contracts Director, engineers/consultants, client representative, the architects and the nominated subcontractors. The progress meeting involved monitoring the project progress, the quality of work, the valuation of performance of site teams and finding solutions to project challenges. This was to be a dynamic process in which there was vigorous talks about the progress, and in most instances, the lack of good progress in certain areas. The active engagement with all was geared towards problem solving processes and action plans to address immediate and foreseeable project problems. It was an act of constant negotiations between the client, the engineers, the Site Foreman and the subcontractors. The meeting allowed the sit community to spend time on action items and on direct activities to assure continued progress. The most critical skills and activities needed at this stage appeared to be the ability to analyse the project needs and to communicate clearly with all community members and other stakeholders (clients, engineers and consultants), what action was needed to resolve the issues at hand. Most of the communication and general project interactions were through face-

to-face meetings, however written communication in the form of minutes of the meetings, reports, site diaries, site instruction books, were also important project management artefacts in this community.

In view of this, site meetings appeared to more than routine construction activities, but were critical work practices within which working and learning were not distinct activities.

4.3.2 Informal learning experiences in a community of practice

The question posed to the participants was: 'Can you tell me about the activities you do or have done at work that have provided you with opportunities to learn?'

During observations and subsequent interviews, the participants highlighted that learning experiences in a construction workplace were primarily part of doing work, a social practice. Lave and Wenger (1991) posit that learning is integral and inseparable from human activity. What became clear about learning in a construction project community was that learning (as defined in educational terms) was not the objective, instead work was the primary focus. BETA's statement sheds light:

When I was first on the site I was put with the General Foreman and he took me through the site from point A to point B. He explained to me what the activities are, and then after that I was put with the Project Manager so that he explained to me the commercial side basically of the project. On site I got the technical explanation and with the Project Manager I got the commercial side and the contractual side of the project...

When you get to the commercial and contractual side you basically work from the bill of quantities and also on specifications which you also do on site as well. But what happens mostly in the site office is, the quantities need to be checked and normally that comes from different sources. The consultant or the consulting engineer will give you drawings and specifications to say this is the level of the road, this is the number of layers that we want, this is the classification of those layers and you need to make sure that you build according to those specifications. The surveyor will go out and will pick up the levels that the levels are according to what was given to you. The Lab will go do the soil testing to make sure that densities are correct, the compaction is correct your CVRs are correct and with all of that you write to the engineer and you say that

this is our evidence we've done this job according to what you want now you must pay us the required amount that is stipulated in the bill of quantities...

So you only start to realise the value of all the information that you get from site once you are in the position to, you know, compiling and recording that information.

(BETA)

Built into work activities were opportunities to learn as illustrated by this Site Foreman's statement:

On site, I can say the site can be a learning situation for everyone. The site contains different people from different levels and different working backgrounds... So meaning construction is a learning point to everyone who is willing to learn. You can learn either from the bricklayers, even myself when I came I didn't know how to lay bricks because I did not do bricklaying but then now if you put me on the line I can give you 500 bricks per day. So meaning that just because I'm a supervisor I cannot learn bricklaying from the bricklayers so which means we are both learning from each other. If you are willing to learn, you can learn from what they are doing. (SASF)

Beyond technical (hard) skills, learning of soft skills appeared salient within this community membership. Meetings were described as events that allowed different actors to work together and to influence the work activities of other project community members. So, for the subcontractors, the main benefit of participation in project processes, such as start-up and other site talks and meetings (such as daily meetings and toolbox talks), was the opportunity to work with others. However, through working with others on site, opportunities for learning tangible performance skills such as developing an action plan, problem-solving and project planning were realised:

In progress meetings we normally discuss previous work, let's say last week's activities that were supposed to have been completed, if it hasn't been complete, why it hasn't been completed and you discuss the way forward in solving that issue and you'll assign the resources to solve that issue. So weekly we see what must be done next, what's of the schedule for next week, but those resources should have been assigned at the beginning of the project so what you are doing now is only coordinating those resources. (BETA)

The role of engagement in practice appeared to be associated with concomitant understanding of construction rules and norms which are essential for subcontractor performance and appeared to translate into positive identification with construction projects.

As an individual when you perform or when you work on a project there is mostly a sense of pride you attach to it and whenever someone brings up that the building of a service station in Otavi, you can positively say I was involved in that project. So, it is mostly a positive thing to be, you know, connected to the idea of being a competent construction worker. (BETA)

So, there is an element of practical learning seeing how people are interacting on the project and to see how people are doing on the project.

...communicating regularly is critical for work progress and continuous updating of work. (PETS)

Working with different foremen at the site and as we are subcontractor or as we are electrician on site, where we are working it's like we are followers because when we want to lay our pipes on the floor we have to wait for builders to compact the sand and then they call us, OK we are ready for you to put your pipes... So it is a matter of good communication to get support. (EKAS)

...Mostly for us, we are now working for big companies, for service stations...It is important to understand that you cannot just take anybody....if there is someone driving around, they will say I saw MPSP, he finished a site in Mariental... it was nice, he is a subcontractor. You are feeling good. (MPSP)

What these comments illustrate is how they internalised understanding of the construction project environment provided these subcontractors with an opportunity to develop particular communication skill that facilitated relationship building which, by extension, may have contributed to the achievement of project outcomes. In these comments, the subcontractors derived a sense of pride in belonging or being part of the process of producing quality outcomes. This data corresponds with Wenger's (2000) statement about the engagement with others that profoundly shape one's

identity and a sense of belonging. Schugurensky (2000:5)) posits that informal learning can be socialisation such that after many years of a particular practice that a culture is rooted in everyday practice in a way that people assume that such is the only natural way to do work. Viewed in this way, the induction processes, meetings and on-site talks amongst the community of subcontractors and the main contractor may be a glimpse of the learning experiences as a socialisation or enculturation processes. The statement by the company Health and Safety Officer provides insight:

For every new site we require that the subcontractors be inducted....It heightens their understanding of the importance and the seriousness of (construction) safe practice. So it sort of give them, it forces them to change their habits to change their attitudes towards the activities that they do every day. For an example, you will see them coming to ask you for personal protective equipment like the dusk masks if they don't have or you will see them inquire something like earplugs so that they can go do those activities... So it guides them and it also gives them the opportunity to change because in most cases this is a very hard thing to do, I'm not sure really how hard it is but it is like a culture it's very difficult to change people's culture so you really have to be persistent, you'll really have to be there present reminding them that no let's do it like this because there's sort of an implication that follow if these are not done. (CHSO).

This statements above gives a clue into identity formation which appears to develop as a result of member alignment to shared values and goals (Lave & Wenger, 1991). In this case, site induction and meetings were some of the workplace processes that appeared to shape the subcontractor learning experiences and access to project specific information and situated knowledge. How subcontractor learning changes their social behaviour to think and act like members of a construction community may be confirmation of the idea that subcontractor learning may not be inhibited by the lack of formal documents or other written instructions and information rather by a lack of verbal instruction denoted by relational interaction at the beginning and during the course of the project (Styhre, Josephson and Knauseder, 2006).

Construction work is complex and context-specific thus participation in situated workplace processes such as site conversations, discussions, listening, observing as well as networking and sharing information; were perceived as vital components of

continuous learning for successful performance in ongoing projects. During project operations fellow community members engaged one another through these processes. Responses from the participants on the question posed about 'what work activities, if any, contribute to your learning of knowledge and skills in your work?', indicated that engaging in these activities may be intentional acts of seeking knowledge that they can apply to improve themselves and their work area:

My learning experience normally extend when we are discussing the job. You normally have different guys discussing the job including the foreman as well. You could be used to doing something in a particular way but somebody else tells you and they give you examples of how they have done it on other sites and you actually realise that it could work on your site as well and you could actually make contributions through that.... (BETA)

There is learning just from looking at what others are doing. (EKAS)

When you see someone working differently from you, you have to change in order to comply with work. (MPSP)

These comments reveal that informal learning in this construction workplace was best achieved through everyday conversations, observations and discussions with fellow community members that includes the Foreman on site. These intentional activities were perceived as important learning experiences that 'extend' ones understanding of the job, site expectations and project outcomes. Even in situations where mediating artefacts, such as the bill of quantities and drawings were used, informal on-site discussions were still the sources of learning of situational site/project needs like clarifying rules and work expectations as stated by MPSP.

Learning amongst members of the community did not appear to be governed by hierarchy, in other words, any community members listening and/or observing during site operations could benefit. This statement gives insight:

When you are working in a team environment, then it is actually a good thing because you can easily observe from different skills of other workers and then you can take those skills and kind of mould it into your own. (BETA)

In this comment on-site activities such as listening and observing others were depicted as arenas of learning wherein observed skills could be moulded into personal set of expertise not only for performance but also to fit in the organisational environment.

Accountability to others in a community increases the need for knowledge sharing (Eraut & Hirsch, 2010). Whilst the participants acknowledged verbal sharing as a regular information sharing activity, they also mentioned that technology-aided forms of sharing, were equally reliable sources of informal learning, especially when used to complement each other. Short text messages on mobile phones (SMS), e-mails, minutes of meetings and *WhatsApp* messages were among some of the main forms of information sharing methods and activities, which were considered to offer longer-term reference records and transfer of valuable information amongst practitioners. The use of technology-aided platforms was an important aspect of learning as technology can be used for innovative practices. The act of sending SMS or messages via *WhatsApp*, in this organisational context, enhanced community engagement and alignment towards shared goals of solving site problems and providing mutual support to members as site operations are in progress (Wenger, 2011). According to these subcontractors, technology-aided interactions, such as the current company-wide *WhatsApp* group, were an excellent form of generating situational ideas, actions and reflection. For example, the subcontractors expressed that the *WhatsApp* group also provided visual records that showed actual company projects as well as the quality of work, which allowed useful exchange of ideas and sharing of best practice from which they could learn:

The company group for example, where a lot of media videos get shared, a lot of communication takes place, that can also be an example of how learning happens outside of work because a lot of times photos and stuff are shared after hours and people notice the type and quality of work that is being done. (BETA)

This comment is noteworthy as, from the perspective of the community, the use of technology-aided information sharing was perceived to stimulate the integration of knowledge from different projects for collective community learning and project progress.

4.3.3 Situated informal learning of workplace knowledge and skills

The knowledge that transpires from the construction practice is often depicted as tacit in nature. According to Eraut and Hirsch (2010:14), tacitness is not a single type of knowledge but an attribute of several types of knowledge such as situational understanding, intuitive decision-making and routine procedures. The participant subcontractors' knowledge of construction practice was demonstrated by their ability to operate within the collaborative project team and their general understanding of construction work. The participants' illustrated their knowledge of construction practice when they described the time-bound and cost-driven nature of construction which demanded that they work with a plan that ensured that all needed resources for project implementation were mapped out:

You have to work with a plan. You say like, the tender is for four months, you have to draw your plan to say, this one I pay my workers, I buy my material, and this is my profit. You have to check that ...you also need petrol to drive. (MPSP)

In construction, everyone is working for money, so sometimes the guy will say I want to do it until this level then I will get this amount...Most of the time we talk to the main contractor or foreman on site because... not know the sequencing of these project applications can cause delays for the project...otherwise we would have to repeat work. (EKAS)

Knowledge of a situated nature, based on these comments, was related to planning of, for example, anticipated financial resources required for the project, as illustrated by MPSP. Additionally, the understanding of a construction cultural practice, which is prone to conflict due to time constraints is illustrated in the second comment by EKAS. The aspect of 'following the sequence' on site, suggest particular practice knowledge about project implementation processes which require skilful practice and careful communication with others on site to avoid 'repeat work'. The subcontractors' implicit understanding of contextual knowledge, through the participants' continued interactions and experiences from past projects appear to have created a shared repertoire of project practice in relation to, in this case, time and cost of project operations. In other words, project practice outcomes appear to be contingent on the

situated knowledge and skills put into practice by subcontractors based on construction practice expectations:

...there is also an element of the administration side that if I do not finish my project on time it will have a negative effect on what I would have made had I finished my project on time. (PETS)

This comment suggests that subcontractors' internalisation of community practice shapes their actions as members of a project community. It also, more importantly, suggests the importance of social practice as a participatory process that enables the development of situated knowledge and skills of individuals and, by extension, also of organisations. For example, the comprehension of construction artefacts such as project programmes, scope of work, etc. and the apprehension of construction norms and procedures were referenced by successful completion of projects. The participants' reports show that situated knowledge is embedded in its context and its application illustrates the subcontractors' understanding of the situated construction practice and culture. Based on the participant subcontractor responses, being able to participate could be evidenced by the way they understood the construction context which informed how they applied their particular know-how to perform as members of a collaborative team of practitioners.

4.4 CONCLUSION

In exploring the role of informal learning in a construction workplace, the findings reported the participants' views of situated informal learning in a construction workplace. The format of this reporting was designed to give illustrations of informal learning through practice in this construction project community context. Based on the findings, it appears that the nature of learning in this construction SME was positively influenced by its underlying cultural practice of meetings, open communication and close working relationships, espoused by the management of this organisation. The ease of communication with all levels and members of the workforce in the organisation and on site appear to have promoted community membership engagement. What and how these subcontractors learned in this construction case study could have been influenced by the organisational setting and its culture (Lave & Wenger, 1991; Gherardi, Nicolini & Odella, 1998 & Tyre & Von Hippel, 1997). The

participants' reports show that situated knowledge is embedded in the construction project context and to understand its utility and application, one must understand the situated construction practice on site and the organisational culture. The organisation's ability to translate written specifications, construction rules and regulations into actual practice and interactions based on trust, were positively regarded as providing access to participation and a shared repertoire of construction project practice.

Even though learning was not always visible, situated informal learning in this project community enabled individual and collective team performance. The findings described the everyday activities and practice that the subcontractors perceived as crucial for learning in this context. According to the subcontractors, construction site practice created opportunities for conversing, discussing, listening, observing and information sharing which were key informal learning activities during the course of work. Based on the subcontractor reports, these activities were sources of construction knowledge practice which supported the subcontractors' understanding and their ability to speak and act in accordance with expected construction practice.

For these participants', informal learning in practice communities was linked to gaining access to the norms, rules and procedures in this construction workplace. The induction process of practitioners at project start-up and throughout the life of the project, were perceived as legitimising participation which incrementally instilled a sense of belonging and identification with the project community of practitioners. The findings, ultimately, suggest that situated informal learning in practice communities has the potential to be the major source of development of situational knowledge and skills for individual and collective performance, however such potential may be realised in an environment that recognises its value and cultivates support for it.

CHAPTER 5

CONCLUSIONS AND POSSIBLE IMPLICATIONS

5.1 CONCLUSIONS

The conclusion in this section is drawn from the participant observations and interviews conducted with a community of practice made up of four subcontractors and three management representatives of the case study construction SME workplace. These subcontractors were typically categorised within the SME profile (Namibian National Policy on Micro, Small and Medium Enterprises in Namibia, 2016:7). The study utilised conventional content analysis to interpret raw data from which context-specific concepts/themes, that were able to answer the question, emerged. The main aim of the inquiry was to understand the role of informal learning in a construction SME workplace based on the perceptions and experiences of subcontractors. The participants were asked a range of questions that covered their perceptions and experiences of informal learning in this construction project context. Chapter 4 provided answers to the semi-structured interview questions posed by this inquiry. The participant subcontractors were asked a range of questions in a construction workplace. The questions focused on how a community of subcontractors experienced or perceived their learning based on the work involvement in a construction workplace (nature of learning in construction); what activities they perceived were important to their learning at work (activities that provide learning opportunities); and in a way in which the construction practice was perceived to contribute to situated knowledge and skills in a construction workplace (work practices that contribute, if at all, to knowledge and skills). The following section is a synthesis of data, theory and the conceptual framework that were foundational to this study (refer to chapter 2).

5.1.1 What is the nature of learning in a construction workplace?

The nature of work in a construction workplace is naturally inclined to collaborative working with partners in the industry such as the subcontractors. The data established that the construction SME workplace provides a range of opportunities for learning. Learning in this construction workplace is dependent on participation opportunities in the project operations based on communication and trust which are at the core of this construction workplace cultural practice. In line with the conceptual framework in

section 2.3, the subcontractors reported that learning in this construction SME was provided for by work engagement and learning processes 'at or near the workplace' (section 2.3) that created access to legitimate participation in a project knowledge and information. These learning processes included:

- (1) start-up and progress meetings and other site meetings (such as daily meetings and toolbox talks);
- (2) induction into site and organisational cultural norms and expectations;
- (3) working alongside others such as the foreman and other co-workers and fellow subcontractor practitioners; and
- (4) participation in project activities to tackle project challenges

The findings display patterns of evidence about the role of informal learning through engagement in everyday construction project practices. By identifying the workplace processes, the data provide insight into the nature of learning in this construction SME workplace as a product of participatory processes in which learning is derived from practice (Tynjälä, 2013).

According to Choy et al. (2016), subcontractors rely on construction workplace processes provided by the scope of work activities and the interaction relationships with other co-workers and managers, for their learning and rapid adaptation to construction work. The subcontractors reported that the organisation of community collaborative working on site contributed to participation opportunities that exposed them to work processes within and across team boundaries. The findings indicate that situated informal learning of the community in this construction workplace is stimulated by continuous social interaction through daily project operations whenever there are problems to be solved or information to be sought from knowledgeable others such as engineers, clients or the foreman on site.

Billett (2011) argues that the social and physical settings afford contributions that provide access to artefacts and situationally pertinent goals for achieving and managing performance. Subcontractor engagements with collaborative community members were mediated by construction artefacts such as project programmes, objectives and scope of work, that shaped their experiences of learning. However, for the subcontractors, more than artefacts, conducive learning opportunities were

afforded by the interconnectedness of site activities which necessitated continuous communication with others in the community on and off site (Gherardi & Nicolini, 2002; Styhre et al., 2006). For example, site meetings were perceived to contribute to addressing immediate questions and problems related to the collaborative community and project issues about resource allocation, planning, ad hoc and unique site challenges that needed pragmatic solutions.

Wenger (2000) suggests that engagement is one of the modes of belonging which profoundly shapes one's identity. Based on subcontractors' comments, engagement in this construction practice facilitated socialisation (through induction) and concomitant understanding of construction rules and norms which are essential for legitimate participation, learning and identity within the construction workplace context (Lave & Wenger, 1991).

The workplace engagement processes which are routine or 'taken-for-granted' on a construction site, develop the individuals and the organisation through context-specific joint learning and on-the-job experiences of construction practices for successful project outcomes.

5.1.2 What are the subcontractors' experiences of the workplace informal learning in a construction workplace?

The work activities identified in the data indicate that workplace learning experiences support the development of situated construction expertise. The subcontractors reported that they derived learning from activities 'located within work' such as conversing, discussing, listening, observing, sharing information and using mediating artefacts on site, as indicated in section 2.3. The role of informal learning in this construction workplace is gleaned from data in chapter 4. For example, BETA stated that discussions on site with others and the daily operational activities, afforded him the opportunity to 'actually realise' how things at work could be done differently. The site activities were important learning experiences that 'extend' the subcontractors' understanding of the job, site expectations and project outcomes. On-site activities such as listening and observing others were depicted as arenas of learning wherein observed skills could be moulded into one's own set of expertise. These comments reveal that the learning experiences of subcontractors in this construction workplace,

to a great extent, relied on informal interaction activities related to how to do work on site. Even in situations where mediating artefacts, such as the bill of quantities and drawings, were used, telling and showing, were still the main sources of learning of situational site/project needs (Styhre et al., 2006). According to the BETA's comment, discussions triggered reflection which assisted him to adjust his action to improve current and future action. Marsick and Watkins (2001) state that, informal or incidental learning becomes more valuable when individuals can reflect on their experiences and thereby gain insight into how to improve their performance. Overall, participants regarded daily interactions with others in the practice community as important learning experiences that allowed them, in a way, to work and learn with one another during the course of everyday project work activities.

Dainty et al. (2006) argue that information flow in the construction project environment is not a random act, but it is contained within the organisational culture. According to the subcontractors, technology-aided interactions, such as the company-wide *WhatsApp* group, were an excellent form of sharing that potentially enhanced the community members' work and learning, generation of situational ideas, actions and reflection. From the participants' perspective, the use of technology-aided information sharing was perceived to stimulate the integration of knowledge from different projects for collective team learning and project progress.

5.1.3 What work activities/practices, if any, contribute to the informal learning of knowledge and skills?

The participants' reports provide evidence that construction knowledge is embedded in its practice context and to understand its application, it is pertinent to take a wide view of situated construction practice and culture in this construction SME workplace. The subcontractors perceived their abilities positively and associated their practice knowledge and skills with being 'a competent subcontractor'.

Knowledge is an activity that constitute practice (Gherardi, 2009:121). Based on the subcontractors' responses, being able to participate in project practices was illustrated by how they applied their particular know-how to perform as members of a community. Gherardi and Nicolini (2002:208) suggest that language in practice is used to produce and carry meaning whilst also creating fundamental impressions about how work

should and should not be done. The participants illustrated their knowledge of construction practice when they described the time-bound and cost-driven nature of construction which demanded working with a plan that ensured that all needed resources for project implementation were mapped out.

Knowledge of a situated nature, based on these comments, was related to planning of, for example, anticipated financial resources required for the project, as illustrated by MPSP's comment. Additionally, the understanding of a construction cultural practice, which is prone to conflict due to time constraints is illustrated by EKAS' comment. The aspect of 'following the sequence' on site, suggest particular practice knowledge about project implementation processes which require skilful practice and careful communication with others on site to avoid 'repeat work'. The subcontractors' implicit understanding of situated contextual knowledge, through the participants' continued interactions and experiences from past projects created a shared repertoire of project practice in relation to, in this case, time and cost of project operations. Successful project outcomes were contingent on the situated knowledge and skills put into practice by subcontractors based on construction practice expectations.

Specific examples mentioned by participants that revealed construction cultural and managerial practice were interpreted based on the conceptual framework in section 2.3 which helped locate this learning as a 'by-product of construction work processes':

- (1) the practice of planning their financial, material, human resource as well as work sequencing for effective site activity implementation;
- (2) understanding the administrative side of the project that heightened awareness of negative consequences of not completing project activities on time; and
- (3) the idea of understanding and practising site safety.

Data indicate that, informal learning in construction practice communities has the potential for developing context specific knowledge and skills that can stimulate individual and organisational performance, particularly, construction project performance.

5.2 POSSIBLE IMPLICATIONS

The role of informal learning in the construction SME workplace is an important inquiry especially in Namibia, where collaborative working with subcontractors is a norm. Despite its importance, this type of learning remains understudied as a source of valuable contextual knowledge and skills in the construction industry. This study was an exploratory inquiry therefore, it reported evidence based on participants' subjective perceptions at one point in time. The study highlights the role of situated learning in the community of practice and the contributions informal learning potentially make in a construction workplace. The inquiry is not exhaustive and does not claim to represent the construction SMEs in general, rather it presented findings and exemplary knowledge of a community of practitioners in one organisation as a single case in time. Nevertheless, the study provides a useful insight into the role of informal learning, which can potentially assist the development of individuals and the construction workplace.

These findings have implications for how an organisation can provide appropriate management support that can possibly promote this learning and harness it for individual and business growth. Management however, may need to consider providing infrastructure to support and enable these community members to apply their knowledge and skills effectively. Based on the findings of this study, one way in which management can support the community of practice appears to be through building on the notion of 'virtual connection' taking into consideration the current use of WhatsApp and SMS mobile platforms. In other words, the managers' cultivation of informal learning through setting a climate and encouraging their workforce to take informal learning as an integral part of their working, may not only be useful for individuals, but can also contribute to organisational development (Vaughan, 2017, Eaut & Hirsh, 2010). The findings similarly agree with Billett (2014), who advocates for practice pedagogies that are rich in different kinds of interventions such as storytelling, discussions and guidance by experienced others, which can enrich learning experiences in practice settings. Even so, cognisance of the uniqueness of each workplace context should be taken. Therefore, it is proposed that critical application of literature and findings that account for the uniqueness of each Namibian workplace setting is required.

The final assessment from this study aligns with the conceptual framework in chapter 2 which points out that learning and adaptation in a construction workplace rely on processes provided by the scope of work activities and the interactive relationships with other co-workers and managers. Ultimately, informal learning gives teams and collaborating members 'the tools experts have traditionally held to themselves' so they can develop themselves and the organisations with which they identify (Watkins, 2017:222).

In conclusion, the inquiry can benefit from a longer-term study with a bigger population to enhance its generalisability. Future studies can also focus closely on the question of how construction SMEs in Namibia can facilitate informal learning in their management of performance within internal teams and across-firm collaborating team members. It also appears that the question of how construction SMEs can capture situated informal learning to manage organisational memory requires further exploration.

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APPENDIX A

Table 3. Semi-structured interview schedule

Main question: What, if any, is the role of informal learning in a construction workplace				
Sub-questions	Data sources	Data Collection methods	Data collection instruments	Lists of interview questions: Subcontractors
Sub-question 1 What is the nature of learning in construction?	Literature review, Observations, Participant subcontractors: Plumbing, Electrical and 2 x Engineering Technician and main contractor staff: Contracts Director, Site Foreman, Health and Safety Officer.	Interviews and observation	Interview schedule and observation field notes	1. How did you get involved in construction work?
Sub-question 2 What are subcontractor experiences of informal learning in construction?	Observations, Participant Subcontractors - Plumbing, Electrical, and 2 x Engineering Technician and main contractor staff: Contracts Director, Site Foreman, Health and Safety Officer.	Interviews and observation	Interview schedule and observation checklist	1. How did subcontractors get involved in construction work?
Sub-question 3 What work activities/practices, if any, contribute from learning of knowledge and skills?	Participant Subcontractors - Plumbing, Electrical, and 2 x Engineering Technician and main contractor staff: Contracts Director, Site Foreman, Health and Safety Officer.	Interviews and observation	Interview schedule and observation checklist	2. Can you tell me about the activities you do at work that have provided you with opportunities to learn?
				3. What work activities/practices, if any, contribute to learning of knowledge and skills?
				2. Can you tell me about activities subcontractors do at work that you think have provided them with opportunities to learn?
				3. What work activities/practices, if any, contribute to learning of knowledge and skills?

(Adapted from Rule & John, 2011:63)

APPENDIX B



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NOTICE OF APPROVAL

REC Humanities New Application Form

29 August 2017

Project number: CUR-2017-0478-592

Project Title: Understanding the role of informal learning in the workplace: a case study in construction

Dear Ms Lungisile Mareka

Your REC Humanities New Application Form submitted on 10 August 2017 was reviewed and approved by the REC: Humanities.

Please note the following about your approved submission:

Ethics approval period: 29 August 2017 - 28 August 2020

GENERAL COMMENTS:

- 1) Please keep in mind that the data collected as well as the signed consent forms need to be destroyed after 5 years.
- 2) Because the researcher is working for the company, the researcher believes that institutional permission is not required. Granting institutional permission and being aware of the study are two different aspects. It is the prerequisite of the company to grant or request the researcher to apply for institutional permission.

Please take note of the General Investigator Responsibilities attached to this letter. You may commence with your research after complying fully with these guidelines.

If the researcher deviates in any way from the proposal approved by the REC: Humanities, the researcher must notify the REC of these changes.

Please use your SU project number (CUR-2017-0478-592) on any documents or correspondence with the REC concerning your project.

Please note that the REC has the prerogative and authority to ask further questions, seek additional information, require further modifications, or monitor the conduct of your research and the consent process.

FOR CONTINUATION OF PROJECTS AFTER REC APPROVAL PERIOD

Please note that a progress report should be submitted to the Research Ethics Committee: Humanities before the approval period has expired if a continuation of ethics approval is required. The Committee will then consider the continuation of the project for a further year (if necessary)

Included Documents:

Document Type	File Name	Date	Version
Research Protocol/Proposal	Research Proposal final draft resubmitted by Lungi Mareka on 04-07-2017	04/07/2017	Version 1
Informed Consent Form	Information and Consent Forms	05/07/2017	Version 1.1
Data collection tool	Interview and Observation Framework	05/07/2017	Version 1a
Data collection tool	Interview and Observation Framework	05/07/2017	Version 1a

If you have any questions or need further help, please contact the REC office at cgraham@sun.ac.za.

Sincerely,

Clarissa Graham

REC Coordinator: Research Ethics Committee: Human Research (Humanities)

National Health Research Ethics Committee (NHREC) registration number: REC-050411-032.

The Research Ethics Committee: Humanities complies with the SA National Health Act No.61 2003 as it pertains to health research. In addition, this committee abides by the ethical norms and principles for research established by the Declaration of Helsinki (2013) and the Department of Health Guidelines for Ethical Research: Principles Structures and Processes (2nd Ed.) 2015. Annually a number of projects may be selected randomly for an external audit.

Investigator Responsibilities

Protection of Human Research Participants

Some of the general responsibilities investigators have when conducting research involving human participants are listed below:

1. Conducting the Research. You are responsible for making sure that the research is conducted according to the REC approved research protocol. You are also responsible for the actions of all your co-investigators and research staff involved with this research. You must also ensure that the research is conducted within the standards of your field of research.

2. Participant Enrollment. You may not recruit or enroll participants prior to the REC approval date or after the expiration date of REC approval. All recruitment materials for any form of media must be approved by the REC prior to their use.

3. Informed Consent. You are responsible for obtaining and documenting effective informed consent using **only** the REC-approved consent documents/process, and for ensuring that no human participants are involved in research prior to obtaining their informed consent. Please give all participants copies of the signed informed consent documents. Keep the originals in your secured research files for at least five (5) years.

4. Continuing Review. The REC must review and approve all REC-approved research proposals at intervals appropriate to the degree of risk but not less than once per year. There is **no grace period**. Prior to the date on which the REC approval of the research expires, **it is your responsibility to submit the progress report in a timely fashion to ensure a lapse in REC approval does not occur**. If REC approval of your research lapses, you must stop new participant enrollment, and contact the REC office immediately.

5. Amendments and Changes. If you wish to amend or change any aspect of your research (such as research design, interventions or procedures, participant population, informed consent document, instruments, surveys or recruiting material), you must submit the amendment to the REC for review using the current Amendment Form. You **may not initiate** any amendments or changes to your research without first obtaining written REC review and approval. The **only exception** is when it is necessary to eliminate apparent immediate hazards to participants and the REC should be immediately informed of this necessity.

6. Adverse or Unanticipated Events. Any serious adverse events, participant complaints, and all unanticipated problems that involve risks to participants or others, as well as any research related injuries, occurring at this institution or at other performance sites must be reported to Malene Fouche within **five (5) days** of discovery of the incident. You must also report any instances of serious or continuing problems, or non-compliance with the REC's requirements for protecting human research participants. The only exception to this policy is that the death of a research participant must be reported in accordance with the Stellenbosch University Research Ethics Committee Standard Operating Procedures. All reportable events should be submitted to the REC using the Serious Adverse Event Report Form.

7. Research Record Keeping. You must keep the following research related records, at a minimum, in a secure location for a minimum of five years: the REC approved research proposal and all amendments; all informed consent documents; recruiting materials; continuing review reports; adverse or unanticipated events; and all correspondence from the REC

8. Provision of Counselling or emergency support. When a dedicated counsellor or psychologist provides support to a participant without prior REC review and approval, to the extent permitted by law, such activities will not be recognised as research nor the data used in support of research. Such cases should be indicated in the progress report or final report.

9. Final reports. When you have completed (no further participant enrollment, interactions or interventions) or stopped work on your research, you must submit a Final Report to the REC.

10. On-Site Evaluations, Inspections, or Audits. If you are notified that your research will be reviewed or audited by the sponsor or any other external agency or any internal group, you must inform the REC immediately of the impending audit/evaluation.



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NOTICE OF APPROVAL

REC Humanities Amendment Form

7 December 2018

Project number: 0478

Project Title: Understanding the role of informal learning in the workplace: a case study in construction

Dear Ms Lungisile Mareka

Your REC Humanities Amendment Form submitted on 20 November 2018 was reviewed and approved by the REC: Humanities.

Please note the following for your approved submission:

Ethics approval period:

Protocol approval date (Humanities)	Protocol expiration date (Humanities)
29 August 2017	28 August 2020

GENERAL COMMENTS:

Please take note of the General Investigator Responsibilities attached to this letter. You may commence with your research after complying fully with these guidelines.

If the researcher deviates in any way from the proposal approved by the REC: Humanities, the researcher must notify the REC of these changes.

Please use your SU project number (0478) on any documents or correspondence with the REC concerning your project.

Please note that the REC has the prerogative and authority to ask further questions, seek additional information, require further modifications, or monitor the conduct of your research and the consent process.

FOR CONTINUATION OF PROJECTS AFTER REC APPROVAL PERIOD

Please note that a progress report should be submitted to the Research Ethics Committee: Humanities before the approval period has expired if a continuation of ethics approval is required. The Committee will then consider the continuation of the project for a further year (if necessary)

Included Documents:

Document Type	File Name	Date	Version
Research Protocol/Proposal	Research Proposal resubmitted by Lungi Mareka on 19-11-2018 (method amendment)	19/11/2018	2

If you have any questions or need further help, please contact the REC office at cgraham@sun.ac.za.

Sincerely,

Clarissa Graham

REC Coordinator: Research Ethics Committee: Human Research (Humanities)

National Health Research Ethics Committee (NHREC) registration number: REC-050411-032.

The Research Ethics Committee: Humanities complies with the SA National Health Act No.61 2003 as it pertains to health research. In addition, this committee abides by the ethical norms and principles for research established by the Declaration of Helsinki (2013) and the Department of Health Guidelines for Ethical Research: Principles Structures and Processes (2nd Ed.) 2015. Annually a number of projects may be selected randomly for an external audit.

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Protection of Human Research Participants

Some of the general responsibilities investigators have when conducting research involving human participants are listed below:

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3. Informed Consent. You are responsible for obtaining and documenting effective informed consent using **only** the REC-approved consent documents/process, and for ensuring that no human participants are involved in research prior to obtaining their informed consent. Please give all participants copies of the signed informed consent documents. Keep the originals in your secured research files for at least five (5) years.

4. Continuing Review. The REC must review and approve all REC-approved research proposals at intervals appropriate to the degree of risk but not less than once per year. There is **no grace period**. Prior to the date on which the REC approval of the research expires, **it is your responsibility to submit the progress report in a timely fashion to ensure a lapse in REC approval does not occur**. If REC approval of your research lapses, you must stop new participant enrollment, and contact the REC office immediately.

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6. Adverse or Unanticipated Events. Any serious adverse events, participant complaints, and all unanticipated problems that involve risks to participants or others, as well as any research related injuries, occurring at this institution or at other performance sites must be reported to Malene Fouche within **five (5) days** of discovery of the incident. You must also report any instances of serious or continuing problems, or non-compliance with the REC's requirements for protecting human research participants. The only exception to this policy is that the death of a research participant must be reported in accordance with the Stellenbosch University Research Ethics Committee Standard Operating Procedures. All reportable events should be submitted to the REC using the Serious Adverse Event Report Form.

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8. Provision of Counselling or emergency support. When a dedicated counsellor or psychologist provides support to a participant without prior REC review and approval, to the extent permitted by law, such activities will not be recognised as research nor the data used in support of research. Such cases should be indicated in the progress report or final report.

9. Final reports. When you have completed (no further participant enrollment, interactions or interventions) or stopped work on your research, you must submit a Final Report to the REC.

10. On-Site Evaluations, Inspections, or Audits. If you are notified that your research will be reviewed or audited by the sponsor or any other external agency or any internal group, you must inform the REC immediately of the impending audit/evaluation.

APPENDIX C



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CONSENT TO PARTICIPATE IN RESEARCH

I would like to invite to take part in a study conducted by Lungisile Mareka, from the Higher Education Curriculum Development Department at Stellenbosch University. You were approached as a possible participant because of your experience as a subcontractor in the construction industry.

1. PURPOSE OF THE STUDY

I am interested to learn about what and how everyday work activities promote learning in a construction SME workplace, based your views and experiences of subcontractors and relevant SME company management.

2. WHAT WILL BE ASKED OF THE PARTICIPANTS?

If you agree to take part in this study,

I would like to get to know what your everyday activities entail through observing you at work. This means that I will be present on site to observe the activities and interactions you have with various site members. I may attend meetings, should there be any scheduled, during the time of my observation. The observations will likely include informal conversation about the activities on site.

I would also like to have a conversation with you of about 45 minutes to an hour, to hear your perspective about what your everyday activities and construction practice entail. This conversation will be recorded in order to help me make accurate notes of the conversation.

3. POSSIBLE RISKS AND DISCOMFORTS

Overall, the study is very low to no risk. There are not foreseeable discomforts. Observations and interviews will be arranged in consultation with you so that the time of such observation and interviews suits. I will ensure that all the records of the discussions and notes are kept safe away from easy access. Written records in paper form will be kept under lock and key and the written material on computer will be secured by a unique password that I will keep. I will maintain the confidentiality of our discussions by not mentioning the names from where the information came. The report will be anonymous however as stated above, the confidentiality of information may be limited in so far as there may be a requirement to share such information with relevant immediate personnel at the university of Stellenbosch.

4. POSSIBLE BENEFITS TO PARTICIPANTS AND/OR TO THE SOCIETY

A unique opportunity is presented by this study to conduct an inquiry with the involvement of subcontractors as participants with direct experiences of workplace informal learning which may create an opportunity for shared learning. By participating in this study I will be able to have insight into the learning that transpires from everyday work activities and if possible, its contribution, if any, to the knowledge and skills in this construction workplace.

5. PAYMENT FOR PARTICIPATION

Participation in this study is voluntary; you may decide to withdraw from the study at any time. As a participant, you will not be paid for participating.

6. PROTECTION OF YOUR INFORMATION, CONFIDENTIALITY AND IDENTITY

Any information you share with me during this study that could possibly identify you as a participant will be protected. This will be done by ensuring that all the records of the discussions and notes are kept safe away from easy access. Written records in paper form will be kept under lock and key and the written material on computer will be secured by a unique password that I will keep. This information will be kept at my house in a lockable safe place.

7. PARTICIPATION AND WITHDRAWAL

You can choose whether to be in this study or not. If you agree to take part in this study, you may withdraw at any time without any consequence. Should you decide to withdraw from the study, please note that the collected data will still form part of the report. The data will only be removed where you expressly indicate in writing your request to delete such data from the research study.

You may also refuse to answer any questions you don't want to answer and still remain in the study. The researcher may withdraw you from this study if you do not uphold ethical standards such as sharing your experiences authentically or where you feel strongly that you are not capable of openly sharing your experiences.

8. RESEARCHERS' CONTACT INFORMATION

If you have any questions or concerns about this study, please feel free to contact Lungisile Mareka at +264 811221642 or +264 61 244552, and/or the supervisor Professor Liezel Frick at +27 21 8083807.

9. RIGHTS OF RESEARCH PARTICIPANTS

You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights or remedies because of your participation in this research study. If you have questions regarding your rights as a research participant, contact Ms Maléne Fouché [mfouche@sun.ac.za; 021 808 4622] at the Division for Research Development.

DECLARATION OF CONSENT BY THE PARTICIPANT

As the participant I confirm that:

- I have read the above information and it is written in a language that I am comfortable with.
- I have had a chance to ask questions and all my questions have been answered.
- All issues related to privacy, and the confidentiality and use of the information I provide, have been explained.

By signing below, I _____ (*name of participant*) agree to take part in this research study, as conducted by _____ (*name of principal investigator*).

Signature of Participant

Date

DECLARATION BY THE PRINCIPAL INVESTIGATOR

As the **principal investigator**, I hereby declare that the information contained in this document has been thoroughly explained to the participant. I also declare that the participant has been encouraged

(and has been given ample time) to ask any questions. In addition I would like to select the following option:

	The conversation with the participant was conducted in a language in which the participant is fluent.
	The conversation with the participant was conducted with the assistance of a translator (who has signed a non-disclosure agreement), and this "Consent Form" is available to the participant in a language in which the participant is fluent.

Signature of Principal Investigator

Date

APPENDIX D

11 March 2019

Lungi Mareka

XXXX

REQUEST TO UNDERTAKE A RESEARCH INQUIRY ON THE ROLE OF INFORMAL LEARNING IN A CONSTRUCTION SME WORKPLACE

Permission is granted to conduct research within our organisation. As a company, we are excited at the prospect of learning from your findings. You are expected to seek appropriate consent directly from potential participants.

We wish you success in your research!

Regards

XXXX