

**THE ROLE OF WORKPLACE CULTURE
IN INCIDENTAL LEARNING: A STUDY OF A
GHANAIAN MANUFACTURING FIRM**

**Thesis submitted for the degree of
Doctor of Social Sciences
at the University of Leicester**

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2013

Abstract

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Title: The role of workplace culture in incidental learning: a study of a Ghanaian manufacturing firm.

In the workplace, the prospect for learning occurs not only through formal training programmes but also effectively and prolifically through opportunities embedded in everyday work activities. This embeddedness raises still-unanswered questions about how such incidental learning is shaped by aspects of the workplace environment. From that view, the numerous means through which the general workplace environment can influence incidental learning arguably creates a significant gap in the theoretical understanding of the phenomenon. The specific gap addressed by this study is ‘How is incidental learning influenced by aspects of workplace culture?’

To investigate this gap, the study explored perceptions of employees on the impact of aspects of workplace culture on incidental learning within a manufacturing environment; specifically, the Volta Aluminium Company (VALCO) in Ghana. For this study, workplace culture refers to both organisational-wide cultures and subcultures within organisations. Thus this research examined employees’ means of incidental learning and ways the different aspects of organisation-wide cultures and subcultures support or suppress incidental learning.

A phenomenological lens was employed to conduct in-depth interviews and focus group discussions with 30 employees selected through quota, purposive, and snowballing sampling methods. The data obtained were analysed through multiple theoretical lenses.

The findings showed that employees acquire knowledge through participatory, inquisitorial, and observational means. The findings also provide specific cultural artefacts/practices, values, and assumptions toward a general understanding of the learning/culture relationship and for constructing models for learning-supportive and learning-inhibitive cultures and subcultures at the workplace. The study further demonstrates that employees may have overlapping or multiple identities, which sometimes makes the identification of cultures or subcultures problematic.

Acknowledgements

This research could not have been undertaken without the support and assistance from a number of persons and so my heart most gratitude is extended to:-

My first supervisor, Dr. Daniel Bishop for his guidance and invaluable support throughout the thesis component of the doctoral programme.

The research participants who gave their time so generously and the management of the Volta Aluminium Company (case organisation) who extended to me the required courtesies and facilitated the participation of employees.

My wife, Mrs. Emelia Emma Lartey who sat by me through the long nights of the assignments compilation and through all written pages of this thesis.

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Chapter I – Introduction

1.1 Background of the research

An established and growing trend in academic and political discourse suggests that the burgeoning technological changes and global shifts in economic patterns; notably, the spread of the ‘post-industrial economy’ in developed economies and industrialisation in developing economies are increasing the need for enhanced levels of learning in most organisations. Learning is therefore no longer thought of as an arcane concept of interest or importance primarily to academics. As part of this trend, it is increasingly argued that both academia and growing numbers of business organisations “now highly value knowledge and the process of acquiring it” (Pillay, et al., 2003, p.95). The rapid pace of economic global change and development is making it increasingly complex to establish exactly the knowledge and skill sets that workers will require although most commentators agree that raising the level of skill is becoming increasingly important to organisational – and national – success. In this respect, Illeris (2004, p.17) asserts:

“Everyone must be prepared for their working functions changing constantly and radically during the whole of their working lives. Therefore, what is needed today is what is typically called lifelong, lifewide and lifedeeep learning.”

Nevertheless, the way that this learning best occurs and the roles that cultures in this context play are open questions.

Learning is a problematic construct. The Oxford Advanced Learners Dictionary defines learning as “knowledge that you get from reading and studying” (Hornby & Turnbull, 2010, p.673) This definition reflects the popular view of the term ‘learning’ that depicts it as a formalized activity through which trainees/students acquire knowledge from their trainers/teachers (Beckett & Hager, 2002) or from books. Thus, many people, including policy makers and employers, have difficulties with acknowledging that learning may occur outside the formal arrangements to transfer knowledge. However, research has shown that most workers instinctively recognize that their competences in their jobs were acquired as they performed various activities related to the jobs (Felstead, et al, 2004). Thus, workplace learning is becoming an important subject in organisational studies because through this learning approach, workers are deemed to acquire skills and knowledge entwined with the task.

This study is based on Kersh and Evans’ (2007, p.131) terse definition of workplace learning; “learning in, for and through the workplace.” This definition has two attributes: the learning must relate directly to the performance of roles at the workplace and must be generated from or triggered by an occurrence at the workplace. Thus, it includes formal training on-the-job and informal learning emerging from workplace activities but excludes off-the-job education/training and informal learning; albeit, they may enhance the performance of workplace roles. Under workplace learning, some writers have dichotomized workers’ efforts to acquire knowledge as through formal or informal learning (Beckett & Hager, 2002; Eraut, 2004). The European Commission (2006) defines formal learning as the structured learning that occurs typically off-the-job in a classroom setting. Contrarily, informal learning emerges from everyday activities at the workplace (ibid). However, Colley, et al. (2003) argue that it is quite

difficult to distinguish clearly between formal and informal learning because ‘formality’ and ‘informality’ are attributes present in all incidents of learning. Nevertheless, they concede that the adjectives ‘formal’ and ‘informal’ are inevitably appropriate to describe learning provided the meaning, purpose, and context are clear.

Traditionally, workplace learning have been associated with informal learning as more empirical evidence is emerging to support the hypothesis that almost 70% of knowledge used at the workplace is acquired through informal learning (Coffield, 2000). In the present work environment, the ‘soft skills’ of creativity, problem-solving, and team working are considered very difficult to transmit in formal settings (Ashton & Sung, 2002). However, despite the claimed prevalence and promising significance of informal learning, the debate about its nature and how an organisation can enhance it persist.

This study focuses on incidental learning within the domain of informal learning for theoretical as well as practical reasons. Eraut (2000, 2004), Livingstone (2001), Schugurensky (2000), and Marsick, et al. (2008) proposed various typologies of informal learning and characteristics of incidental learning. However, no particular theoretical model has dominated because of considerable disagreements and overlaps in the conceptual terrain of informal and incidental learning (Colley, et al., 2003). Schugurensky (2000) maintains that the concept of informal learning is too broad and research into it without identification of its internal categories would lead to conceptual confusion. For this study, the fundamental distinction of the categories of informal learning is the occurrence of intention. The study defines incidental learning at workplace as the learning that occurs without prior intention to learn. The worker may be aware of the learning during or after the experience, or may later become aware

through retrospection (Marsick & Watkins, 1990). The study seeks to build on the theoretical understanding on the concepts of informal and incidental learning.

Practically, it is argued that the varied range of settings, processes, purposes, and contexts for informal learning makes its exploration difficult without a form of focus, principally because informal learning research are normally qualitative with various theoretical frameworks guiding the interpretation of the findings. Furthermore, the focus is on incidental learning because a good deal of workplace learning emerges naturally through incidental learning. As Unwin, et al. (2007, p.1) noted, “The phrase, ‘you learn something new every day’, captures the often accidental and incidental nature of learning as part of everyday human activity.”

Research has suggested that learning may be impacted by cultures at various levels, including national (Hofstede, 1998), professional (Cheetham & Chivers, 2001), and organisational (Mahler, 1997). This debate among academics regarding the level to which the concept of culture should be applied still rages: hence, no consensus has emerged with respect to the most appropriate unit of analysis for culture. Notwithstanding this debate, Lemon and Sahota (2004, p.483) claim that “Organisational culture has been recognized as a primary determinant within innovation and the need to better understand this relationship or process is a necessary prerequisite to nurturing it in a more structured and systematic manner.” However, from a review of some theoretical (Fuller & Unwin, 2003, Unwin, 2004) and conceptual (Bishop, et al., 2006) models on the relationship between learning and workplace environment/culture, it was found that the effects of aspects of culture have been rarely investigated in detail with respect to workplace learning or in related studies. Furthermore, no other study has

yet investigated the connection specifically between incidental learning and culture in the workplace. Other studies have begun (albeit in a varied and inconsistent approach) to unpick the link between informal learning and organisational culture, but the key originality of this study lies in the particular focus on incidental learning. In the literature, there are useful theories of incidental learning, and useful theories of culture, but no theory systematically draws the two together. Specifically, this research seeks to identify particular cultural manifestations that afford or restrain the occurrence of particular types of incidental learning and then subsequently identify values/assumptions underpinning these manifestations.

In recent times, post structural/postmodern views of culture have challenged the previous studies that focused on the relationships between organizational-wide cultures and performance features of workplaces (Morgan & Ogbonna, 2008). In this regard, some scholars have argued that “cultures are frequently heterogeneous, comprising multiple layers of identities and several diverse communities” (ibid, p.40). Following this argument, this study does not only seek to contribute to the literature on subcultures at the workplace but also intends to reveal the incompatibilities and ambiguities among cultures/subcultures. The study will identify salient consistencies and inconsistencies in the convictions of organizational members using Martin’s (2004) framework for analysis of the data. These revelations would provide an empirical contribution to Martin’s (2004) multi-perspective view of culture in a large manufacturing organization staffed by multiple skills of professionals working from eight departments. Through the aggregation of empirical data from the various departments, professional groupings, as well as other groupings represented in the study, first, various subcultural understandings would be highlighted and integrated to provide an organizational-wide

perspective. Second, the deployment of subcultural differentiation would allow differences between the various groupings as well as harmony within them. Finally, given the complexities of organizational life, salient evidence of interpretations that do portray distinct individual convictions that are inconsistent with the subcultural/cultural convictions would be identified.

In Africa or generally speaking, in developing economies, most of the studies on workplace learning have focused on adult learning in general rather than specifically studying informal or incidental learning at the workplace (Andrews, 2007). Therefore, informal/incidental learning has not been a topic for discussion for major institutions engaged in human resource development in Ghana. Neither has it been addressed in any conceptual document in policy terms nor any study in academic terms; it is a new subject for policy and research within the African context. Consequently, employee development is often defined in terms of formal training programmes and no tradition exists for informal/incidental learning in Ghana except for apprenticeship arrangements for lower-level crafts such as masons, carpenters, and tailors (Donkor, 2006).

It is also important to look at these issues at the manufacturing workplace because empirical evidence indicates that firms and workers in the manufacturing environment depend heavily on informal/incidental learning to meet the skill requirements of the rapid technological development and changing economies (Wongboonsin & Rojvithee, 2007). Volta Aluminium Company (VALCO), the context in which the objectives of this study will be carried out is a large manufacturing facility and is reviewed in the next section.

1.2 The VALCO context

VALCO is an aluminium smelter that employs about 2000 workers during full operation. It was jointly owned by Kaiser Aluminium and Chemical Corporation (KACC) - 90% and Reynolds Metals Company – 10%. In 2004, the Government of Ghana purchased the shares of KACC and the balance in 2008. The recent rapid shift in technological and economic paradigms coupled with the insatiable demand for low-cost but high quality goods continue to challenge manufacturers to improve on their products. Therefore, the current VALCO executive team has stated its intention to transform the setup into a learning organisation whereby enhanced levels of informal/incidental learning are harnessed to improve and build on the bench strength of the organisation.

At VALCO, initial training of new employees clearly distinguishes between the formal training in the classrooms and on-the-job learning in the field (VALCO Orientation Programme, 2010). The duration and nature of the mix of the formal training and field learning is determined by the various departments. VALCO has in place established operational work floors with information technology infrastructure, which allows employees to perform their daily assignments and potentially share information. Writers such as Billett (1996) have suggested a potential link between such physical infrastructure and opportunities for employees to acquire skill sets that enable them to connect the operational theories to practices in an authentic work setting.

VALCO plant is equipped with a training school to train employees to perform in the complex manufacturing environment. Further, information about the processes and

equipments are available in the offices, libraries, and lobbies to support learning initiatives. From the theoretical and empirical perspective, following the ideas of situated learning, VALCO seems to be the most suitable organisation in Ghana with the physical and social infrastructures that provides a useful means for the analysis of incidental learning and how it relates to social and physical situations in place.

1.3 Justification and significance of the study

The rapid technological and economic changes affecting the manufacturing sector have led to increasing interest by policy-makers and practitioners in programme initiatives to meet the skills requirements of industries as well as in the broader theoretical debate regarding how people learn. In Ghana, programme initiatives have been sought on various platforms but the approaches have focused on the deployment of formal training programmes to the neglect of the informal. Ghana National Vocational Training Institute, the agency assigned responsibility for coordinating every aspect of vocational training has targeted only formal training of apprentices (COTVET, 2012). There is a lack of awareness among policy-makers and practitioners of the prevalence and significance of informal learning in the workplace. Therefore, there seems to be a knowledge gap regarding the exploitation of informal learning opportunities at the workplace. Essentially, the learning discourse is moving from the unilateral stress on provision of formal training to acknowledgement of the importance of informal/incidental learning. Unfortunately, many practitioners regard informal learning practices as invisible and hard to manage form of learning (Garrick, 1998). Yet as the mounting research evidence suggests, it is important that policy-makers and

practitioners recognize informal learning as a critical dimension to learning at the workplace, which should be facilitated.

Besides the neglect of informal learning on the organisational agenda, there is also the issue of ambiguity about what constitutes informal learning. Currently, the concept of informal learning seems to be confusing in the literature. The budding body of literature on the concept indicates that the area is still under conceptual development, and it is increasingly being researched empirically. On the ground, however, the ways in which some researchers, policy makers, organisational executives, and workers refer to informal learning are very different.

In addition to the conceptual problems, there is another issue relating to the 'management' of incidental learning. The debate about the possibility of influencing incidental learning relates to the 'natural' or 'unintentional' means through which they occur (Rogers, 1997). For Ross-Gordon and Dowling (1995), incidental learning is difficult to harness or influence for use as it is not normally distinguished as learning. Nevertheless, Cseh, et al. (1999) posited that attributions, beliefs, and assumptions influence the occurrence of incidental learning. Following Cseh, et al.'s (1999) line of thinking, the problem relating to how organisational executives and policy makers create cultures that foster incidental learning surfaces. Also the assumption of the three-level model concept of culture and their correlation with incidental learning was not addressed by Cseh's team. The literature does not show which artefacts trigger incidental learning and which basic assumptions result in behaviours that inhibit incidental learning.

Similarly, Marsick (2011, p.1) affirms that “Informal learning has grown in importance in today’s organisations, yet questions arise about what it looks like, how it can be ‘formalized’ and supported, and how it works in various contexts.” Hager (1998 cited in Vaughan, 2008, p.12) also affirms that “learners are often unaware of the significance, range, and depth of their own informal learning.” This study delves into understanding the occurrences of incidental dimensions of informal learning. Of the few studies of the manufacturing workplace, no research was found to identify specific aspects of workplace culture that influence incidental learning outcomes.

Carliner (2012) argues that the heart of the opportunities and hindrances to informal learning is the workplace infrastructure. According to Fuller, et al. (2003, p.5), “what emerges is that workplace learning manifests and constructs itself in different ways according to the character of the organisation.” Hence, it is imperative to commence from the analysis of workplace culture (character) to unpack and uncover how the learning is taking place. Ostensibly, VALCO’s management seems to have provided a massive infrastructure of training, library facilities, and opportunities for co-worker engagement to facilitate employees’ development. However, research work has shown that the workplace is not automatically a conducive-environment for learning (Smith, 2003 cited in Harteis, et al., 2008). To outward appearances, it would seem that VALCO has invested in and implemented various measures that support both on-the-job and off-the-job learning. It may thus be hypothesised that there are cultural values behind this that support learning but do these conditions/cultures engender or inhibit incidental learning in practice? To address the issues mentioned above, the current study seeks to address the central problem of how incidental learning in the workplace is influenced by aspects of workplace culture.

The research fills a gap in the body of literature because a search revealed dearth of information about workplace learning in Ghana, and the developing world in general. As Dawe (2002) hinted, an appraisal of workplace learning has often been disregarded in developing countries. Earlier workplace learning researches have been conducted in multinational organisations in the Anglo-Saxon countries (Chisholm & Fennes, 2006) and Japan (Kurosawa, et al., 2005) but there is limited research focusing on informal learning within developing countries. This research contributes to teaching/learning in Ghana by importing research-based evidence to the content of academic material.

Chappell (n.d. cited in Keating, 2006, p.3) observes that the vital working knowledge required for the present-day organisation is “rarely codified in text books, formal training programs, competency standards, or procedures manuals;” however, they are effectively being shared through informal learning. Dawson (2008, p.1) also warns that “the failure of companies to develop this informal learning culture can result in inefficiencies and failure in their manufacturing environment.” From the personal perspective, therefore, the selection of VALCO provides the opportunity to contribute to the attainment of the objectives of management in this regard.

1.4 Research objectives

On the basis of the literature and the issues raised in the previous sections, the first objective aims at developing an understanding of how incidental learning, which is not often recognized or addressed in education, training, and employee development, occurs as part of the regular work activities. It entails making sense of the everyday

learning, including the examination of knowledge embedded in work practices and employees' behaviours (Boud & Middleton, 2003). Thus, the study intends to understand the underlying means by which the everyday learning by workers emerges.

Learning occurring under everyday settings has been called situated learning (Lave & Wenger, 1991) with a focus on the interrelationship among workers and between the workers and their environment. From that view, situated learning relates to the construction of knowledge from the cultural and social circumstances in which the learning emerged, namely, the socio-cultural context. However, to understand how the deep cultures or underlying assumptions influence incidental learning, which is the main objective of this research, artefacts and practices, such as job titles, office layouts, and relationships that form the surface level of Schein's (2010) model of culture will have to be earlier identified. Thus, the second objective seeks to identify artefacts and practices as aspects of culture at the workplace that influence incidental learning.

Schein (2010) suggests that the essence of culture lies in the basic underlying assumptions and should therefore be examined to understand what the members share. He argues that these assumptions "determine perceptions, thought processes, feelings, and behaviour" of members that facilitate the deciphering of artefactual and practice phenomena observed (Schein, 1990, p.112). From this recommendation, some conceptual and empirical studies describe certain assumptions/values of culture as having the propensity to influence the capacity of workers to engage in informal learning (Bishop, et al., 2006). It is argued that workers' assumptions may promote the recognition of complex problems and subsequent search for innovative solutions and ideas. On the other hand, some assumptions may justify maintenance of the status quo

or impose greater orthodoxy. The third objective, therefore, is to present a more systematic and empirically informed model of culture-learning connection than is provided for by Bishop, et al., (2006) on the possible aspects of learning-supportive culture.

Finally, the workplace culture is not being framed as a whole and unitary cultural pattern, even though certain practices and artefacts may illustrate shared patterns. This research is premised on the assumption that there may be patterns of sub-culture across organisations based on department, occupation, or age. Thus, workplace culture simply refers to both organisational-wide cultures and subcultures within organisations. Thus, the study seeks to identify how these cultures or subcultures influence incidental learning. It is also useful to define some of the assumptions as a nexus where some inconsistent cultures converge or overlap to influence learning (Martin, 2004).

1.5 Research questions

To address the abovementioned objectives of the study, the following research questions are posed.

- How do workers undertake incidental learning at the workplace?
- How can artefacts/practices support or inhibit employees' incidental learning?
- What are the values and basic assumptions that support or inhibit incidental learning and how are they represented as cultures and sub-cultures of the organisation?

The first research question targets the identification of means of incidental learning experiences at the workplace. Marsick and Watkins (2001) present incidental learning as being integrated into normal work activities, highly unconscious, influenced by chance (serendipitous) and haphazard. They noted that some incidental learning starts with a trigger, which could be stimulated by internal or external signals, and argued that these signals are recognizable and can be explored. By taking a phenomenological approach, the study explores various means of incidental learning by interrogating how people acquire new knowledge without an initial intention to learn.

Once the nature and prevailing types of incidental learning within the case organisation have been identified, the second question aims at observable ‘cues’ or ‘moderators’ in terms of the artefacts and practices of the workplace that trigger or influence the generation, transfer, or utilization of new knowledge. This research highlights the ‘instrumental’ dimension of workplace artefacts and practices to identify how they facilitate or hinder learning (Rafaeli & Pratt, 2006). The final question for this study identifies the ‘deep’ aspects (values and assumptions) of organisational-wide cultures or sub-cultures as well as their influence on incidental learning. Narrowing down to incidental learning, these aspects of culture gives a sharper focus and provides the opportunity for more in-depth analysis.

1.6 Statement of methodology

Incidental learning at the workplace may be portrayed as a phenomenon informed by workers everyday subjective experiences (Le Clus & Volet, 2008). In that light, the

methodological framework for this research was informed by a phenomenological approach within a single case qualitative research inquiry. Sections 3.1.2 and 3.1.3 provide the justification for the choice of this framework. The study on incidental learning is new in the country (Ghana) as no previous study has been conducted on informal learning. In that view of a ground-breaking research, qualitative approach is suitable to explore the field to understand the nuances that inform the recall and occurrence of participants' learning experiences. Toward that end, in-depth individual interviews were conducted to provide the means of understanding participants' incidental learning of skills and knowledge. Thematic analysis was used to identify and report on the themes in the interview data. The study uses the cognitive and socio-construction learning theories to understand the themes relating to the means that workers employ to incidentally learn new skills and knowledge. Two focus group discussions were held to triangulate responses from the interview data as well as provide additional data relating to the themes identified. In all, 30 workers participated in the interviews and focus group discussions out of a population of 531 workers (See details in Chapter 3).

This study adopts Vilnai-Yavetz and Rafaeli's (2006) multi-dimensional perspective to analyse for the instrumental, aesthetic, and symbolic dimensions of the artefacts/practices identified in the data. The study also uses Martin's (2004) multi-perspective model to investigate the espoused values and assumptions/values-in-use to understand the cultural and sub-cultural dynamics that may be influencing incidental learning.

1.7 Outline of the chapters

This thesis has been structured into five chapters. Chapter one introduced the theoretical and socio-cultural context of the central research problem and the central concepts of the study. Following that exposition, it posed three questions that the research proposes to answer. The second chapter details previous studies on the relationship between learning and work with respect to their interdependence, related theories, and perspectives. It also reviews previous studies on the relationship between culture and learning for comparison with the findings of this research in later chapters.

Chapter 3 explains why the research and the research questions reflect interpretive philosophy, qualitative methodology, and phenomenological principles. The chapter gives a detail account of the multiple data collection and analytical processes as well as the research design challenges encountered. Chapter 4 has four sections. Section 4.1 covers the general introduction of the chapter and the remaining three sections cover the presentation, analysis, and discussion of the findings. Section 4.2 highlights the three themes relating to means of incidental learning to address the first question. Section 4.3 presents findings and discussion relating to the second sub-question to illustrate the impact of artefacts/practices on incidental learning. Section 4.4 identifies values and basic assumptions that impact on incidental learning leading to identification of organisation-wide cultures, sub-cultures, and webs of cultures. Chapter 5 provides a summary of the major findings, conclusions about research problem as well as contributions and implications for theory, policy, and practice.

Chapter 2 - Literature Review

2.1 Introduction

Although research suggests that majority of the learning going on at workplaces may be informal and is influenced by organisational context (Dobbs, 2000); research on the influence of culture on informal learning is rare probably because these concepts are complex phenomena with deep-rooted definitional issues. Therefore, it is pertinent to review these concepts in detail to expose the diverse views about the nature and elements of informal learning and culture because their misapplication or misuse may result in their 'reification' (Ott, 1989). According to Ott (1989, p.51), the ultimate truths about the concepts of culture and informal learning "cannot be found or discovered." Nevertheless, the central assumption for this study is that these concepts can be understood and their relationship analysed to help solve the learning challenges confronting businesses. For this study, four broad bodies of literature considered are 'learning and work,' 'concepts of informal and incidental learning,' 'concept of culture' and 'relationship between culture and incidental learning.'

Following this introduction, Section 2.2 presents the current trend of thinking about the relationship between learning and work. It continues with the review of the learning theories from the various perspectives and highlights the competing paradigms and metaphors of learning. Section 2.3 examines the concepts of formal and informal learning and describes the various typologies of informal learning that have been theorised. Incidental learning is subsequently viewed as a type of informal learning. Section 2.4 provides a review of research findings and conclusions on incidental

learning in the literature. Section 2.5 reviews the concept of culture by examining various paradigms and perspectives of culture. Section 2.6 outlines the present views on the relationship between incidental learning and culture.

2.2 Learning at work

2.2.1 Learning and work interdependence

In contemporary discourse, the distinct division between learning and work is seen as problematic because empirical studies suggest that learning cannot be extricated from work (Eraut, 2004). Haddad (2004, p.3) argued that “the need for continuous access to information and knowledge makes learning lifelong and the traditional neat distinction between learning and work unreal.” This argument is currently viewed as part of the healthy academic debate relating to what constitutes learning. Further, a misunderstanding exists between industrial organisations and academia about whether learning from the workplace should be regarded as “valid knowledge” or not (Garrick, 1998, p.40). This misunderstanding about learning and work underpins the famous split between theory and practice. Additionally, it has practical and economic consequences; for example, it reflects on the sort of advice that the academic world provides on the contents of the workplace learning programmes. Argyris (1987) asserted that learning is a component of work definition, which means that learning cannot be separated from completing the specific tasks. Thus, as Barnett (1999, p.29) noted laconically, “Work has to become learning and learning has to become work.”

Learning at work has also gained a new currency and urgency in contemporary policy and research interest. This outlook recognizes that the majority of learning emerges naturally from the demands of the daily work practices and the social interactions with co-workers, customers, and clients (Fuller, et al., 2003). Eraut, et al. (1998) observed that the quality and quantity of learning that occurs at work is primarily shaped by the opportunities arising from workplace practices and processes. From these views, this research focuses mainly on the learning in the practices, processes, and interactions at the workplace. In setting the present research context, the key issues will focus on the behaviours, norms, and natural settings to investigate their influence on the learning that naturally occurs at the workplace, i.e., incidental learning.

2.2.2 Theories on learning at work

Literature reveals very little coherence in the definition of learning because the roots of learning are diversely spread and the authors define learning according to the theory they uphold. According to Kincheloe and Horn (2007), most learning theory discourses revolve around behavioural, cognitive, and social-constructive theories of learning with a lively academic debate on their relevance to workplace learning.

Initially, learning was conceived around behavioural and cognitive theories. Thorndike, et al. (1928 cited in Behlol & Dad, 2010) proposed that learning causes a permanent change in behaviour of the learner resulting in experience. This theory, albeit not recent, provides the basis for most succeeding behaviourist theorization in learning. At the workplace, 'lower order learning' is normally associated with the acquisition of manual skills through rote learning based on the behaviourist theory.

However, Malloch, et al. (2011, p.199) affirmed that “adult learning research has moved beyond the behaviourist paradigm and increasingly centres on cognitive, constructive, and social learning theories.”

The cognitive theory focuses on internal mental structures and addresses the problem of how the learner stores and retrieves information from the mind. Cognitive skills acquired through “higher order learning” support the execution of complex tasks (ibid, p.15). The cognitive theorist views the individual learner as the appropriate units of analysis. Its drawback stems from the focus on only the cognitive aspect of work performance to the neglect of the social or cultural factors. Contrarily, the social-constructivist views learning from a process perspective, which is entrenched in the social practices of a group such as the workplace (Lave & Wenger, 1991). Social-constructivism highlights the relevance of context and culture to understand occurrences and construct consensus at the group level (McMahon, 1997 cited in Kim, 2001). In the light of these theories, Ertmer and Newby (1993, p.62) conclude:

“As one moves along the behaviourist – cognitivist – constructivist continuum, the focus of instruction shifts from teaching to learning, passive transfer of facts and routines to the active application of ideas to problems.”

Bingham and Conner (2010, p.21) suggested that the social constructivism approach enables human resource practitioners “to take full advantage of the larger opportunity for incidental learning, learning from interacting with others, and learning along the way in the course of work.”

Some scholars situated workplace learning under behaviourism because observation, imitation, and reinforcement are important components (Wihak & Hall, 2011). Others put workplace learning under cognitivism because cognitive processes are required in modelling (Keating, 2006). According to Billett (1994), workplace learning falls under socio-constructivism because it is socially negotiated with the learner interacting with a more experienced person for support. Considering the above, two broad trends emerge within workplace learning discourse. The discourse either draws on the theories on behaviourism/cognitivism with a focus on the individual, or theories on socio-constructivism that focuses on the group (Vaughan, 2008). An approach that combines the two broad directions is chosen for this research because it provides the opportunity to look at the phenomenon of learning from a wider and holistic perspective that incorporates the individual's behaviours/cognitions as well as the recognition of the individual's interaction with other individuals and his or her environment, including workplace culture. Hodkinson, et al, (2008), advocates a similar transcendence of the individualist/socio-cultural divide in theories of learning.

2.2.3 Paradigms and metaphors of learning

Extant literature on workplace learning highlights a number of paradigms and metaphors, which have facilitated understanding in this body of knowledge (Lee, et al., 2004). According to Beckett and Hager (2002), workplace learning perspectives emerged from two different paradigms, underpinned by different fundamental theories and epistemological positions, namely, 'standard' and 'emerging' paradigms of learning.' But given the increasing popularity of social learning recently, the term 'emerging' may no longer be appropriate for the latter paradigm. However, there is no

new term in the literature for this important perspective. For the purposes of this report, therefore, the term ‘socially-orientated paradigm’ shall be used; it is essentially the same as what Beckett and Hager called the ‘emerging paradigm.’

The underpinning theories of the ‘standard paradigm of learning’ are behaviourism and cognitivism, whereas the ‘socially-orientated paradigm’ of learning is based on social-constructivism. The advocates for the ‘standard paradigm of learning’ assume that the learning content may be articulated verbally and written down in repositories such as computer hard disks, books, and drawings (Painter, 2009), and it is fundamentally transparent to the mind (Hager, 2004). However, the assumption that all learning at work emerges from mental sets of ideas is problematic, it relates to the debate about the roles of theory and practice during the performance of tasks mentioned in Subsection 2.2.1. One can assert that knowledge at the workplace is not just propositional understanding of true or false information, but it also involves the intellectual and emotional capacities as well as other abilities of individuals and teams. These abilities include physical dexterity, tacit knowledge, and collective knowledge acquired at the workplace that may be difficult to describe. Therefore, not all knowledge at the workplace can be expressed verbally or theorised prior to application.

Engeström’s (2001, p.133) theory of expansive learning with basis in “activity theory” may be seen as one representation of the ‘socially-orientated paradigm.’ He suggests that the main entity of analysis is “a collective, artefact-mediated and object-oriented activity system, seen in its network relations to other activity systems” (ibid, p. 136). Engeström (2001) recommends the emphasis on horizontal learning and development through activities such as collective problem-solving. This horizontal dimension of

spontaneous expertise acquisition “where practitioners must move across boundaries to seek and give help, and to find information and tools wherever these happen to be available” (Tuomi-Gröhn, 2003, p. 203) generates informal learning. Therefore, the ‘socially-orientated paradigm’ is more pertinent to appreciating how employees learn through work practice than the ‘standard paradigm.’

Sfard (1998) engages in the debate about the contrast between ‘acquisition’ and ‘participation’ metaphors. This profound division relates to two fundamentally different approaches to learning comparable to the two broad directions earlier mentioned. Most theorising about learning espoused an approach to ‘learning as acquisition’ with roots from behavioural and cognitive theories. From the social constructivist theory of learning, Sfard’s (1998) alternative ‘learning by participation’ approach has dominated recent workplace learning discourse. This latter approach assumes that knowledge is not present in a world out-there by itself or in the minds of individuals but learning occurs through participation in workplace activities undergirded by their cultural practices. In that light and from a landmark study of apprentices, Lave and Wenger (1991, p.37) postulated the theory of “legitimate peripheral participation” that focused on the individual going through the learning processes to become a full member of a group. They argued that learning cannot be extricated from belonging and individuals cannot belong until they learn the understandings, practices, values, norms, and identities of the group that they belong to. However, some authors have identified weaknesses in their work with respect to recent trends in the workplace. For example, Rainbird, et al. (2001) contended that workplaces, such as the Vai and Gola tailors and the Naval quartermasters referred to as ‘communities of practice’ examined to illustrate the ‘legitimate peripheral participation’ theory do not represent the majority of the current

technologically driven organisations. Nevertheless, it is noted that the notions of 'legitimate peripheral participation' and 'communities of practice' have gained extensive currency in the workplace learning discourse. The 'learning by participation' metaphor highlights the broad conceptual framework of informal learning and has influenced the work of some researchers on learning culture such as Marsick (2009).

Despite the aforementioned relative strengths of the 'socially-orientated paradigm' and 'participation metaphor', it is argued that choosing the 'socially-orientated paradigm'/'learning as participation' to the total neglect of the other broad direction may lead to theoretical distortions and preclude the significance of other modes of learning (Sfard, 1998). Sfard emphasized that "when it comes to research, some important things that can be done with the old metaphor cannot be achieved with the new one" (ibid, p.9). Following Sfard's line of argument, Fuller and Unwin (2004) draw on both participatory and acquisition dimensions in the research of the metals sector of UK. The research resulted in the development of the expansive/restrictive continuum for describing the learning environment at the workplace.

Developing and extending the Fuller and Unwin's line of research, Paavola and Hakkarainen (2005) proposed the knowledge-creation metaphor that focused on innovation rather than adjusting to the existing culture or assimilating the prevailing knowledge. Another perspective of the knowledge-creation metaphor is a depiction of the "triological" view of learning that draws attention to the supportive or inhibitive role of mediating artefacts or practices; rather than the "monological" view that considers only the learner's mind or the "dialogical" interaction between minds of the learner and the transmitter of knowledge (Hakkarainen & Paavola, 2007, p.3). This research throws

light on this “trialogical” theorisation by identifying a collective network of artefacts/practices that provide the basis for individual and group participation and subsequent creation of knowledge. The researcher argues that the individuals’ efforts to co-construct may not be understood without an understanding of their cultural means, and the organisation may not be understood without an understanding of the beliefs and values of those who use and produce these artefacts/practices. Hence, this study attempts to analyse aspects of workplace culture that influence learning and how these aspects may draw attention to the opportunities or barriers to workplace learning.

2.3 Types of learning

2.3.1 Formal and informal learning

Traditionally, formal learning is viewed as occurring in institutions or through arrangements designed purposively for education and training. Thus, it involves didactic relations and is often situated within the standard paradigm of learning. ‘Informal learning’ provides a popular alternative that authors have used to explain the majority of learning at the workplace (Eraut, 2004). The definitions of informal learning are varied and highly contested. Colley, et al. (2003, p.31) described it as the learning with “aspects of informality.” Garrick (1998) found that the way an author defines informal learning begins to construct the attributes/aspects it acquires. For instance, some experts perceive the physical location as the differentiating factor (Ramey-Gassert, 1997), whereas others consider the pedagogue or agent responsible for the content (Scanlon, et. al., 2005) as the critical differentiating factor. These disagreements

create difficulties during a conceptualization of this learning phenomenon from the literature, as the original proponent may have described informal learning from a different perspective or emphasis.

Literature reveals two broad views about informal learning. Some authors suggest deep-seated differences between formal and informal learning (Beckett & Hager, 2002), whereas other writers claim that there are interrelated attributes of formal and informal learning in any particular learning situation (Colley, et al., 2003). Regarding the former perception, Beckett and Hager (2002) reported that no respondent had difficulty in differentiating between informal and formal learning during the compilation of some case exemplars: hence, this suggests that the concept of two distinct paradigms may be tenable. From the dichotomous view, another important consideration of the relationship between formal and informal learning is the learning continuum presented by Stern and Sommerlad (1999) and Eraut (2004). Stern and Sommerlad (1999) argue that a consideration of a learning continuum with informal learning at one end and formal learning at the other end may be more appropriate than a distinct separation of the two learning conceptions.

However, from an abstraction of 20 attributes that various authors have employed to differentiate between formal and informal learning, Colley, et al., (2003) found that the diversity and extent of overlap of the 20 attributes illustrated the problems associated with identifying the boundary between formal and informal learning methods. They claimed that formal and informal learning experiences are entwined inextricably in practice and also argued that “changing the balance between formal and informal attributes changes the nature of the learning” (Colley, et al., 2003; p.ii). Thus, they

advocated for high-quality case studies to further enhance the theoretical and conceptual understanding of in/formality in learning, noting that scholars may draw various boundaries between the celebrated formal learning and the ubiquitous informal learning for a particular purpose and within a particular context.

The study suggests a modified version of Livingstone's (2001, p.4) definition of informal learning as follows: "any activity that results in the attainment of understanding, knowledge or skill which occurs without the presence of externally imposed curricular criteria." From this definition, informal learning emerges from 'any activity' signifying the true informality of the process and occurs outside institutionally or otherwise enforced curricula and programmes. It is significant to note that the proposed definition uses the phrase "externally imposed curricula criteria" because informal learning may also occur inside educational institutions (Livingstone, 2001, p.5). The researcher also deliberately uses the phrase 'attainment of understanding' and not 'pursuit of understanding' in the original author's definition because the word 'pursuit' connotes an intentional search. Informal learning is not pursued, it emerges.

In view of the challenges with the concept of informal learning, Schugurensky (2000) notes that "the concept of informal learning is useful but still is too broad, as it encompasses different types of learning which are usually conflated" (ibid, p.2). Hence, various typologies of informal learning will be reviewed and the type referred to as incidental learning explored in detail in the next section.

2.3.2 Incidental learning: a type of informal learning

Eraut (2000, 2004) advocates a typology of informal learning that considers three levels of intention and three periods of focus. Eraut's three periods of focus are past episodes, current experience, and future behaviour: whereas, the three levels of intention are described as deliberative, reactive, and implicit learning. Eraut's posits that deliberative learning has two forms. He refers to Tough's (1971) deliberate learning where an intentional purpose and time is set for the learning but the location or process may be informal such as coaching at the workplace. Second, Eraut refers to deliberative activities such as problem-solving meetings that result in learning. It is argued that learning from deliberative activities is incidental learning because the learning is a by-product of the deliberative activities: there was no prior intention to learn. He regards reactive learning as unplanned and unintentional but indicates that intention to learn occurs in the middle of the action. Eraut cautions that this type of informal learning is associated with varying and debatable levels of intentionality. He affirms that implicit learning is unintentional. In Eraut's typology, incidental learning (unintentional) overlaps between the second description of Eraut's deliberate learning and the other two types he identified; thus, Eraut's typology will not be followed for this research.

Schugurensky (2000) also suggests three forms of informal learning differentiated according to the constructs 'intentionality' and 'consciousness.' The forms are 'self-directed', 'incidental' and 'socialization.' Of relevance is incidental learning, which refers to the experience of learning that occurs albeit there was no prior intention to learn. For Schugurensky, the learner is aware that incidental learning is occurring at the time of learning. The third form of Schugurensky's (2000) informal learning is

socialization, which does not suggest intentionality or awareness. Schugurensky's typology will not be followed as this study assumes that Schugurensky's socialization is also incidental learning. This study makes a distinction between two types of informal learning: intentional (deliberate) and incidental learning. This view accords with Reider's (2003, p. 28) description of "Incidental learning as being composed of implicit learning processes (which happen without the learner's awareness and intention) and/or of explicit learning processes (which take place without learning intention but nevertheless involve online awareness)." From this description, incidental learning may be explicit with awareness by the learner and can be explored easily. Otherwise, passing inquiries or insights can be prodded on 'implicit' incidental learning and thereafter explored. Therefore, Reider's description is adopted as the operational definition of incidental learning for this study. Thus, incidental learning refers to unintentional learning irrespective of awareness or "the acquisition of knowledge independently of conscious attempts to learn" (Eraut, 2000, p.115). From this view, the study seeks to provide empirical evidences of opportunities and hindrances for spontaneous, inadvertent, or implicit learning.

Marsick, et al. (2008) caution that assigning operational and definitional boundaries around the concepts of informal and incidental learning may be problematic. Marsick and Watkins (1990, pp, 6-7) provided a combined definition of informal and incidental learning as "learning outside of formally structured, institutionally sponsored, classroom-based activities." Nevertheless, they differentiated incidental from informal learning by describing it "as a byproduct of some other activity, such as task accomplishment, interpersonal interactions, sensing the organizational culture, or trial-and-error experimentation" (ibid, pp. 6-7). Marsick and Watkins (2001, p.29) also

developed a model for their combined conceptualization of informal and incidental learning from the “belief that learning grows out of everyday encounters while working.” Their model focused on eight learning phases of the individual. Many researchers have used their model to explore incidental and informal learning but the findings and conclusions from these studies do not distinguish between incidental and informal learning. As earlier mentioned, this study focuses on incidental learning.

As aforementioned, scholars such as Marsick, et al. (2008) and Colley, et al. (2003) write about the challenges relating to prescribing operational and definitional boundaries around informal and incidental learning. Nonetheless, this thesis prescribes a simple typology of informal learning that distinguishes between intentional (deliberate) and incidental learning. In the literature, the significance of incidental learning has been under emphasized (Eraut, 2000). The challenges put forward include inability of learners and organizations to distinguish or recognize incidental learning (Le Clus, 2011). Eraut (2000) posits that the exciting theoretical question with practical implications is whether the knowledge through incidental learning was capable of being elicited. Indeed, there is still paucity of research on incidental learning at the workplace. Using the operational definition of incidental learning above, this research seeks to broaden the theoretical understanding of incidental learning by identifying some specific forms of incidental learning (involuntary, spontaneous, etc) and detailing the relationships between these incidental learning occurrences and specific aspects of cultures. It is in connecting these specific aspects of incidental learning to specific aspects of culture that this study aims to go beyond existing research in this area.

2.4 Status of incidental learning research

To a great extent or perhaps most of the time, the learning in life takes place outside the domain of intentionality (Epstein, 2001). Bargh and Chartrand (1999) indicated that about 90% of learning in adult life is implicit. Similarly, Le Clus and Volet (2008, p.12) stated that the most important characteristic of incidental learning is that “it is always occurring” as they are consequential to everyday activities. Given the plethora of means through which incidental learning may occur, a study that identifies some of the means of incidental learning may be interesting and useful to both practitioners and academia. The review below illustrates how research has illuminated means of incidental learning and how it may be influenced.

English (1999) found that the conditions that produce incidental learning include the occurrence of change and the necessity for an action. English concluded that incidental learning is influenced by context, experience, and situation of the learner. We can, perhaps, begin to see how the cultural context might impact on such learning. In the literature, there is broad agreement that context influences incidental learning. For example, Brown and Duguid (2000) concluded that good office design may engender powerful environments for learning and the majority of such opportunities facilitate incidental learning. They found that the lack of congenial office places created a need for very elaborate formal training programmes. Brown and Duguid (2000) further suggested that to create an environment that supports employees to learn naturally, practitioners require a better understanding of the means and methods through which workers accomplish incidental learning.

Fuller and Unwin's (2003) research on learning in the metals sector of UK found that some more experienced workers were partnered with less experienced co-workers to enable sharing of skills needed to improve the operations and specific practices of the learner. They observed that these sharing of skills often take place informally as their operations create the need to deploy new knowledge in an unplanned and naturalistic manner. However, in other firms, opportunities to learn incidentally were much more restricted. These mixed findings highlight the key message of their expansive/restrictive continuum; if work is structured appropriately, opportunities to learn incidentally are increased. But, if the distributions of skill sets are polarised then learning is restricted.

Cahoon (1995) found that workers undertake incidental learning when the need arises to perform specific computer operations and they implicitly understand a computer function. Research also reveals that although members of online discussions articulate their prior intention to learn; nevertheless, large amounts of incidental learning do emerge during the discussions (Collins & Berge, 1996). Thus, some scholars are studying incidental learning relating to general use of computers/worldwide web.

Harteis, et al. (2008) found that incidental learning arises from 'intelligent' mistakes that emanate from calculated risk-taking or experimentation for improvement. Therefore, we might hypothesise that the workplace culture that countenances workers mistakes stands to exploit these mistakes as learning experiences. They described competence development from mistakes in everyday work as "acquisition and modification of concepts, routines and scripts by experiencing failure" (ibid, p.224). However, Harteis' team found that little empirical evidence exists regarding the cultures that frustrate or facilitate learning from 'intelligent' mistakes.

Van den Tillaart, et al. (1998) found that incidental learning emerged by talking to and watching fellow workers or experts execute assignments. Workers talk to colleagues at coffee breaks and learn from them, chat with staff from other companies, and watch more skilful employees perform assignments. As Nonaka (1994) asserts, continuous dialogue among workers is a pre-requisite for knowledge creation. Thus, an opportunity to observe colleague workers during the execution of a task creates the prospect for learning, which is a popular phenomenon from master-apprentice programmes.

In spite of the perceived benefits of incidental learning, such as changed attitudes and improved competence (Ross-Gordon & Dowling, 1995), it is important to note that research also indicates that incidental learning can impact negatively on the work processes. Leroux and Lafleur (1995 cited in Kerka, 2000) underscore the drawbacks of the 'hit or miss' character of incidental learning because it can lead to expensive mistakes. Dodge (1998) also reported that some workers incidentally learn to subvert occupational safety practices in the workplace. Although the objectives of the study do not include inquiries about the negative effects of incidental learning, conclusions about unsafe practices are important to the manufacturing environment.

Although several ways of incidental learning have been identified empirically and conceptually, there is no framework that prescribes how employees learn unintentionally. It is argued that a framework for understanding the means of incidental learning that borrows from the behaviourist, cognitive, and socio-constructivist theories on learning, which acknowledges that individual and group effort of mental co-construction and sense making would be useful for practitioners and policy-makers.

2.5 Concept of culture and implications for research

2.5.1 Understanding culture

Before moving on to explore the possible connections between workplace culture and incidental learning, this sub-section explores the ways in which culture has been defined and conceptualized. The broad use of the term 'culture' by academics and practitioners gives rise to tensions and ambiguities when assessing its influence on aspects of the organisational system. Like informal learning, the amorphous nature of the concept of culture has resulted in numerous and contested definitions (Schein, 2010; Ott, 1989). Despite the controversies, the concept of culture has become an important business phenomenon since early 1980s. Nonetheless, the workplace or organisation is just one of the levels for the application of the concept of culture in the literature. Other writers have also looked at culture at the national, group, team, or even sub-cultural level. Seminal books such as Ouchi (1981 cited in Baker, 2002) attributed the success of the Japanese firms to their culture. Meek (1988, p.454) indicates that "the concept of organisational culture can be a powerful analytical tool in the analysis and interpretation of human action within complex organisations." However, the concept has proved very problematic to operationalize despite the vast and increasing interest.

Researchers in recent times have been inundated with perspectives with which they can conduct theoretical discussions and empirical studies of culture, such as its nature, content, dimensions, and measurements. The study adopts the following operational definition of culture: 'the arrangement of basic underlying assumptions/values and espoused values that manifest through artefacts/practices, assumed by identified group

members through their mutual experiences, which assist them to understand the world around them and how they should behave in it.’ The phrase ‘identified group’ reflects the identification of patterns of organizational-wide cultures and subcultures. On the other hand, post structural/postmodern thinking emphasizes an ephemeral and transient reality. The challenge from postmodern view, nonetheless, does not invalidate the structural conceptions of culture because functionalist views such as Hofstede’s (1991, p.21) “collective programming of minds” and Schein’s (2010, p.200) “collective choice” of group members seem to have identified some structural consistency to collective attitudes within social groups. Consequently, as Schultz (1992, p.31) notes, “culture is a catalyst of tensions between modernism and postmodernism as it points to organization expressions that seem to encapsulate dualistic understandings.” This examination of workplace culture, therefore, seeks for underlying patterns at the workplace as well as identifying “changing combinations of cultural forms and unexpected relations between forms and fragments of meaning” (ibid, p.32). From this line of thinking, “webs of culture” would also be identified.

The thesis essentially assumes a functionalist perspective on culture because it is concerned with the influence or functions served by culture on learning (Schultz, 1994). Furthermore, the study seeks to identify and analyse elements that reveal the collective convictions and manifestations of identifiable groups in concert with the functionalist perspective (Dennison, 2011). However, as Martin (2004) reminds us, we also need to accept that cultures may not always be as unified or coherent as assumed under stricter functionalist conceptions. So, the study will seek to uncover tensions and ambiguities in culture and how these might impact on learning.

A popular classification of paradigms in culture research relates to the distinction between functionalism and interpretivism. Functionalism has enjoyed popularity among culture scholars since the late 20th century but interpretivism is receiving increasing attention because it aligns with the current strong sociological trend of constructing meanings to situations in organisations. The raging debate between functionalism and interpretivism is characterized by the different fundamental assumptions at ontological, epistemological, and methodological levels. With respect to the ontological assumptions, the difference between these perspectives lies in the functionalist's notion of "culture being something that an organisation 'has' as compared with something an organisation 'is'" by the interpretivist (Sackmann, 1992, p.141). The functionalist takes an objective position and espouses the existence of a universal culture in an organisation that a researcher can discover. Thus, once the culture is formed or identified, it reflects on what the organisation becomes, which is experienced by an insider or outsider who interacts with it as its culture. On the other hand, the goal of the interpretivist is to seek subjective explanations to how symbolic relationships are given interpretation by the workers.

Although the ontological approach regarding the objective/subjective dialectic is a valuable theoretical distinction, it is contested nonetheless. For Stablein (1996 cited in Martin, 2003), the subjectivity of the participants is constrained by features of the stimulus under consideration. As Buono and Bowditch (2003, p.137) succinctly noted, "Organisations are both subjective and objective cultures." From this argument, this research shall be framed both objectively and subjectively. This approach requires that the exploration will gather and interpret physical manifestations of artefacts, observable practices as well as the subjective interpretations associated with them.

The fundamental assumption from the functionalist epistemological stance is centred on the practicality, purpose, and utility of culture ‘as constituted’, whereas the interpretive epistemology considers the culture ‘as lived’. Regarding the methodological assumptions, Schultz and Hatch (1996, p.537) remark that "functionalism and interpretivism differ in the extent to which they define an analytical framework prior to entering the organisation to be studied." The interpretivist views culture as an emerging phenomenon whereby most useful constructs required for the description of the culture emerge during the analysis. The functionalist emphasizes different variables of culture as well as advocating the use of predefined analytical framework for specific organisations to be studied (Deal & Kennedy, 1982). The functionalists have been charged for seeking for an understanding of the events from the agency’s frame of reference and not conceptualizing adequately the nature of the process of interaction. As Bishop, et al. (2006) argue, it is possible to adopt an approach between the two paradigms. Schultz and Hatch (1996, p.544) also claim that:

“It is possible to study the simultaneous occurrence of (a) culture as generality, inherent in a predefined and universal framework and (b) culture as contextuality, suggested by the emergent construction of meaning.”

From this view, this study uses Schein’s (2010) model as a predefined framework for the deciphering of the levels of culture as well as understanding of artefacts/practice and values typical of the interpretivism paradigm.

Most researchers have adopted one of the perspectives of ‘integration,’ ‘differentiation,’ or ‘fragmentation’ as theoretical traditions to describe culture (Martin, 2004). Arguably, the integrationist perspective has been the most dominant in cultural research (ibid). It assumes consistency and consensus among members; thus, searches for commonalities or patterns and enjoys a wide appeal from organisational executives. Theorists who subscribe to the integrative nature describe culture as possessing ‘collective programming’ (Hofstede, 1991), ‘basic underlying assumptions’ (Schein, 2010), or ‘collective values’ (Sackmann, 1992). They often collect evidence from a sample of an organization, identifies the trends of consistency and consensus to generalize these findings to the whole culture. However, as the current research seeks to demonstrate, an in-depth study would not only show evidence of organization-wide consensus and consistency in cultural manifestations as claimed by integration studies but also significant divisions and disagreements. Thus, theories supporting the integration view of culture have been challenged by empirical results that show that subcultures prevail in organisations (Parker, 2000).

Toward the identification of subcultures, the differentiation perspective considers the heterogeneous or plural nature of culture, and acknowledges the possibility for conflict of beliefs or values (Martin, 1992). From that perspective therefore, the culture of the organisation may be formed by the consensus present to an extent within identified sub-groups, leading to the emergence of sub-cultures. Integration and differentiation studies assume functionalist/structural theorization and search for patterns by oversimplifying the nature of culture. Hence, within an identified organization or subgroup, consistency and consensus are assumed to predominate, whereas ambiguities are relegated to the interstices between subcultures.

From the post structural perspective, however, fragmentation perspective conceptualizes culture as ambiguous and lacking consensus with characteristics of ironies and multiple meanings. It is conceded that the ambiguities and changing patterns of culture may be difficult to examine. However, Schultz (1992, p.32) suggests that the researcher conducting an in-depth study should be able to catch “glimpses of culture by observing the specific and unexpected and by accepting differences and discontinuity in organizational life.” This study therefore adopts the multi-perspective theory suggested by Martin (2004), which into play to explain more fully the actions and inactions at the workplace. The essential characteristics of these perspectives are described in Table 2.1.

Table 2.1: Integration, differentiation, and fragmentation perspectives

Orientation	Integration	Differentiation	Fragmentation
Orientation to assumptions/ values	Organisation-wide consensus	Consensus within sub- cultural boundaries	Multiple views and contradictions by individuals
Relationships among artefacts/ practices	Organisation-wide consistency and clarity in manifestations	Subgroups consistency in manifestations	Complexity (neither clearly consistent nor inconsistent) in manifestations
Orientation to ambiguity	Ambiguities are excluded as they were viewed by members as “not part of the culture” (ibid, p.5).	Ambiguities are relegated to the interstice between subcultures.	Ambiguities are acknowledged as defining features of some cultures in an organisation.

Source: Adapted from Martin (2004)

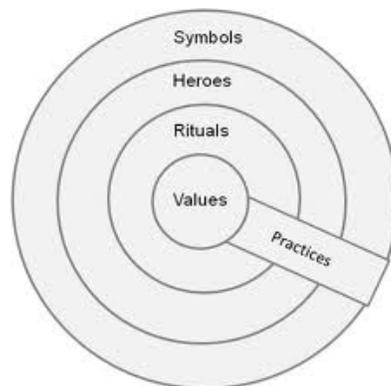
The main drawback of this multi-perspective approach is that empirical evidence to support this theory is limited, especially from the fragmentation perspective where very few studies have been conducted (Kappos & Rivard, 2007). The synthesization of the data using Martin's framework will not only provide empirical evidence about culture's role in incidental learning but also an empirical contribution to support multi-perspective approach of viewing culture. As would be seen, the analysis of the data did not only point out cultures and subcultures but also subsections 4.4.4 and 5.4 in the Findings and discussion and Conclusion chapters respectively show significant ambiguities and complexities associated with some cultural convictions that influence incidental learning. For example, the data illustrated ambiguity and complexity that emerged when two conflicting values - 'we learn from experience' and 'right first time' were espoused by management of case organization. In this instance, some workers interpreted the 'right first time' core value in the company's Business Plan to imply zero-tolerance for mistakes that tend to hinder incidental learning but they also assumed that the periodic publications 'We Learn From Experience' imply that making and learning from mistakes is encouraged.

2.5.2 Elements of culture

An understanding of the elements of culture is necessary prior to the determination of how culture influences or may be managed to influence incidental learning. From Hofstede's (1984 cited in Bishop, et al., 2006) landmark studies on culture, he claimed that culture has two levels. The first level contains the values that reflect the 'deep' stage of culture. These values are shared and lead to a widespread understanding with respect to what the group perceives as good or bad as well as what is rational or

irrational. The second level contains the ‘practices,’ which is the ‘shallow’ level of culture. In a later publication, Hofstede (1997) proposes four levels of culture relating to onion skins that can be peeled in layers. The four levels are values, rituals, heroes, and symbols. He notes that values represent the core or deepest manifestation as illustrated in Figure 2.1 below.

Figure 2.1: The Onion model of culture



Source: Hofstede (1997, p.9)

In Figure 2.1 above, rituals, heroes, and symbols have been subsumed under the larger category practices. An outsider can observe these levels; nonetheless, their meanings are invisible and can be interpreted only through the means by which the practices are interpreted by the members of the organisation. Several cultural researchers draw on Hofstede's (1997) Onion model or variations of it: albeit, scholars have not universally accepted the validity of his work (Bishop, et al. (2006).

Schein (1985, 2010) proposed three 'levels' of culture consisting of 'artefacts,' 'espoused values,' and 'basic assumptions,' which has been adopted as the conceptual framework for many research works. However, inconsistencies emerge in the way

authors espousing Schein's levels of culture have delineated them. Trompenaars and Hampden-Turner (1998) described the three levels as explicit, norms and values, and implicit or basic assumption: whereas, De Long and Fahey (2000) use the term 'values' rather than 'assumptions' as the deepest level, and claim that the intermediate level contain explicit 'norms' instead of espoused values and the most observable level was termed practices instead of artefacts. Bishop, et al. (2006) maintained that the differences in the descriptions are superficial.

Some writers advocating for Schein's three levels describe level 1 - artefacts as the observable, tangible, or audible manifestations of behaviours (Kong, 2003), such as organisation's office layout, language/jargons, equipment/technology, and rituals. Deal and Kennedy (1982, p.63) emphasized the importance of artefacts by suggesting that "without expressive events, any culture will die." For example, the opened office layout may have impact on the knowledge sharing, whereas the dispersion or centralization of common utilities, such as libraries are tangible manifestations of organisational values regarding accessibility to information. Vilnai-Yavetz and Rafaeli (2006, p.10) succinctly affirmed that "artefacts allow people to do things, and inspire people to feel or react a certain way." In this study, artefacts are the common objects and symbols found in the organisational lives of members (Rafaeli & Pratt, 2006), including things such as intranet system, office layout, posters as well as the less obvious categories like organisational positions and job titles. Ott (1989) described practices as the widely agreed set of repetitive behaviours or routines such as patterns of behaviour, habits, rites and rituals, and the manner in which departmental meetings are conducted. However, some of these repetitive behaviours have been earlier described as artefacts. Therefore, in this study the terms artefacts and practices shall be combined.

The second level contains the espoused values of an organisation, representing “what ought to be done, rather than what is” done (Schein, 1985, p. 15). Further to the espoused values such as vision and mission statements, some advocates of Schein’s levels have prescribed value laden documentations containing ethos, philosophies, moral, and ethical codes as level two indicators (Ott, 1989). The level two documentations may not be able to give correct information about the true or accurate workplace culture because of prevailing inconsistencies between ‘espoused values’ and ‘values-in-use’ in the organisation (Argyris & Schon, 1978). Despite the challenges associated with the use of the level two elements, they are better predictors of behaviours of organisational members as they are conceptually nearer to the ‘true’ culture residing in the underlying assumptions than artefacts/practices.

Schein (2010) proposes that a third level of culture, which consists of basic underlying assumptions or fundamental values, beliefs, and perceptions: often, these have been taken for granted. The basic assumptions agree with Argyris’ ‘theories-in-use,’ which guide organisational behaviour as they direct members with respect to their feeling as well as how they think about and solve problems. According to Baumgartner and Zielowski (2004, p.5), “Basic assumptions are implicit assumptions guiding individual behaviour, and tell group members how to perceive, think about, and feel about things.” Thus, to gain an understanding of the cultures and subcultures of a workplace requires an elaboration of the underlying assumptions.

Contrarily, some scholars have criticised the identification of levels of culture because of the growing recognition and emphasis on complexity of culture, arguing that partitioning of culture makes it lose its sense of coherency (Denison, et al., 1995).

Similarly, arguments have been presented against conceptual models employed for the research on cultures of an organisation from the view that they tend to oversimplify a complex phenomenon. However, literature reveals that these models have played significant roles in guiding empirical research and theory generation (Hatch, 1993). Therefore, Schein's model is adopted to analyze cultures and subcultures in this study, based not only on its wide acknowledgement, operationalization, and use (Kong, 2003; Schultz, 1994) but also it provides an important distinction of the views on cultures during data collection.

2.6 Culture and Learning

2.6.1 Culture and learning connection at the workplace

Research on the culture and learning connection is part of a broader research agenda regarding the relationship between the organisational/workplace environments in general and learning. Culture is one aspect of the organisational environment that can affect learning; since, as noted in previous sections, for example, the more structural aspects of the workplace, such as organisational structure also influence the learning process (Ashton, 2004). Marsick (2011, p.7) emphasizes that “organisational factors are critical to the nature, quantity and quality of informal learning.” Further, Doroudi (2012, p.3) maintains that the nature of “organisational culture defines the identity of learning and the method of its realization.” Findings from research works illustrated below describe the current status of the relationship between cultures and learning at various workplaces.

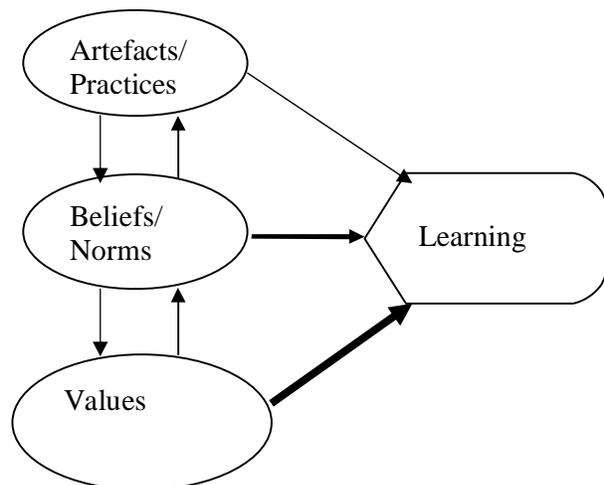
In 1998, the Education Development Centre (EDC) based in Massachusetts, published the report of a two-year study on the relationship between informal learning and cultures of organisations in the United States. The research sought to find organisations that create the environment in which learning is entrenched culturally. The research embraced major manufacturing companies, including Siemens, Motorola, and Boeing establishments (EDC, 1998). Significant findings from the EDC study reveal opportunities to encourage or replicate the identified experiences of informal learning episodes in some of the organisations. For example, during shift changes at Motorola's establishment, the shifts overlap for half-hour to allow outgoing workers to inform the oncoming shift members about problems encountered and hint them about the likely causes and solutions to these problems. The report suggested that there can be opportunities for enhancing the informal exchanges of information and appropriate resources can be allocated to enhance the depth and breadth of their communication.

Ellinger (2005) also identified artefacts such as libraries and training rooms as important symbols (in addition to their more practical and tangible value) that demonstrates the investment the company provides toward learning. Another broad theme under the socio-cultural platform that shaped the informal learning in the company was the opportunity for people to socialize and form webs of relationships that facilitated learning. However, 'old-guard cynicism' and the tendency for some employees to be territorial impeded informal learning (Ellinger, 2005, p.404). It is argued that the establishment of learning networks might be foiled by existing cultures of cynicism and territoriality; bringing the key question relating to how easy it is to manage or create an organisational-wide culture to the fore.

Mahler (1997, p.527) studied the importance of cultures to learning in public organisations. She found that learning activities of employees depend on the interpretations assigned to information in the “context of the historically developed organisational meanings represented or symbolized in the organisation's rituals, myths, and ceremonies” (ibid, p.527). Mahler argued that the inclusion of culture as a feature in workplace learning enhances the capacity of both academics and practitioners to explain how the learning process occurs and why sometimes learning may not arise.

According to De Long and Fahey (2000), practices afford the most direct leverage for altering behaviours that lead to learning whereas the deepest level values provide the least direct lever. However, the impact of the deep level assumptions on knowledge creation, sharing, and use is most profound. Thus, as shown in Figure 2.2 below, the arrow from assumptions to behaviours is most prominent. Yet De Long and Fahey’s (2000) statements were not based on empirical evidence; this study provides empirical evidence on this line of thinking.

Figure 2.2: Cultural elements’ relationships with learning



Source: Adopted from De Long and Fahey (2000, p.116)

Evans, et al. (2011) found that workplace knowledge is embedded in artefacts as they play key roles in structuring of work and sharing of information. They drew attention to the use of textbooks, manuals, and sets of data by experienced employees as mediating artefacts. Evans' team conceded that these documents do not contain all the knowledge because the majority of practical knowledge was not contained in them, as the knowledge was accessible through the conversations around the documents. They noted that it may be difficult to develop these conversations without the artefacts and also reported that many novices feel diffident in asking questions unless when working as a team. However, peers and seniors did not hesitate to ask questions, and they had the latitude to learn from their mistakes. The current study sheds light on how various artefacts/practices and sub-cultural groupings may influence learning.

In sum, the cultures and subcultures of the workplace are not only illusive or intangible systems of assumptions, values, and beliefs but include also observable artefacts/practices embodied in meetings, documents, etc. These elements of the various cultures reflect different levels of relationships with incidental learning at the workplace. This research explores how the different levels or aspects of cultures and subcultures support or inhibit incidental learning and will enable researchers and practitioners to perform a better assessment of the workplace as a setting for learning.

2.6.2 Supportive and inhibitive cultures of workplace learning

Fuller and Unwin's (2003, p.131) expansive/restrictive continuum identified factors in the organisation's environment "which influence the extent to which the workplace as a whole creates opportunities for, or barriers to, learning." They did not refer to

'cultures', but to the broader term 'environments' that encompasses cultures as well as the structural aspects of the organisation. In a similar study and with a focus on informal learning, Skule (2004, p.14) explored the conditions most favourable to workplace learning and identified seven circumstances that may encourage informal learning such as "a high degree of exposure with changes" and "extensive professional contacts." Although Skule drew attention to the factors that encourage informal learning, it also covered the broad environment rather than a focus on the culture. This study adds to knowledge in this area by focusing on the influence of workplace culture on learning.

From the expansive/restrictive environment, Unwin (2004) developed a narrower scope of their model by identifying various expansive and restrictive learning cultures. However, her model did not distinguish between the distinctive roles of various aspects of culture. For example, surface levels of culture such as "workplace learning infrastructure" and "reputation for routine jobs" are discussed as if they are on the same level of relationship as the assumption - "learning is valued" (Fuller, 2004, p.6). Building on Fuller and Unwin's work and based on a conceptual study of themes in the extant literature, Bishop, et al. (2006) identified some likely features of cultures supportive of learning. The framework for the description of the features was based on Schein's levels of culture. Thus, the features were classified under tacit assumptions, explicit beliefs, and practices that represent or constitute culture. Bishop's team cautioned that the list is only indicative because it does not provide the complete and confirmed features of the learning supportive cultures. Hence, it may not be a comprehensive model for the identification of a learning supportive workplace or organisation. Although Bishop et al. (2006) attempted to address the gap relating to

Unwin's (2004) model, their model was not developed from an empirical base. Additionally, their model outlines a list of artefacts/practices, values, and assumptions without discussing any relationship among them. The findings from this study will further develop on these lists by providing additional empirical substantiation and further establishing the particular relations between specific artefacts/practices, their underlying assumption/values, as well as the nature of occurrence or hindrance to learning. The need for such research to elaborate on the relationship of particular aspects of culture to particular aspects of learning was highlighted by Bishop, et al. (2006) and it is this gap that the research aims to address.

2.6.3 Aspects of culture that support incidental learning

Callahan (1999 cited in Smith & Defrates-Demsch, 2008) found that incidental learning emerged when technical workers got the opportunity to observe each other when working and to interact or socialize in informal situations. Callahan reported that artefacts such as jargons and special language also played important roles in sharing. As colleagues interact and work, these engagements provide opportunities for observation and modelling, leading to the acquisition of the requisite skills, knowledge, and attitudes for work. Research also shows that incidental learning opportunities emerged during the debriefing after a project (Watkins & Cervero, 2000) and as older workers unpacked their experiences through stories shared with new comers (English, 2002). It is hypothesized, therefore, that the depth and breadth of conversations at the workplace may affect the quality and extent of incidental learning that may occur.

Woodall (2000 cited in Silva, 2007) observed that results from studies on incidental learning seem to be conflicting. Some occurrences of incidental learning emerged from ‘tough love’ cultures characterised by numerous problems and a great deal of uncertainty in operations (McCauley, et al., 1995). Nevertheless, in other occurrences, incidental learning emerged because workers were open and allowed opportunities to share and reflect on situations. This study draws attention to the phenomenon of mixed or conflicting influence by aspects of culture on incidental learning.

According to Marsick, et al. (2008), modern workplaces offer rich environments for incidental learning because it is increasingly socially situated and structured. They observed that the pervasive use of computer-based machinery enriches the work environment with opportunities for informal and incidental learning. Boud (1998) also asserted that computer usage is becoming crucial to the success of businesses, and argued that “information technology not only automates, it also informs” by providing diverse information to enhance thinking (ibid, p.24). Currently, the proliferation and performance of personal computers have made this assertion relevant.

A synthesis of the literature revealed six super-ordinate themes of learning-supportive cultures. These themes as shown in Table 2.2 below influenced the researcher’s theoretical and analytical interest during the research process. The thesis offered here is that these themes positively influence the capacity of the worker to experience incidental learning. For example, we can hypothesize that a culture or subculture that supports the opportunities for several informal meetings, and countenances intelligent mistakes may be developed to support incidental learning.

Table 2.2 Theoretical themes of supporters of incidental learning

Super-ordinate theme	Themes	Reference
Social relationships	<ul style="list-style-type: none"> • Informal official meetings • Informal social meetings • Jargons and special language 	Callahan (1999)
	<ul style="list-style-type: none"> • Relationship between managers and subordinates 	Dawson (2008)
Nature of tasks	<ul style="list-style-type: none"> • Numerous problems • Heightened risks • Uncertainty 	McCauley, et al (1995)
	<ul style="list-style-type: none"> • Non-routine and new tasks 	Keeping and English (2001)
	<ul style="list-style-type: none"> • Unfamiliar situation – culture, role, etc. 	Younes and Asay (2003)
Tolerance and flexibility	<ul style="list-style-type: none"> • Tolerate intelligent mistakes 	Dawson (2008)
	<ul style="list-style-type: none"> • Encourage risk taking 	English (2002)
Information sharing culture	<ul style="list-style-type: none"> • Debriefing 	Watson and Cervero (2000)
	<ul style="list-style-type: none"> • Unpacking experiences 	Warhurst (2008)
Office infrastructure	<ul style="list-style-type: none"> • Office layout • Pervasive use of computers 	Marsick, et al. (2008)
Individual traits	<ul style="list-style-type: none"> • Prior knowledge 	Sleight (1994)
	<ul style="list-style-type: none"> • “managers of inquiry” 	Schuck (1996, p.207)

2.6.4 Aspects of culture that inhibit incidental learning

Although literature is replete with specific elements of cultures that support incidental learning, it only very rarely reflects on the information related to the cultures that inhibit incidental learning. The dearth of information in the literature about factors that might inhibit incidental learning is arguably a reflection of the paucity of research as well as a lack of information on inhibitors of informal learning; the parent concept. However, it could be argued that the contrast or absence of the features of cultures that appear to support incidental learning may hinder learning. For example, Konetes (2011) argued that a shallow formation of social network at the workplace may constrain the opportunities to undertake incidental learning since participation and interaction among workers facilitate incidental learning. Naturally, incidental learning decreases as participation in the interactions decline (Warhurst, 2008).

Schuck (1996, p.207) avers that the responsibility of leadership as “managers of inquiry” in the emerging knowledge economy is important. The manager may either ask questions or provide feedback to create opportunities for employees to think and not acquiesce without reflection. She emphasizes that:

“The beliefs, attitudes, and behaviours of the manager are at the heart of the environment of inquiry. ... a ‘special’ manager, as somebody who listens, ... makes me understand, and makes me think. Workers seek out such managers because they help them sharpen their intellectual skills” (Schuck, 1996, p.207).

From the operational perspective, therefore, the lack of interaction between supervisors and employees may hinder incidental learning. Burgoyne and Hodson (1983 cited in

Beattie, 2006) also stated that there is a growing imperative for business considerations as well as academic inquiries into the behaviours of line supervisors with respect to their employee developmental responsibilities. From the organisational perspective, Beattie found from two voluntary organisations that provided social services that the prevalence of mistrust and irregular interaction between employees and managers are two cultural elements that hindered incidental learning.

Research has showed that the emerging phenomenon of “working from home” and “off-shore employees” stifle participation in organisational socialization, which therefore prevent employees from benefiting from opportunities to learn incidentally from co-workers (Thompson, 2010, p.12). Johnson (2005) also notes that although the deployment of PowerPoint presentations is an important tool for communicating, the tool has a bitter-sweet influence. She claims that presentations inhibit spontaneity among the audience and thus hinders learning. One can argue that lack of spontaneity may be due to the strict reliance on the PowerPoint notes; hence the audience may not be afforded enough space for incidental learning. Lohman (2000) also found that the factors such as fairness to learning materials, inadequate time, and not having meaningful rewards inhibit informal learning.

From a representation of the literature review, Table 2.3 below is a summary of the themes of a possible learning-inhibitive culture. Four super-ordinate themes were identified; namely, social relationships, job design, office infrastructure and individual traits. These were considered as theoretical themes to guide the analytical process.

Table 2.3 Theoretical themes of constraints of incidental learning

Super-ordinate theme	Themes	Reference
Social relationships	Shallow formation of social network	Konetes (2011)
	Dysfunctional co-workers interaction	Le Clus and Volet (2008)
	Low participation in interactions	Warhurst (2008)
Job design	Standardized procedures	Ellstrom (2006)
Office infrastructure	working from home	Thompson (2010)
	PowerPoint presentations	Johnson (2005)
Individual traits	Not manifesting “managers of inquiry”	Schuck (1996, p.207)

2.6.5 Workplace culture and the role of the individual in learning

Although the focus of this study is on the role of workplace culture on incidental learning, it is also important to remember that the role of the individual on learning is significant. The tendency to emphasize cultural factors has been influenced by the increasing importance of the learning as participation metaphor and the associated informal learning discourse that has characterized much of recent research on workplace learning. In recognition of the acquisition metaphor, Billett (2002) maintained that the individual’s nature also influences commitment to workplace activities and what he or she learns. He claimed that:

“How workplaces afford opportunities for learning and how individuals elect to engage in activities and with the support and guidance provided by the workplace, is central to understanding workplaces as learning environments.”
(*ibid*, 2002, p.1)

Effort is required by individuals to acquire new knowledge such as job steps, attitudes toward work, and concepts about work. Similarly, much effort is required to refine the knowledge that was previously learned through the mediation by the individual's existing knowledge. Therefore, it would be a grave error to disregard the role of the individual in incidental learning. In that light, Wertsch (1998 cited in Billett, 2002) proposed the examination of the constructs of mastery and appropriation of the individual in learning. He explains that mastery is the reception of knowledge combined with an individual's capability to meet the requirements for task accomplishment. However, appropriation is the recognition by the individuals of what is being learned and the effort to acquire understandings, beliefs, and procedures (Luria, 1976 cited in Billett, 2002). From the work on 'unintended' or incidental learning at three workplaces, Billett reported that where the workplace environment is replete with affordances, participants acquired more knowledge than where there was less support for learning. However, there was evidence of situations in which the actions of the individuals worked in opposition to the values of the organisations being studied.

Hodkinson (2006, p.1) found that although some individuals developed consistent positive dispositions towards learning and work, others demonstrated changing dispositions. Therefore, to understand the nature of learning at the workplace, scholars should value the individual's dispositions because homogeneous and standardised

approaches to learning at the workplace may fail if individual peculiarities are not considered (Hodkinson, 2006). Obviously, to take an approach that considers only the individual and treat every employee or learner uniquely is also problematic. The backgrounds of the individuals with respect to social class, ethnicity, labour markets, and gender could be considered. Hodkinson and Hodkinson (2004) also found that different individuals within the same organisation context may perceive and benefit differently from learning opportunities. For example, two male individuals in the same organisation, practicing the same school-teaching profession, and both of the mid-40s age demonstrated differing approaches to learning as well as tendencies to participate in work activities. Hence, an assumption that all individuals will be reacting in the same way to stimuli from cultures may not be right. As argued by Hodkinson, et al. (2008), there is the need for future exploration of the interrelationships between the individual learner and socio-cultural situation. They noted that, currently, valuable theoretical works separately address some of these issues; however, none of them effectively integrates them.

The literature review has demonstrated that incidental learning seem to afford employees the opportunities to acquire specific social and technical knowledge. This study draws on the models of informal/incidental learning highlighted and uses the hypothetical models of learning-inhibitive and learning-supportive cultures identified as part of the analytical framework, and to some extent structure the data collection and analysis. At a higher level, Schein's (2010) model and Martin's (2004) multi-perspectives of culture are parts of the analytical framework. These parts form the main framework for the three questions guiding the study. Chapter three outlines the research methodology used to address these questions.

Chapter 3 – Research Methodology

3.1 Introduction

This research seeks to understand better the ways in which various aspects of cultures impact on incidental learning in the workplace (Marsick, 2011). More specifically, the research examines experiences of incidental learning and determines how some elements of Schein's (2010) model of culture are more supportive or inhibitive to this learning, and why they have such effects. The methodology employed is in accordance with the concepts and ideas from the cultural perspective where individuals and cultural context are studied concurrently because learning is assumed to be structured by situational, physical, and social factors (Billett, 2009).

Through the phenomenological lens, the study captures and analyzes how workers experience incidental learning and how their experiences were influenced by culture. This research design is aimed at providing sufficient data to address the central research problem - *“How is incidental learning influenced by aspects of workplace culture?”* Toward that end, this study addressed the following three research questions.

- How do workers undertake incidental learning at the workplace?
- How can artefacts/practices support or inhibit employees' incidental learning?
- What are the values and basic assumptions that support or inhibit incidental learning and how are they represented as cultures and sub-cultures of the organisation.

After this introduction, the rest of the chapter has been divided into six sections. Section 3.2 describes the research philosophies and strategies such as the epistemological and methodological principles employed in the design of the research. It also explains how the research reflects these principles and highlights research design challenges relating to incidental learning and workplace culture. Section 3.3 describes the research site and sampling techniques adopted as well as the justification for these choices. Sections 3.4 and 3.5 give detailed accounts of the multiple data collection processes and analysis methods employed to address the three research questions. The detailed accounts are in accordance with Attride-Stirling's (2001, p.386) recommendation for ample and comprehensible disclosure in qualitative methodology through a "learned and robust methodology;" so that, present methods and tools can be upgraded. Section 3.6 outlines the ethical issues encountered, and describes how they were addressed. Finally, section 3.7 highlights the research limitations acknowledged in the research process and discusses the choices made to mitigate them.

3.2 Research philosophy and strategies

3.2.1 Epistemological position

The adoption of an overarching philosophy for the research design is related to the epistemological choice from pure positivism to pure interpretivism continuum (CLMS M1, U2). Positivists assume that the social world is stable and observable and may be described from an objective viewpoint. However, interpretivists assume the social

world is complex, open to interpretation, and cannot be reduced to observable laws and it is more important to understand the multiple experiences and meanings of the participants that underpin the reality (Creswell, 2003).

The proponents of interpretivism contend that the positivist approach to investigations is restricted, especially relating to the capacity to identify easily the characteristics of lived experiences and interpretation of their patterns (Creswell, 2003). In practice, interpretivism translates into highlighting the common features of the social world, and questions how people undertake the everyday things that sustain their social lives such as learning. In line with the interpretivist approach, this study interprets the perceptions of employees on how the incidental learning opportunities are afforded or hindered by their cultural contexts.

3.2.2 Methodological position

A research work may have design elements based upon a quantitative, qualitative, or mixed method. The quantitative approaches to investigations in some ways are restricted, especially with respect to the capacity to identify easily the characteristics of everyday experiences, such as incidental learning and interpretation of their patterns (Creswell, 2003). Hassard and Pyn (2012, p.34) suggest that studies such as those involving incidental learning and culture are topics of the “highest order of complexity: thus, research languages with low varieties such as quantitative approaches are not suitable.” Further, the qualitative approach enables the use of words mainly instead of numbers, thus allowing the recount of elaborate learning experiences.

Since the 1980s, some researchers have rejected the dichotomized rubric of quantitative/qualitative methodology and switched from this methodological debate to how to combine these methods within a research to improve upon the depth and breadth of insight. However, Brannen (2005, p.183) cautions that “multi-method research is not necessarily better research.” As Erzberger and Prein (1997) also caution, mixing the two approaches would not be the panacea for the methodological problems associated with each approach because challenges would emerge from mixing the methods. Therefore, Lartey’s (2009, p.3) claim that ‘an efficiently combined methodology derived from an excellent working knowledge... will result in the generation of an expansive and intensive knowledge’ tends to underestimate the complexity of the research processes. Following the reasons aforementioned, the qualitative approach is adopted for this study. Further, the literature review revealed that researchers in Ghana have emphasized quantitative rather than qualitative strategies. This study contributes to the body of knowledge on a specific strand of qualitative research in Ghana upon which other enquiries can develop.

3.2.3 Qualitative strategies: single case study and phenomenology

The research adopted a qualitative case study method based on a phenomenological perspective. Schell (1992) claims that the case study genre is supreme in the consideration of a complex research question in which the environment is loaded with contextual variables such as human, physical, and infrastructural entities. As noted in Chapter 1, VALCO has a huge infrastructure and employs about 2000 workers when in full production with both white and blue-collar jobs comprising several professions, including engineers, accountants, and human resource practitioners. Yin (2009) also

maintains that a case study is unparalleled for investigating contemporary phenomena, such as informal learning and culture within its real-life context. Yin claims that the unique strength of the case study strategy is "its ability to deal with a full variety of evidence—documents, artefacts, interviews, and observations" (ibid, p.11) as required for this study. He further asserts that the case study is most suitable for the consideration of how and why questions, especially where there may be inadequate existing theory. These characteristics pertain in this study.

A case study strategy may either interrogate a single case or multiple cases (Yin, 2009). Fundamentally, the choice affords an in-depth analysis through a single-case study or greater generality through multiple cases. The selection of the single-case strategy was informed by three reasons affirmed by Yin (2009). First, there is paucity of research on incidental learning at the workplace and the phenomenon is also not well understood. Second, incidental learning is usually considered inaccessible because of its unintentional nature, thus this study is a revelatory case. Third, the characteristics of the research site present a typical case believed to be representative of large manufacturing establishments. The number of employees (greater than 250) and nature of operations capture the conditions and circumstances of everyday experiences that may be assumed for the average manufacturing firm (Basaran, 2013). A single-case study strategy was adopted to have an in-depth knowledge of the case because as Vogt and Williams (2012, p.300) cautioned, "It is difficult to know more than one case really well."

Phenomenology has become increasingly popular in qualitative methodology because it "can help us to sort out issues that pertain more to existential aspects of personal and interpersonal experiences" (Gallagher, 2012, p.5). This study is mainly underpinned by

the phenomenological philosophy to gain an understanding of the experiences of the phenomena under investigation. The study reflects three central and relevant assumptions of phenomenology as stated by Husserl (1970). First, phenomenological research assumes that the participant's perspective is central to the analysis. Hence, the first research question (See Section 3.1) aims at describing and analyzing the incidental learning from the perspectives of the participants; or their 'life-world'. Second, the phenomenologist celebrates multiple realities that reflect the view that the social world is defined by the subjective interpretations of experiences (Denscombe, 2010). This research requires an understanding of the relationship between 'workplace culture' and 'incidental learning.' Thus, my perceptions about this relationship were usefully employed to co-create the understanding of these relationships in the second and third questions. Finally, the phenomenologist assumes that a recognizable 'shared essence' exists for a given experience, which can be articulated for enquiry (Husserl, 1982). The third question attempts to uncover the shared essence or common experience of beliefs and underlying assumptions to identify cultures and subcultures that impact incidental learning.

Despite the growing use of phenomenology in Social Science research, some scholars have criticized and raised questions against this approach. The issues often raised in the literature include the lack of consensus about what is phenomenology (Neergaard & Ulhøi, 2007). For instance, Daniels (2004) identified 18 varieties of phenomenology, albeit common themes and overarching concerns emerge that unites its advocates. Nonetheless, the two main schools of thought emerging in the literature are descriptive and interpretive phenomenology. Husserl's descriptive phenomenology involves the performance of four basic processes: bracket, intuition, analysis, and description (Polit

& Beck, 2013). Bracketing requires that the researcher sets aside prior opinions and beliefs about the phenomenon under study but the researcher argues that a research without pre-supposition may not be possible. Similarly, Heidegger (1927 cited in Polit & Beck, 2013, p.271) argues that it is impossible “to bracket one’s being-in-the-world.” Thus, this study was informed by an interpretive phenomenology under a qualitative framework.

3.2.4 Research design challenges

The challenge with prescribing the scope of the study emerged because many important facts, rules, and skills used at the workplace, such as facts about unwritten social rules and short cuts to get work done under certain conditions are incidentally learned at the workplace and during off-site interactions among workers. This study focused on incidental learning, which emerged from the knowledge employees obtained while participating in everyday work activities. It excluded incidental learning during off-site training because they were not part of everyday work, albeit learning is accretionary.

Practically, challenges emerged from relying on the learner’s personal account and meta-cognitive analysis because incidental learning outcomes are normally personal and elusive. Bratton, et al (2010, p.2) asserted laconically that “through incidental learning people acquire tacit knowledge.” The identification of tacit knowledge, however, posed practical challenges because the learner is often unconscious of the learning process. Therefore, the study relied on the learners’ recognition of the outcomes of incidental learning through improvements in their performance (Hager

& Halliday, 2006). Limitations may arise during these retrospective accounts of incidental learning regarding the accuracy and rationalization.

Eraut (2004, p.115) cautions that the extent of unintentionality will “vary and often be debatable.” Incidental and intentional learning are at the ends of a continuum of a gamut of learning situations. This study focused on learning in situations in which learning was an accidental by-product of the intention to do something else such as daily work activity, personal interaction, and view of publications. Thus, there was no intention but there is realization that learning has taken place.

Two main forms of realization of the learning have been proposed based on reflexive or reflective activities (Rogers, 2009). A reflexive response may emerge when a stimulus such as a question from the supervisor, researcher or the demand from the execution of a task produces knowledge from the worker that the worker does not remember learning. On the other hand, the reflective realization emerges when on their own accord, the workers become aware of a skill set or information they have learned but were unconscious of the learning process previously (Younes & Asay, 2003). For this study, both forms of realization were considered.

Culture is also fraught with debates about its definition, conceptualization, and methodology for exploration. Martin’s (2004, p.2) comment below illustrates the challenges relating to the lack of consensus on fundamental issues regarding the use of culture as a framework for the analysis of a phenomenon such as incidental learning at the workplace.

“This dissension among cultural researchers, regarding such fundamental issues, makes it difficult to define culture and summarize the results of this growing literature in terms of linear progress toward greater, widely accepted knowledge.”

Furthermore, researching incidental learning with workplace culture as a framework brings more challenges to those mentioned above. Hence, following Jackson’s (2011) suggestion, this study adopts a multi-level and multi-perspective approach to afford further and better insights into the phenomena (cultures, subcultures, and incidental learning).

3.3 Research site and sampling technique

3.3.1 Research site

The research site is a large-sized Ghanaian manufacturing facility with 537 workers currently on site. Participants were drawn from all the eight departments of the organisation: one - Maintenance, three - Operations, and four - Support Services departments. As argued in Chapter 1, the justification for the selection of the VALCO plant for this single-case study was grounded on theoretical, empirical, and personal reasons.

The selection of a single site afforded the opportunity to undertake an in-depth exploration of one organisation and allowed the collection of rich descriptions of how participation in workplace activities affords incidental learning.

3.3.2 Sampling technique

A quota sampling method was used to determine the number of employees to be interviewed in each department according to representativeness from the departmental number on roll and professions. Subsequently, purposive sampling was employed to select 19 participants considered most appropriate (Parasuraman et al., 2004) based on the organisational-wide scope and quality of required data (Burns & Grove, 2005). Thus, sample constitution reflected employees across all departments, with different job characteristics and grades to provide rich and broad data as well as allow comparisons/contrasts to be drawn. As Hycner (1999 cited in Groenewald, 2004, p.156) claims, “the phenomenon dictates the method (not vice-versa) including even the type of participants.” Snowballing was also employed to add two participants.

For the focus groups, four new participants were added to six previously interviewed in the management group and five new participants were added to three old interviewees in the non-management group based on judgement sampling. As Onwuegbuzie et al. (2010, p.712) found, “for data saturation and/or theoretical saturation to occur, both within-group and across-group saturations are needed.” They also found that the group sizes of between eight and ten participants were sufficiently small for all the participants to express their opinions; yet they were sufficiently large to generate diversity. Another objective of the purposive sampling was to ensure maximum variation with respect to rank and power in the organisation. Toward that objective, one deputy CEO, one director, three area managers, ten managers, and fifteen non-management staffs participated. The profile of the participants is provided in Table 3.1 below.

Table 3.1: Profile of participants

Department	Age (years)	Service Length (years)	Nature of work or role	Level of Education
Human Resource and Admin	55-59	32	Fire Warden	GCE 'O' Level
	55-59	26	Administrator	Masters Degree
	55-59	24	Administrator	Masters Degree
	55-59	28	Administrator	Masters Degree
	55-59	31	Clerk	Trade Certificate
Carbon Operations	45-49	21	Staff Engineer	Masters Degree
	55-59	30	Production Supervisor	Trade Certificate
	50-54	32	Maintenance Technician	Trade Certificate
Cell Lines	45-49	8	Staff Engineer	Masters Degree
	55-59	32	Production Technician	Trade Certificate
	35-39	16	Production Technician	Bachelors Degree
	55-59	30	Production Technician	Trade Certificate
Cast House	45-49	24	Production Technician	Trade Certificate
	50-54	20	Production Supervisor	Trade Certificate
	55-59	28	Director – Metallurgist	Bachelors Degree
DEM	55-59	31	Maintenance Technician	Trade Certificate
	55-59	34	Maintenance Technician	Trade Certificate
	55-59	32	Maintenance Technician	Trade Certificate
	50-54	26	Maintenance Supervisor	Diploma
	55-59	32	Maintenance Supervisor	Trade Certificate
	55-59	32	Maintenance Technician	Trade Certificate
	30-34	1.5	Maintenance Technician	HND
Finance and Commerce	50-54	30	Warehouse Clerk	Trade Certificate
	55-59	31	Accountant	Masters Degree
	50-54	20	Area Manager - Programmer	Masters Degree
	50-54	20	Warehouse Clerk	GCE 'A' Level
Technical	40-44	10	Computer Programmer	Bachelors Degree
	50-54	27	Quality Control Clerk	Trade Certificate
	45-49	24	Technical Supervisor	Bachelors Degree
Power and Integrated Aluminium	50-54	26	Mechanical engineer	Bachelors Degree

Although the research sample is representative of the population; nonetheless, issues relating to the age and length of service of participants emerged. The average age and length of service of the research sample are 52 and 25 years respectively. Consequently, the data could contain views from workers who may be considered older than workers from a typical manufacturing firm in some countries because as Redden (2013) found out from a compilation of statistics relating to the employment of workers in various industrial sectors in the UK, 60% of employees in the manufacturing environment were between 25 to 49 years. Hence the conclusions cannot be even generalized over the manufacturing industry. However, given the exploratory nature of this study, the sample of more experienced workers who cut across the organization in terms of status, departments, and occupations may afford more opportunities to garner insights and understandings into the phenomena being assessed (Patton, 2004).

3.4 Individual interviews data collection and analysis

3.4.1 Pre-interview activities

Researching incidental learning can be difficult because respondents are usually unaware that it is happening (Eraut, 2000, p.133). This presented challenges regarding the design of the specific kind of questions for participants. To address this challenge, the first phase involved pre-interview observations to collect notes about what the participants have been doing and artefacts available at the work environment. These observations and review of posters, libraries, and reference documents lasted between 5 to 20 minutes, depending on the researcher's previous knowledge about the participants and work area. These notes enabled attention to be drawn to related events, learning

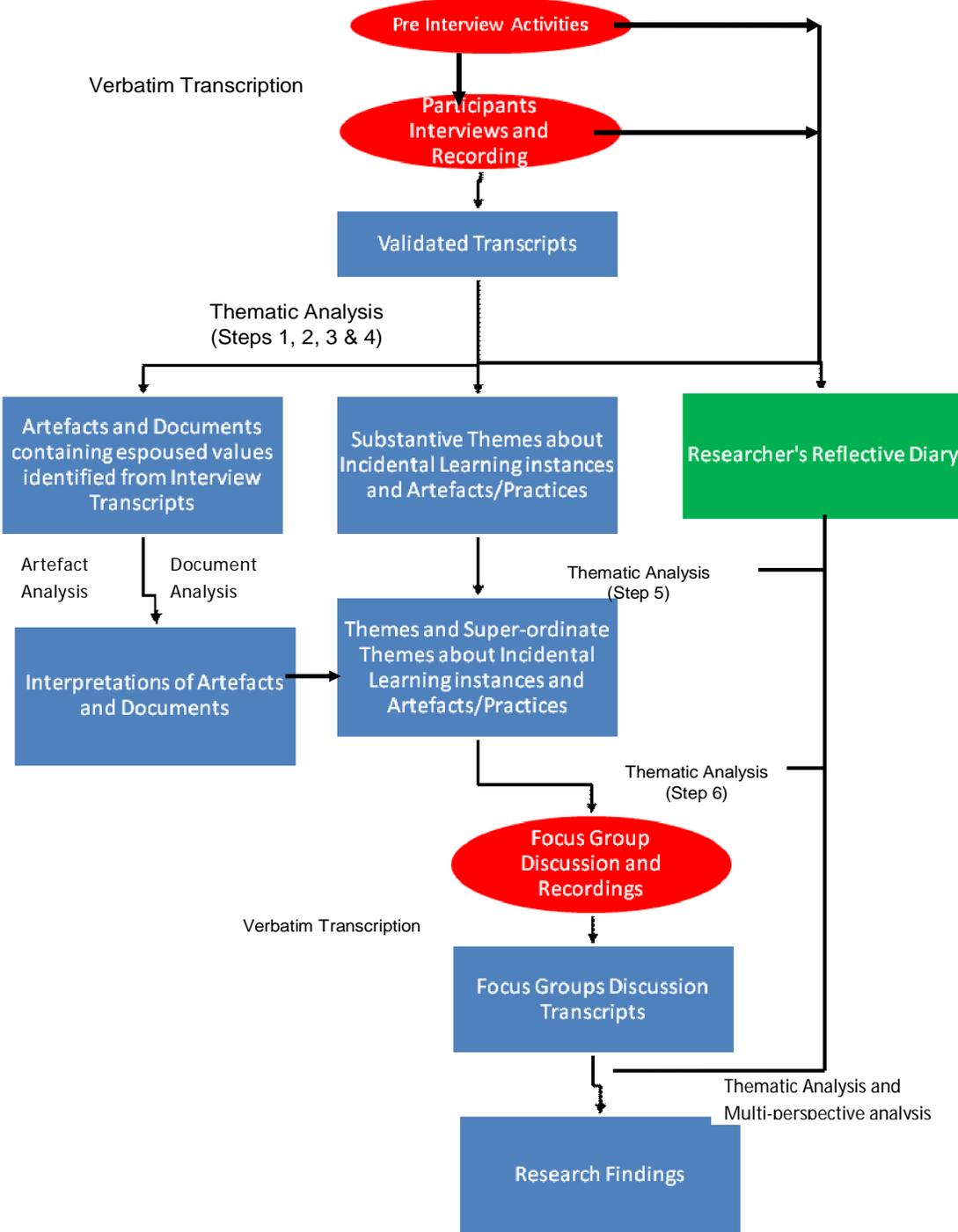
experiences, and artefacts during the interviews. For example, by looking at posters, notes about the wording and pictures were made for probable connection with the learning experiences of participants. During the interviews and focus group discussion, these notes enabled the researcher to make out the incidental learning by the participants assimilated through continuous viewing of the posters.

These pre-interview activities were covertly undertaken with attendant methodological and ethical considerations. At the methodological level, the intention to make notes of everyday working environments could be compromised by participant's pretentious behaviours if they become aware that they are being observed. At the ethical level, the process of observing and interrogating participants for research purposes while pretending to be on an official assignment raises an ethical concern relating to deception of participants in covert research. However, the participants were debriefed about the pre-interview activities prior to the commencement of the individual interviews. The post-observation debriefing of participants was used to address this ethical concern; moreover, the notes collected during the pre-interview activities were not used as 'data' but rather to inform the interview process (Kimmel, 2007).

3.4.2 Interviews of individuals

Within the qualitative research framework, Alvesson (2003) delineates between two data collection approaches, namely, planned-systematic (structured) and emergent-spontaneous (unstructured) approaches; with many possible approaches in between. This study primarily followed a planned-systematic approach as illustrated in the data collection and analytical process presented in Figure 3.1 below.

Figure 3.1 Data collection and analytical process



Nonetheless, some portions of the data were gathered from the emergent-spontaneous approach by carrying out further inquiries when something informative or revealing arose. Toward that objective, special attention was given to interesting disclosures and artefacts/practices mentioned. Although Bryman (2007) warns about arbitrariness and unscientific nature of the emergent-spontaneous approach, Alvesson (2003, p.181) maintains that some benefits may accrue to the success of the research, “the most significant one is that it increases the likelihood of coming up with interesting material.”

There are three types of interview procedures in the literature: face-to-face, written questionnaire, and telephone interviews. The face-to-face interview process was more useful for this phenomenological study, although it limits the number of participants because of time required to conduct it. The face-to-face interviews enabled clarification of questions, provision of insights from participants, and adoption of style of questions that matched the conversational styles of participants. Interviews are normally delineated according to the extent of predetermined structures. From that view, Patton (2004, p.341) identified three types of interviews for qualitative research, namely, “informal conversational,” “general interview guide approach,” and “standardised open-ended” interviews. The “informal conversational” interviews are the most open-ended and are normally used as part of participant observations. The “general interview guide” approach is not as flexible as the “informal conversation” because it is directed by subject areas to enable researchers to explore similar issues. This approach requires a checklist to ensure that the germane issues are covered. The “general interview guide” approach was employed because it enabled an in-depth probe and allowed the researcher to maintain the boundaries traced by the research questions. The

'standardised open-ended interview' approach is the least flexible because the questions are identified prior to the interviews and was not suitable for this inquiry's in-depth data requirement.

The interviews were conducted in the managers' offices or lunch rooms of non-management participants because participants are most comfortable with familiar environments, such as their offices and lunch rooms (Smith & Osborn, 2007). The general interview guides focused on the first two sub-questions to explore ways in which the participants access, or fail to access incidental learning as well as how cultures within the organisation are consequential for incidental learning. The guide was divided into two sections (A and B) to provide for a break period but none of the participants took advantage of it. In concert with the interpretative phenomenological perspective, the interviews on some occasions digressed from the items on the guide (Smith, et al., 2012). Table 3.2 below covers the summary and Appendix 3.1 provides a full version of the guide.

Both management and non-management personnel were asked similar questions for the purpose of triangulation or cross verification of their views (Finlay, 2009) and all the interviews were recorded fully on audio-tape equipment. The permission to record was confirmed prior to the commencement of the interview, albeit the participants had signed the informed consent form. Additionally, the researcher reminded participants that the tape can be stopped during the interviews at their discretion. Although this opportunity was given, no participant requested for an interruption; rather, they shared their learning experiences openly as well as their personal stories ardently.

Table 3.2: Summary of interview guide for individual interviews

Summary of interview guide	
Interview section A:	
A1.	Expected duration and description of the stages of the interview process. Reminder about ethical issues addressed in the Informed Consent Form.
A2.	Elicit information about the following:
I.	Prior educational/training acquired.
II.	Description of working life history.
III.	Positions participant has occupied at VALCO and the type(s) of work involved.
IV.	Process of acquisition of knowledge and skills for the each type of work.
V.	Colleagues that participants worked with and their contribution to the item IV.
Interview section B: Description of participant's incidental learning experiences.	
B1.	Description of participant's unintentional learning experiences. (Explanation of the concepts intentional and unintentional learning.)
B2.	Unintentional learning during formal meetings. } <i>Culture of sharing/everyday</i>
B3.	Informal official and social interaction co-workers } <i>participation in social events</i>
B4.	Trial and error and intelligent mistakes during individual or group task assignments. } <i>Culture of tolerance</i>
B5.	Learning through unsolicited e-mail exchanges, information on bill and notice boards. } <i>Culture of sharing provision of ICT</i>
B6.	Incidentally learning new things during formal training } <i>Culture of</i>
B7.	Incidentally learning through difficult assignments and situations } <i>flexibility</i>

The first set of interviews (Section A) encouraged participants to speak freely about their personal profile and work experience, which created a relaxed atmosphere. It dovetailed to how they learned to perform the jobs, who they worked with and learned from. The second set of questions (Section B) focused on the first research question to identify instances of incidental learning. During the interviews, the fundamental distinction of incidental learning is the complete absence of prior intention to learn. The

interview guides were based on six broad sources of unintentional learning identified from the Literature Review. To address the second sub-question, the interviews elicited views about how artefacts/practices at the workplace triggered or hindered the incidental learning. Interesting notes and impressions about the feelings and thoughts regarding participants' accounts and the interview process were recorded in the researcher's diary to enrich the data and form basis of the researcher's reflection during the analytical process (Blaxter, et al., 2010). For example, there was a note about a participant's 'disastrous' trial and error experience that was not communicated to the team members because of fear of victimization. Writing this incident in the diary enabled rethinking about the ethical implications about what the participant said. Potentially, the researcher's values may therefore influence the collection and analysis of data in concert with the philosophical position of co-creation and intersubjectivity of research knowledge. These activities confirm my interpretivist philosophical position.

The positionality of researcher may present methodological advantages and complications (Chavez, 2008). Realizing the potential for the researcher's position to negatively impact on the data collection and interpretation process, systematic steps were followed to try to minimise that impact. Subsections 3.4.2 and 3.7.3 respectively describe the methodological and ethical arrangements employed. With respect to data collection, my status as the DCEO of the case organization may lead to filtering of or biased responses by participants; thus, conducting the interviews in "backstage" settings (Roxå & Mårtensson, 2009, p.555) as well as behaviours such as using appropriate (non-technical and non-academic) language and clothing were employed during data collection to downplay the difference between the participants and researcher.

3.4.3 Data management of the individual participant interviews

This research adopted an explicit data management and analysis process as shown on Figure 3.1 above to ensure clarity and transparency that may vitiate the concerns relating to the authenticity of the study. Transparency implies that a reader is provided requisite information to accept or challenge the data or its interpretations (Stenius, et al., 2008). Regarding frameworks, Pearce (2012, p.52) advises that:

“Frameworks are especially useful in setting out complex, multi-step analytical procedures by providing a structure to outline and justify the steps taken to make the sequence of analysis clearer.”

The audio-recordings were transcribed verbatim to maintain the exact language used by the participants as generally recommended for an interpretive phenomenological approach (Smith, et al., 2012). The transcription was conducted in four stages to facilitate an audit and probable replication of the research. First, the transcription of the whole individual interviews called the “everything audible” versions (Blore, 2011, p.161), which includes the questions and interjections (Smith, et al., 2012). Appendix 3.2 is a sample page of ‘Stage One – Everything Audible’ version of a transcript.

The second transcription stage involved the removal of unnecessary repetitions and interjections. Some emphasized or important words were made bold and minimal punctuations were inserted to enable easy reading of the transcription by the participant. Appendix 3.3 is a sample of ‘Stage two – Cleaned and highlighted’ version of a transcript sent to participants for validation. Some validated versions

received from the participants did not contain only corrections but also attempts at clarification, justification, or alteration of what was said, which added value to the research process. However, the feedback from the respondents was limited by the availability of respondent. Appendix 3.4 shows a sample page of the validated versions.

To ensure confidentiality of participants' validated transcripts, pseudonyms were assigned to people mentioned. Finally, the layouts of the validated versions were modified for ease of analysis: wide margins were inserted on both sides of the data for insertion of analytical comments. Appendix 3.5 shows a sample page of the transcript ready for data analysis. The transcription of the individual interviews were completed and analyzed prior to prosecution of focus group discussions.

3.4.4 Data analysis of the individual participant interviews

The analytical framework shown in Figure 3.1 above shows the categories, contours, and coverage of the multi-layered analysis process employed. The analytical process adopted accords with Dahlberg, et al.'s (2008, p.231) assertion that an analytical methodology "is about understanding phenomena and finding their meanings using the life world descriptions that relate to the phenomenon in focus." Thus, the study employed four analytical strategies: thematic analysis of the transcribed texts, artefacts analysis of the identified artefacts/practices, document analysis for excerpts related to the espoused values, and multi-perspective cultural analysis for harmony or conflict in the evidence.

3.4.4.1 Thematic analysis

Thematic analysis is a categorizing strategy that afforded the opportunity to move the analysis from a broad interpretation toward identified patterns or themes in the data. “A theme is a specific pattern of meaning found in the data” (Harper & Thompson, 2012, p.209). Thematic analysis was adopted because as Braun and Clarke (2006, p.81) noted, “through its theoretical freedom, thematic analysis provides a flexible and useful research tool, which can potentially provide a rich and detailed, yet complex account of data.” This study employed a modified version of a six-stage process for thematic analysis recommended by Braun and Clarke (2006).

The first stage involved familiarization with the data: reading to search for meanings and patterns as well as making notes for use in subsequent phases. The second stage involved further reading in search for key themes. The study was largely inductive, but deductive themes drawn from the literature essentially constituted the signposts for the analysis. The significant statements relating to occurrences of incidental learning were annotated at the left-hand margin as part of the process to answer the first question. Toward addressing the second and third questions, statements relating to artefacts/practices, espoused values, and beliefs/values in use were noted at the right margins. Appendix 3.6 is a sample page of an interview transcript with both left and right margins completed. The third stage involved grouping the statements from each transcript according to themes onto another sheet. The fourth stage of the analysis introduced structure to the selected data by comparing the themes and grouping them according to Patton’s (2004, p.465) dual criteria for categorization of “internal homogeneity and external heterogeneity.” This stage of the analytical process was aimed at searching for major themes with associated sub-themes. At this stage, the

relationships between the themes and identification of different levels of themes were accomplished. Consequently, all the texts relating to a particular sub-theme under each broad code were extracted and assembled together. In addition, an identifier was assigned to each extract to assist with the analysis and also facilitate the subsequent corroboration with the original source.

The fifth stage of the thematic data analysis process involved several layers of analysis toward getting to the understanding of the themes and subthemes. The themes and subthemes relating to means of incidental learning and aspects of cultures were identified toward addressing the first and second questions. According to Sandelowski (1995) the sample size in qualitative research does not only refer to the number of participants, but it also refers to the number of interviews, interview sites, artefacts, and documents. For this study, about 21 artefacts and 9 documents relating to espoused values mentioned during the interview data were gathered for analysis. ‘Artefact analysis’ of the identified artefacts/practices and ‘documentary analysis’ of the espoused values mentioned were conducted as described in subsections 3.4.4.2 and 3.4.4.3 respectively.

The final stage of the thematic analysis process involved corroborating and confirming of the analyzed data. Corroborating refers to “the process of confirming the findings” (Crabtree & Miller, 1999, p. 170) by scrutinizing closely the original text, assigned codes, and themes for accuracy. Indeed, during the entire thematic analysis process, the knowledge acquired from the extensive reading of other researchers’ work, shaped the interpretation of the data. Toward the enhancement of the quality of the claims, a number of strategies such as the triangulation of the information from multiple sources and methods were used, which included interviews/focus group discussions and

confirmation of the analyses. While the provision of the underlying grounds from the literature for the claims may introduce some rigour to my findings, uncertainties relating to the influence of my subjectivities may prevail. As Crabtree and Miller (1999) cautioned, the researcher constructing evidence could occur during the interpretation of data, albeit it may not be intentional. This occurrence is more likely in this study because of the positionality of the researcher. Thus the participants were requested to confirm the various interpretations and thematic labels assigned to their experiences in the findings. All the management and about half of the non-management participants confirmed the interpretation of their experiences as reported in the findings. Some of the non-management personnel did not review the findings because the abstract synthesis required perhaps was difficult. In concert with the phenomenological approach, the researcher explained the meaning of their learning experiences to some of the participants for confirmation.

3.4.4.2 Artefacts/practices analysis

Several sets of theories aimed at systematic analysis of artefacts/practices have been suggested in the literature. However, Rafaeli and Vilnai-Yavetz (2006) indicated that previous scholars did not avail to the multi-dimensionality of artefacts/practices and also missed their coherent theory of operation. Their three dimensional model was employed in the identification of the instrumental, aesthetic, and symbolic dimensions of the artefacts/practices that appear to influence the instances or experiences of incidental learning as they provided complementary dimensions to the analysis.

According to Rafaeli and Vilnai-Yavetz (2006), the instrumental dimension of an artefact/practice refers to the extent to which it facilitates or hinders the

accomplishment of an individual's task or output. Instrumentality may be positive, if the probability of accomplishment is enhanced by the presence or the qualities of the particular artefact/practice. Thus, the instrumental dimension establishes whether the artefact/practice inhibits or supports incidental learning. The aesthetic dimension describes the sensory experience such as the emotions that the artefact/practice elicits from the participant whereas the symbolic dimension draws attention to the meaning or association that it elicits. For this study, each artefact/practice was examined to identify the three dimensions to enhance the understanding and avoid a narrow and limited consideration with respect to influence on incidental learning.

3.4.4.3 Document analysis

Schein (2009) suggests the inclusion of document analysis process to enhance the understanding of the influence of espoused values. Patton (2004, p.4) writes that data from document analysis “consists of excerpts from documents captured in a way that records or preserves context.” In this study, the documents mentioned by the participants were analyzed and the underlying meanings of the excerpts relating to issues identified from the individual interviews were sought through the Vilnai-Yavetz and Rafaeli's (2006) three dimensional analysis. For example, an extract from the organisation's Ground Rules meetings required members to be participative; indicating a supportive instrument dimension. This document explicated the intended symbolism as “Actively involved and contributing the best of our capability -Free Expression of Opinions: Sharing of Ideas, Feedbacks, Viewpoints, Feelings” (VALCO Meeting Ground Rules, 2003, p.1). This evidence was significant in illustrating how such a poster/espoused value in the meeting rooms facilitate learning. For Yin (2009, p.101), “documentary information is likely to be relevant to every case study topic.”

3.5 Focus group discussions data collection and analysis

3.5.1 Discussions of the focus groups

The main objective of focus group discussion was to further address the third question. Workplace culture is a concept that some participants had not discussed prior to the discussion, but even for some who had, they would have had difficulties discussing it without the provision of a discussion context. Thus, the focus group discussion guide was designed to address four questions as shown in Table 3.3 below starting with a review of the concepts of aspects of cultures and incidental learning.

Table 3.3: Focus group discussion guide

Focus Group Discussion Guide	
C1.	Review of the concept of unintentional or incidental learning and Schein's three aspects of culture.
C2.	Review the themes and sub-themes for the means of incidental learning identified from the interviews for triangulation
C3.	Discuss the relationship between the artefacts/practices, espoused values, and basic assumptions and incidental learning mentioned during the interviews.
C4.	Review the emergence of cultures and subcultures from the analysis of participants' accounts and focus group discussions.

There were separate management and non-management focus discussions because of ethical concerns. Consequently, the non-management participants were encouraged to be more open in their responses and shared their opinions on some of the earlier statements by management participants. The management and non-management focus

group meetings covered the same discussion guides for the purpose of triangulation or cross verification. The two focus group discussions were held in the natural settings of conference rooms; administration building for the management and in-plant for the non-management group. Onwuegbuzie, et al. (2010) found that based on the research design and questions, focus group discussions are normally held for between one to two hours. However, the scope of work for this study required that both focus group discussions last about two and half hours. The entire discussion sessions were audio recorded.

The focus group discussions were very productive in widening the range of examples of incidental learning, the activation of forgotten details of incidental learning experiences, and further identifications of elements of cultures that inhibited or supported incidental learning. As Wilkenson and Birmingham (2003, p.92) claimed, the focus group discussion enabled “synergism, snowballing, stimulation, security, and spontaneity,” which allowed the respondents to assist each other in eliciting perceptions and experiences of the cultural environment and occurrences of incidental learning.

3.5.2 Data management of focus group discussions

The audio recordings of the focus groups discussions were transcribed verbatim. “The impact of the group dynamics and specific comments, questions, censorship, changes of mind, deferring to the opinion of others are all equally important” (Robinson, 1999, p. 909). Therefore, focus group discussion data were different from the individual interviews, and it was significant to preserve the sense of a subgroup or the whole group within the data. Consequently, transcription processes for the focus group discussion was undertaken by an employee who sat in the meeting and transcripts were proofread

by another participant to ensure accuracy. The transcription was done in four stages similar to the process for individual interviews as described in subsection 3.4.3.

3.5.3 Data analysis of focus group discussions

The facilitating role of the researcher helped in the analysis of the data because of prior understanding of what happened during the group discussions and why it happened. The analysis of the focus group data followed a similar thematic analysis approach according to the description in Subsection 3.4.4.1. In sum, it involved the annotation of the scripts through rereading the transcripts and noting interpretive thoughts in the left and right margins. The new ways of incidental learning as well as ideas about artefacts, practices, beliefs, underlying assumptions were analysed in accordance with the Vilnai-Yavetz and Rafaeli's (2006) multi-dimensional.

3.6 Analysis of cultures and subcultures

The final layer of the analytical framework involved comparing the statements regarding the espoused values and basic assumptions; essentially to identify cultures and subcultures. The analysis was conducted according to Martin's (2004) framework to check for integration (cultures) – deeply held or widely shared values and assumptions, differentiation (subcultures) – consensus emerging within departments or subgroups creating subcultures, or fragmentation (webs of cultures) – individually constructed values and assumptions.

These categories were further scrutinized to identify subcategories by following the processes for thematic constructions. Although the delineation of subcategories was informed by the body of knowledge on cultures and subcultures; however, at this stage, the subcategories were not based on theoretical categories or themes, instead the categories of assumptions/values were identified from the evidence.

3.7 Ethical issues

3.7.1 Introduction

The researcher has 32 years of continuous working experience at the research site and is currently the deputy Chief Executive Officer (DCEO) for Operations, Maintenance, and Engineering (OME) of the case organisation with direct responsibility for 424 out of the 537 employees currently on plant site. Twenty out of the 30 participants work in the OME section: thus, the researcher's position is an important consideration at the ethical as well as methodological levels.

The extent to which insider research poses ethical problems for a qualitative study is more subtle and significant than in quantitative research. Further, these insider research issues were intensified because of the position of the researcher at the case organisation. As a framework for discussing these issues, four distinct phases that required ethical consideration were identified, namely, negotiating for permission, access, and participation; collecting and analyzing data; writing about findings; and disseminating the results.

3.7.2 Negotiating for permission, access, and participation

In view of the researcher's position and VALCO's complex manufacturing facilities, where "gatekeepers" protect sensitive information by controlling access to the various systems and people (Bryman & Bell, 2007, p.639), the negotiations for permission, access, and participation were conducted in three stages. First, the researcher applied for permission and obtained approval to the research site (See Appendixes 3.7 and 3.8). Although the permission was approved, ethical consideration emerged from the potential influence of the researcher during negotiations for access to selected employees and pieces of information. Thus, the researcher applied to departmental managers for the release of the selected participants (See Appendixes 3.9 and 3.10). In view of the researcher's position, employees who work closely with the researcher were not sampled.

The periods of engagement with participants were designed to ensure minimum disruption of work schedule during the collection of the data and ethically sound allocation of company resources. Finally, despite the approval by their respective departmental managers, employees may not be comfortable with participating. Accordingly, the researcher sought participants' voluntary informed consent as stipulated in the form (See Appendix 3.11). The principle of voluntariness was emphasized because of the position of researcher. Further, the difficulty regarding ensuring that participant's consent is truly informed may have emerged because of evolving character of qualitative research procedures (Rubin & Barbie, 2010). In that regard, participants were informed that they could withdraw in the course of the

interview because "negotiation of access is patently not a once and for all agreement but a continuous process of winning people's trust" (Edwards, 1992 cited in Desira, 2003, p.49). Further, participants were assured that refusal to participate will neither jeopardize their employment nor career progression.

3.7.3 Ethical issues during data collection

Four ethical considerations emerged during data collection, namely, equitable distribution of resources, arrangements for the protection of rights and safety of participants, management of the interviews/discussion sessions, and power relations. First, ethical consideration relating to exercise of authority emerged due to the requirement to distribute appropriately VALCO's resources to those similarly situated. To address this problem, participants were scheduled for interviews at the convenience of the department managers to ensure minimal interruptions of work and individual interview sessions did not exceed 90 minutes as allowed by convention to other researchers.

Second, every person is entitled to the right of privacy, confidentiality, and dignity of treatment (Leedy, 1993). The protection of these rights was explicitly outlined in the "Informed Consent Form," taking cognizance of Creswell's (2003) essential elements of Inform Consent such as the right to withdraw. Each participant's permission was sought at every stage when an attention was required such as during the review of transcripts, although their all-encompassing consent was sought.

Third, despite the rapport developed from previous relationships, there were special efforts to maintain rapport during the field work.

According to Keegan (2009, p.107),

“Until we can achieve a sufficient level of rapport, empathy and trust with our research participants, we will be unable to get beneath the superficial platitudes of their lives. Rapport is a prerequisite of good qualitative research.”

The use of the same technical vocabulary, matching pace of speaking, and matching voice tones yet not mimicking helped to create further rapport. Berg (2004) claimed that rapport is a tool for equalizing the balance of power between the researcher and participant. Additionally, efforts were made to maintain an informal environment during the interviews. Toward that end, the individual interviews were conducted in “backstage” settings (offices and unoccupied lunch rooms); out from the public view (Roxå & Mårtensson, 2009). The backstage settings are “situations where we are private, or at least feel that we know who is watching, and we behave in a more unrestricted way than when we are ‘front stage’” (ibid, p. 555).

Insider research supporters applaud it as the way of studying the complex interdependencies of societal processes, such as incidental learning and deep elements of culture (Wallace & Atkins, 2012). However, van Heugten (2004, p.215) concluded that, “the decision to research colleagues, and to employ qualitative methods, inevitably leads to concerns about bias and subjectivity” perhaps due to familiarity. To mitigate

these concerns, the participants were allowed full expression during the description of the situations, which were triangulated at the focus group discussions. Assumed benefits of insider research include the previous knowledge of the research setting and the intimate relationship with the participants. Nonetheless, Sikes and Potts (2008) hint that the insider can over identify with the participants and therefore lose the ability to conduct a fair study. In this light, the use of the guides placed issues within the specified boundaries irrespective of the prior in-depth knowledge of the participants.

The fourth issue relates to the notion that research at a workplace eliciting lived experiences of workers has potential implications on their continuous employment, development, and promotions. These issues were embedded within the “concepts of relationships and power” between the research participants and researcher (Orb, et al., 2000, p.93). Participants were reminded that they could modify their consent in the course of the data collection.

Also it is not likely that this extent of access to employees and documents may be presented to an outsider. However, as Desira (2003, p.47) suggested, to interrogate complex social systems and unravel intricate issues that emerge from the empirical qualitative data such as the influence of workplace culture on incidental learning, it may be necessary “to be inside the culture.”

3.7.4 Ethical issues during analysis of data and writing about findings

Two types of ethical problems emerged during the analysis and composition of the report, namely, misrepresentation and misinterpretation of the data. First, the transcripts

were checked by the participants; they confirmed patterns for inclusion and identified portions to be expunged (Sikes & Potts, 2008). The researcher was mindful that some might consider the frequent meetings to be interruption of their work or harassment. Thus, appointments were scheduled with the participants prior to each meeting.

Second, the researcher took into consideration the potential influence of the previous knowledge and relationships on the evidence and how they were interpreted. Despite the advantages of working within the organisation, elements of observed cultures may be given greater weight than they merited. It was expected that the focus group discussions and review of the findings by the participants minimized any inappropriate influence of the researcher during the data analysis of the individual interviews.

3.7.5 Ethical issues relating to dissemination of report

The researcher intends to allow appropriate dissemination of research to the entire academic community because global insights may emerge as well as access to the copious data collected for secondary analysis. However, participants' interest and privacy will be protected during the process to access data for secondary analysis. First, the data will be safely and securely stored by the researcher. Second, the research opines that the construction of the data was a joint endeavour between participant and researcher, thus both parties will have ownership rights over the research data.

3.8 Research limitations

This section highlights limitations relating to the collection of phenomenological data, single-case study, self accounts of participants, workplace cultures, and incidental learning research. It explains the characteristics of these limitations and the justifications for the choices made in the course of the research. Some suggestions have been offered regarding how to overcome such limitations in future research.

Statistically, the collection of data from 5% of the population implies that findings may not be generalized to the entire population. Nevertheless, sample size of 30 participants is considered sufficient, especially if saturation is attained (Lavery, 2003). Further, the selected population is a single organisation; therefore the findings could be generalized with caution to only organisations with similar facilities and employee characteristics. The objective of this enquiry would be achieved if readers have a good understanding of how participants are able to experience incidental learning or otherwise and how some aspects of culture influenced the incidental learning. From this in-depth study, future multiple case studies and quantitative designs may enable researchers to further test the conceptual frameworks employed in the study.

Partington (2000) noted limitations with the retrospection and self accounts shared by interviewees, rather than researcher's direct observations. He argued that the researcher cannot assess the extent of unintentional restriction or deliberate restraint in the effort to provide a more compelling or logical account. In view of these weaknesses, focus group discussion and document analysis of espoused values and other documents were used to triangulate the individual interview data.

Further, incidental learning represents a seamless web to work such that distinguishing the learning experiences is problematic. It is also important to emphasize that self-reported accounts of incidental learning is normally an underestimate of the total occurrence of incidental learning because of its taken-for granted and embedded nature (Breen & Rees, 2009). However, given that the aim of the study was to assess the ways in which culture can support or inhibit incidental learning rather than to provide an exhaustive description of such learning, this limitation may not be crucial. Arguably, compelling evidence that can throw insights into how culture influences incidental learning may not be remembered by participants. Hence, in future studies, sufficient time and logistics should be considered to allow for detailed observations and reviews of archival materials for triangulation.

Chapter 4 – Findings and Discussion

4.1 Introduction

This chapter presents and discusses the findings of the research by; first, outlining the means of incidental identified through analysis of knowledge acquisition processes in and through the workplace. Second, it highlights how these means of incidental learning were enhanced by artefacts/practices at the workplace, whereas others inhibited such situations. Finally and of particular interest in this study, it identifies values and assumptions that form cultures and subcultures as well as “webs of culture” that influence incidental learning. To preserve anonymity, the names used in the presentation of the findings are pseudonyms. In concert with phenomenological presentation and to richly describe the phenomenon of incidental learning, illustrations of participants’ accounts are presented through extracts to bring to life their experiences as they learned and share their reasons for learning or not learning.

The findings and discussion are presented in three sections within the framework of the three research questions. Section 4.2 presents an analysis of the participants’ accounts in an attempt to illustrate the three themes identified in the data relating to means of incidental learning. The first theme, ‘learning by doing,’ illustrates the incidental learning that emerges from undertaking authentic work activities. The second theme, ‘learning by talking/listening,’ highlights how incidental learning emerges during official meeting with co-workers and conversation/chatting. The third theme, ‘learning by viewing,’ highlights observation of mentors and various artefacts as well as “incidental reading” (Vidal, 2010, p.1).

Sections 4.3 and 4.4 provide evidence that shows the conceptual usefulness of employing levels of culture to understand the experiences of incidental learning in the workplace. Section 4.3 presents the findings and discussion around the second question illustrating the impact of artefacts/practices on incidental learning. It draws attention to organisational inhibitors and supporters to incidental learning at the surface (observable/tangible) level of culture. Finally, to address the third question, Section 4.4 describes the values and basic assumptions (deep/abstract levels of culture) that influence on incidental learning at the organisational-wide, sub-cultural, and “webs of culture” levels.

4.2 Means of incidental learning in the workplace.

4.2.1 Introduction

All the participants reported about how incidental learning emerged as part of everyday work. However, what they learned, how it occurred, and what influenced it, often differed. Therefore, incidental learning was illustrated in many ways. As will be seen, the evidence from the interviews suggests that participants mainly employed three ways of learning at the workplace; ‘got involved - participatory,’ ‘asked questions - inquisitorial,’ and ‘observed - observational.’ From the evidence therefore, three major categories of themes emerged.

- Learning by doing
- Learning by talking/listening
- Learning by viewing

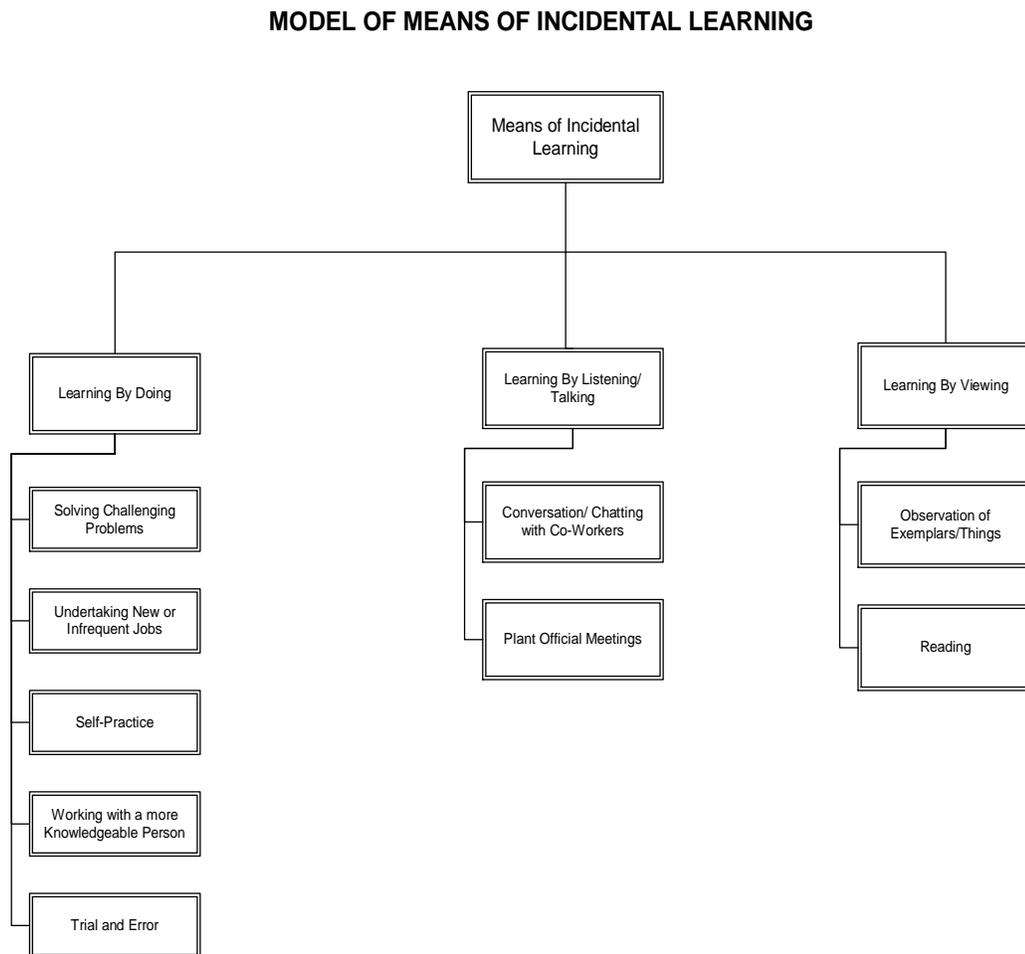
In concert with Patton’s (2004) criteria for categorization, these categories were internally homogeneous; ‘learning by doing’ emphasized practice or authentic work, ‘learning by viewing’ highlighted seeing somebody or something such as watching exemplars and reading, and ‘learning by talking/listening’ emphasized hearing from people. However, challenges emerged regarding external heterogeneity as the learning process sometimes relates to more than one theme. Both learning by doing and learning by viewing may occur simultaneously sometimes in the workplace, for example, working with colleagues who had different or more expertise. Nonetheless, these themes emphasize distinct activities, which were explored based on participants’ view of the activities responsible for the learning. Table 4.1 below clarifies the issues that these themes highlight with reference to the elements of “a good thematic code” suggested by Boyatzis (1998, p.31). These issues provide evidence regarding the nature of the connections between learning and artefacts/practices.

Table 4.1: Broad themes of ways of incidental learning

Label	Definition/Description
Learning by doing.	Performing an authentic task as an individual or in a team.
Learning by talking/listening	Talking with or listening to employees or external agencies.
Learning by viewing	Observing others perform tasks and reading documents.

From the sub-themes assigned to the broad themes, the model in Figure 4.1 below represents means/ways of incidental learning that emerged from the data.

Figure 4.1 Model of means of incidental learning



4.2.2 Learning by doing

IPD (2000 cited in Beattie, 2006, p.102) defines “learning by doing” as “learning and practice in one activity” and asserts that for many, it is “the most effective form of learning.” The analysis identified five sub-themes to illustrate different means of “learning by doing.” So an extract may illustrate self-practice, working with more knowledgeable persons, trial and error, undertaking new or infrequent jobs, or solving challenging problems. Nineteen out of the twenty-one interviewees spoke more about

learning by doing than the other two classifications of means of incidental learning. This accords with the finding of Mulholland and Turnock (2012, p.12), which suggests that “learning is more effective and lasting if the individuals discover on their own (learning by doing).”

4.2.2.1 Self-practice

Most of the participants spoke about how they learned by individually performing a regular job over a period or self-practice. Practice has been described as the “performative” and “situational” understanding of workplace activities (Dean, et al., 2012, p.4). One participant, Aquaye without any prior knowledge about transformer repairs was assigned the responsibility to repair big and highly complicated transformers. He describes how he got acclimatized to the working conditions inside the transformer and acquired mastery in performing that maintenance tasks as he learned incidentally each time he went into the transformer to work (self-taught) in the following account.

“Working inside the transformer was difficult but when I started entering into the transformer then I began to know a whole lot of things ... others feel it was not conducive and it is challenging to work in the transformer but after doing that several times I did it effortlessly ...” (Maintenance electrician).

This finding about self-practice exemplifies learning individually through an inductive process that proceeds from an action and self reflection as theorized by Marsick and Watkins (2001). Aquaye may have drawn inferences from previous work in the transformer through self-reflection for refinement of his skills as recommended by

Malloch, et al. (2011). Malloch's team suggested that this means of learning is important when performing a new job or something new emerges while undertaking an old task. According to Vicsod, his team members learned how to improve their performance through self-practice over time in following remarks:

“We were seven in the group, when it comes to ramming of the fillet¹; it is not everybody who can perform it well. Actually it is from experience acquired here; once you do that work for a very long time ... you will find ways and means of doing the job well ... the older team members are better.” (Production technician)

This finding portrays the natural acquisition of knowledge embedded in work practice; the older members in terms of tenure have had more opportunities to practice and were considered more accomplished at this task. Vicsod intimated that finding “ways and means of doing the job well” emerges when they compare fresh experiences (incidental learning) with their experiences to build new knowledge instead of repeating the previous experience. This finding accords with much of the literature that emphasizes the importance of learning through practical experience (Knowles, 1990). Vicsod claims that it is not everybody who can perform ramming well and noted that some older employees are not that good. It is possible, though the data do not allow us to conclude, that the lack of improvement was due to deficiency in reflection.

Richtaw's designation is a mason and not a forklift operator but his assignment requires using the forklift to transport materials to the worksite. After an initial training, he has practiced daily operation of the forklift for about 30 years and proudly claims that:

¹ Ramming of the fillet occurs when carbon material is compacted in the space between the edges of the blocks of newly constructed equipment.

“I was able to learn other fields like operating of the forklift because due to the nature of our job; there is the need for us to lift materials to the site every day.”

(Construction technician)

About half of the participants claim to have acquired unintentionally new occupational skill sets by performing tasks related to other disciplines over a period. These experiences illustrate acquiring entirely new sets of skills through evolutionary and incremental learning afforded by the expansive environment even in what might stereotypically and arguably incorrectly be characterised as ‘routine’ occupations (Unwin, 2004). These findings also support Hopkins’ (2012, p.200) conclusion that workers learn new skills and roles through practice with a caution that “it is incremental and developmental.” Richtaw’s experience also begins to provide some initial indications of how the prevailing culture might impact on incidental learning; if it is common practice within an organisation or department for workers to be allocated tasks outside their immediate job role, then learning is arguably likely to follow. Themes such as this are expanded upon in later sections.

4.2.2.2 Undertaking new or irregular tasks

Many participants reported that occurrence of change and the necessity for an action were some of the conditions that influenced spontaneous learning. Kaysos narrates how they learned a repair procedure on the spur-of-the-moment during the repair of a vacuum pump that had never previously failed:

“One day the vacuum pump motor got spoiled ... we should have removed the motor to shop so that they service and repair it. There was no JSP (Job Safe Practice) to service. So we started something ourselves ... managed to solve the problem and prepared new repair guidelines.” (Mechanical technician)

By attempting to solve complex and ambiguous problems, participants reported unintentional learning after trying out new techniques, styles, and skills while noting what did not or did work. According to Keeping and English (2001), incidental learning often emerges when the employee is assigned a non-routine or new task. This finding highlights how learning opportunities emerged from undertaking an irregular or new task, and stresses the spontaneous nature of incidental learning. It underscores Unwin’s (2004) expansive/restrictive theory that organisations that favour a highly routinised approach to job design and work allocation are likely to promote a learning-restrictive culture. The finding also confirms that “a high degree of exposure with changes” may lead to incidental/informal learning as suggested by Skule (2004, p.14).

4.2.2.3 Solving challenging problems

For Rigay, solving a problem in the workplace is like conducting a research. He explains that:

“Troubleshooting a problem is like conducting research ... I come across things that may not be relevant but I make use of them later. Often you learn more than the knowledge required ... in the cause of investigating a cable fault, I found things related to springs that I used later.” (Electrical technician)

Most of the participants indicated they learned unintentionally from their background or through various investigative means, including manuals, drawings, and online materials when confronted with a problem. They had not, however, generally recognised this as learning at the time; their intention was simply to solve an immediate work problem. Rigay's term '*conducting research*' aptly describes this process. This finding confirms that incidental learning may occur when an employee tries to cope with a challenging task as suggested by English (2002). The finding also supports Bishop, et al.'s (2006) suggestion that employees should be empowered to utilize and exploit the knowledge from their background. Furthermore, Rigay's unconscious learning about 'springs' aligns with Eraut's (2000) description of implicit learning, "There is no intention to learn and no awareness of learning at the time it takes place" (ibid, p.115). Rigay found that he had learned about springs when later he had to solve a problem related to a spring. Therefore, gathering only the learning experiences that the participants are conscious of may be only a conservative appraisal of their incidental learning.

4.2.2.4 Trial and error

The majority of the Operations and Support Services departments' employees claim that they do not engage in trial and error. They referred to their SOPs (Standard Operating Procedures) and JSPs as tried and tested procedures they follow because of the presumed inflexible nature of work. Thus, the maintenance technicians engage in more trial and error practices than the rest of the plant. Perhaps, they operate in an environment in which the principles of flexibility and innovativeness associated with more post-Fordist models were more in evidence (Amin, 2008). The evidence revealed that these practices emerge in two ways. First and most often, the higher level of task ambiguity in maintenance work required a more flexible approach; trial and error may

be the only procedure when the problem is so difficult such that an obvious solution is not accessible. Second, trial and error may be deployed when working under the often intense pressure in the manufacturing environment. Regarding the latter means, the findings confirm that “a high degree of exposure with demands” engenders spontaneous learning as theorized by Skule (2004, p.14). Kaysos puts it this way:

“If I had to repair on the field just to allow production to go on, I do ‘ma try ma kwe (trial and error)’ by removing a similar part from another machine... if it does not work I try another part” (Mechanical technician)

‘Ma try ma kwe’ is an aspect of jargon at the case organisation that means ‘trial and error’. It is countenanced “to allow production to go on” as reported by Kaysos. The finding affirms Dawson’s (2008) report that incidental learning arises if organisational leaders tolerate workers’ ‘intelligent’ mistakes and allow them to learn from their mistakes. This finding has interesting practical implications as it sheds light on the challenges facing the modern workplace that often pushes workers into uncharted territories. It further throws light on the question posed by Pearn (2003, p.250) with respect to trial and error: “whether in the quest of learning fast, we may often sacrifice learning without errors.” Practically, however, learning through authentic work entails making mistakes. This is very significant in the manufacturing workplace because if the error is not detected and reported, it might result in considerable loss.

4.2.2.5 Working with more knowledgeable persons

Participants reported that a major part of incidental learning by doing occurred through the impartation by a more knowledgeable person in a team; characteristic of the

apprenticeship process. In contrast to self-practice that focused on the efforts of the individual, this practice focuses on colleagues and experts' involvement in incidental learning. Aquaye (an electrician) naturally learned the mechanic's job by pairing with a mechanic in a team and reports that:

“I worked with a mechanic ... the job involved both of us working together and therefore we needed to understand each other. I learned the mechanical principles as we worked together without knowing I was learning... it helped me to solve problems even when he was not around.” (Electrical technician)

The account above portrays dyadic learning between a mechanic and an electrician. This finding confirms Bishop, et al.'s (2006, p.23) proposition that “collaborative working” provides an effective means of knowledge sharing even where it is not recognised as such at the time. Several participants also affirmed that the complex problem-solving processes in the manufacturing environment often involved collaborating with others from different backgrounds; thus, underscoring the social nature of incidental learning. This finding sheds light on the socio-constructivist understandings by Malloch, et al. (2011) that incidental learning is very often collaborative.

For Rigay, the role of senior colleagues in getting new employees initially familiarised with drawings, tools, etc. required to accomplish a task is very important. He describes how, in the process of solving new tasks or problems, more experienced colleagues provide inherent guidance when the formal, written guidelines are insufficient:

“The manuals and drawings help, but you need to learn from the seniors the location of the parts or select the right drawings.” (Electrical technician)

This finding confirms Tehrani’s (2011, p.309) proposition that the technical knowledge about one’s role is not adequate; workers need to know “the overt and hidden drivers, connections and processes involved in organisational life,” which are often acquired through implicit learning. Also it resonates with Billett’s (1994) socio-constructivism view of workplace learning, whereby learning is seen to be constructed socially in authentic settings through an interaction with a more knowledgeable person who facilitates the initial participation of the learner but may withdraw when the learner becomes competent enough to complete the task.

4.2.3 Learning by talking/listening

The second broad theme, ‘learning by talking/listening’ was an important medium employed by workers to receive information and ideas. Participants reported that talking, chatting, and listening facilitated understanding of how jobs are done as well as access to the requisite information and resources. The sub-themes identified are plant official meetings and conversation/chatting with co-workers.

4.2.3.1 Plant official meetings

Participants reported that plant meetings were officially arranged to address business needs or communicate to employees; however, many participants stated that incidental learning often occurs by listening, asking questions, and exchanging ideas at the meetings. The departments have weekly CEO communication meetings to discuss

departmental performances and company-wide issues and initiatives. In the operation and maintenance departments, moreover, additional opportunities for official meetings were offered through daily start-up meetings; weekly, bi-weekly, or tri-weekly production meetings; and fortnight trend chart meetings. At the trend-chart meetings held thrice a week, Markoto notes unanticipated learning:

“You go there and learn a lot because you meet your co-workers from the lowest up to the highest ... so if there is an engineering, maintenance or process issue, they will speak to it. We look at the trend whether downwards or upwards ... within the band ... how you could get back to acceptable levels. ... everyone contributes ideas to address the undesirable trend; ... all of a sudden some ‘wild suggestions’ are made and we discuss to come to a recommendation to improve the performance” (Process engineer)

Markoto’s perception draws attention to the variety of experts and their “*wild suggestions*” as well as the relationships required to facilitate the social processes to enhance learning. The trend chart meetings were held with the aim of solving emerging work process problems, rather than to promote learning. However, the incidental learning occurred as a by-product of the collaborative problem-solving process. These findings highlight the role of the culture that promotes “informality, spontaneity, collegiality, and voluntariness” that may facilitate or hinder incidental learning at official meetings (Janowicz-Panjaitan & Noorderhaven, 2008, p.1339). This discourse is important because of the pivotal role played by social engagements in the sharing of the tacit aspects of knowledge. Again, themes such as this will be developed later in the chapter.

Though these official meetings might conventionally be regarded as a programmed and formal type of learning environment (Pak & Snell, 2003); nevertheless, this study confirms Janowicz-Panjaitan and Noorderhaven's (2008, p.1339) assertion that "spontaneous organisational learning" like the learning emerging from communities of practice prevail at such meetings. The evidence reveals that participation in the group discussions enabled employees to critically reflect on the business challenges and uncover creative solutions, which otherwise might not be apparent to an individual. This finding throws light on an aspect of learning-supportive culture recommended by Bishop, et al. (2006, p.23): "participative decision-making within work group."

This finding resonates with the work of Janowicz-Panjaitan and Noorderhaven (2008), which drew attention to a concern with spontaneous organisational learning at formal meetings, as it is normally pre-planned by management. The emphasis in this regard is on the spontaneous and open exchange of ideas at these meetings and not the official setting because the operational definition of incidental learning focuses on the unintentional characteristics rather than formality of setting. It is argued that incidental learning emerges from the "free expression and exchange of views that takes place in the context of official meetings" (Pak & Snell, 2003, p. 282). Nevertheless, several instances of inhibitions to opportune learning were also cited. Jaypee, an administrator recalls that "*sometimes in your attempt to bring information you could be stopped and subjected to questions which might suggest to you that your inputs are not required.*" These practices and behaviours shall be explored later in Section 4.3.

Information emanating from the focus group discussions to complement the findings on learning at official meeting reveals that apart from Comrade, the rest of the participants

did not recall instances of learning by talking with employees from other organisations in Ghana. The majority of the focus group members derided the benefit of learning by talking with workers from local firms as shown in the following discussion.

Aquaye: “When we went to TOR to seek help to check our transformers, they said ours was better.” (Electrical technician)

Comrade: “That is not always the case because I have suggested that why can’t we allow TOR or Ghacem to join us for safety meetings and housekeeping tours; they may tell us hazards that we have not seen all these years.” (Programmer)

Jannan: “If you go to TOR and you see their general housekeeping, how can you allow them to come and conduct a tour in your facility ...” (Metallurgist)

One can argue that settings characterized by informal, spontaneous, collegial, and voluntary engagements found within the intra-organisational context in the case organisation may be more difficult to achieve within the inter-organisational environment in which relationships can be characterized by mistrust and intense competition. The debate among participants regarding the value of knowledge from outsiders may influence the acceptance of contributions from new-comers from local firms. This finding is a precursor to the cultural assumption that the VALCO team is a superior group in Ghana, which will be explored in Section 4.4.

4.2.3.2 Conversations/chatting with co-workers

Responses from the interviews highlight the incidental nature of everyday talk that often occurs at the workplace, which is different from talking at the meetings. Perhaps a

more appropriate word is ‘chat’ as used by some participants because it indicates the extent of workers’ relationships that allow the talking to be spontaneous and flow freely. Davlamp is a management-personnel who claims that, on reflection, he attains unanticipated learning when he joins the non-management team for lunch:

“At break time I take my lunch to join the non-management workers ... we eat together and chat ... I will pick an issue and they will start contributing they share things that I have not seen or heard...for example, what they have done to correct erratic temperature trends, the information they share helps me to run the area.” (Production supervisor)

Lunchtime chat featured prominently in the conversations of non-management employees. However, chat in the offices dominated the conversations of management employees. For example, an engineer, Opoboat remarked that *“Many times – I easily walk to Director’s office and we start chatting. often we talked about the issues relating to the problems at the work place.”* These findings concur with Boud, et al.’s (2009, p.327) observation that “talk and social relationships are experienced quite differently across the hierarchical divide.” They also reveal that very useful learning emerges during informal conversation between workers irrespective of status. A common feature among these extracts is the premise on the informal gathering where employees coincidentally learn by discussing their work. Thus, informal conversations, ‘chats,’ or ‘everyday talk’ described as “extensive professional contacts” by Skule (2004, p.14) play a very important role in the everyday learning at the workplace. They also reflect Nonaka’s (1994) claim that continuous dialogue among workers is a pre-requisite for knowledge creation.

4.2.4 Learning by viewing

4.2.4.1 Reading (e-mails, posters, notices, and other documents)

The majority of participants reported learning by reading e-mail messages, posters, procedure manuals, drawings, CEO newsletter, and workplace websites. Comrade reports that:

“Emails, perfect ... somebody chances on information and share, Through email I learnt more tips on programming Access database from Beebees, he passes on tips on database to me and this had helped me in improving on my old databases and also designing new databases.” (Programmer)

Thus Comrade and his colleagues incidentally learn as they “chance on information” from emails. The data also indicate that management personnel are more active readers than the non-management group because of the nature of their jobs and access to the computer infrastructure. This perception is similar to Mosher’s (2008) finding that higher level managers have more proclivities to reading than their counterparts. Some researchers do not consider reading as an informal activity (Mosher, 2008); nonetheless, participants reported acquiring valuable information as by-products when searching for other information. This finding supports Davenport and Prusak’s (1998) claim that the phenomenal increase in computing power, telecommunication speed, and the low prices of microcomputers have engendered huge infrastructure for exchange of knowledge.

Case organisation members have access to copies of magazines that offer technical information. Markoto recalls reading about technical information in the waiting room of the administration building:

“One time I was reading one of the periodicals on the aluminium industry at administration building. I was sitting down in the lobby waiting to attend a meeting After reading one of the articles on the table, I made a photocopy and gave it to Hopeban who was also interested in reading how these people have the technology to get to zero anode effects” (Chemical engineer).

Incidental learning about ‘zero anode effects’ affirms Morgan’s (n.d., p.1) report that “incidental reading” has a positive impact on employees’ development because their proficiency depends on the worker easily acquiring quality information.

Another key finding relates to reading of notices, posters and procedures that resulted in incidental learning. This finding accords with Fulford’s (2012, p.279) conclusion that this type of learning “is often a subconscious process, rather than a structured and planned activity, and involves reading magazines, as well as a wide variety of ‘incidental’ reading, such as signs, promotional materials, technical equipment instructions and so on.” Participants reported learning from weekly CEO newsletters and Significant Incident (SI) reports. Tonut, the manager responsible for publishing the SI reports, defined a Significant Incident as “*an undesired event that could, or does result in injury, damage to property or illness.*” Regarding the SI reports, Joebaid notes:

“we learn from SI reports ... we discuss the reports in detail then if there are some things that happened somewhere we investigate to see whether it can happen at our area also, it opens our eyes to unforeseen things and then we take corrective actions....” (Production technician)

Although the SI reporting practice is an important source of incidental learning, its scope is narrow as it covers only safety issues, and it highlights only negative incidents therefore arguably restricting the opportunities for learning.

Fulford (2012) suggests that workers undertake both intentional and unintentional reading for professional development. However, he notes that key challenges for practitioners relate to the means for recognition and capture of each type of reading to create opportunities for maximum benefit from learning at workplace.

4.2.4.2 Observation of exemplars

This spontaneous learning by observation was mentioned more often by non-management personnel because of the nature of their jobs. Rigay refers to this unplanned observation:

“I work with two or three people. Sometimes as I see how they tested the equipment, dismantled it, and then fixed the problem. I learned them as I see them since the process was not written in any book.” (Maintenance electrician)

Participants reported that learning by observation is often undertaken in an ad-hoc fashion by watching exemplars or experts perform a skill and attempting to perform the

same skill at a later time. This finding corroborates van den Tillaart, et al.'s (1998) assertion that incidental learning emerges by haphazardly spotting fellow workers or experts as they execute assignments. In addition to observing colleagues work, some participants observed attitudes such as walking to the work site and how co-workers hurriedly perform assignments and then they copy. Aquaye narrates how co-workers unintentionally learned Jeevees' attitude:

“I worked with Jeevees. He was a hardworking person and when he walked or worked, everybody liked him ... so I learned that attitude from him, especially his work habit ‘gidigidi’ (energetic) ... it was like a culture; a lot of our predecessors were walking and working like him.” (Maintenance electrician)

‘Gidigidi’ (energetic) is an aspect of jargon used by employees irrespective of original language to describe an employee who works energetically. Typically, maintenance and operations employees walk fast and try to express strength in their demeanour. Therefore, as implied by behaviourism theory, observation, imitation, and reinforcement can be important components of incidental learning (Wihak & Hall, 2011).

The findings also indicate that incidental learning through observation occurs within work groups because expert or tacit knowledge often required in the workplace is domain specific. This evidence is significant as it highlights the argument that in the present challenging environment, the ‘soft skills’ of creativity, problem-solving, and team-working skills are difficult to transmit in a formal setting (Ashton & Sung, 2002) and are often tacitly acquired by observation of colleagues. Specific skills related to

specific events during operations or “soft skills” such as solving of problems are acquired and stored by employees; constituting a repository of unconscious knowledge. The transfer of such tacit knowledge occurs as the transmitter and the receiver encounter similar situations (Eraut, 2000). For example, Etenar implicitly learns from seniors:

“When I open the cell with my seniors, they are able to determine the source of the problem from the colour of the flame, the sizes of bubbles of the bath materials, or the amount of ore cover. After walking with them through the cells, I can now know what is wrong when I open the cell.” (Production technician)

The intrinsic nature of incidental learning is illustrated by the participants’ recourse to implicit meanings in response to everyday challenges at the workplace.

The evidence from this study suggests that much incidental learning emerged from doing things. Behaviours, such as trial and error and self-practice that created opportunities for workers to learn by doing were found to be practiced by employees in cultures where innovativeness and flexibility is assumed. For all non-management participants, opportunities to practice skills were the most popular means of learning. In addition, some incidental learning opportunities were found to be embedded within the nature of the work, such as frequent solving of problems and undertaking new or irregular tasks. These findings confirm the importance of structuring of work for learning.

Working with more established employees allowed employees to talk/listen and observe colleagues to gain new perspectives, learn new practices, and become aware of the tacit knowledge of others. These learning situations were embedded within the social processes at formal (plant official) and informal (chat) meetings as well as facilitated by the physical infrastructures for communication. Incidental learning opportunities were therefore found to be situated in specific contexts that comprised not only the set of activities but also the set of supporting social infrastructure giving rise to the activities such as working with more knowledgeable people. The relationship and opportunities to interact emerged as key factors that influenced the means and quality of incidental learning that arose through workers' everyday activities. These findings suggest explicit linkages between the means of learning identified and the artefacts/practices at the workplace and raise important questions about the appropriate cultural interventions/manifestations for improving the quantity and quality of learning, which will be discussed in the next section.

4.3 Impact of artefacts/practices on incidental learning

4.3.1 Introduction

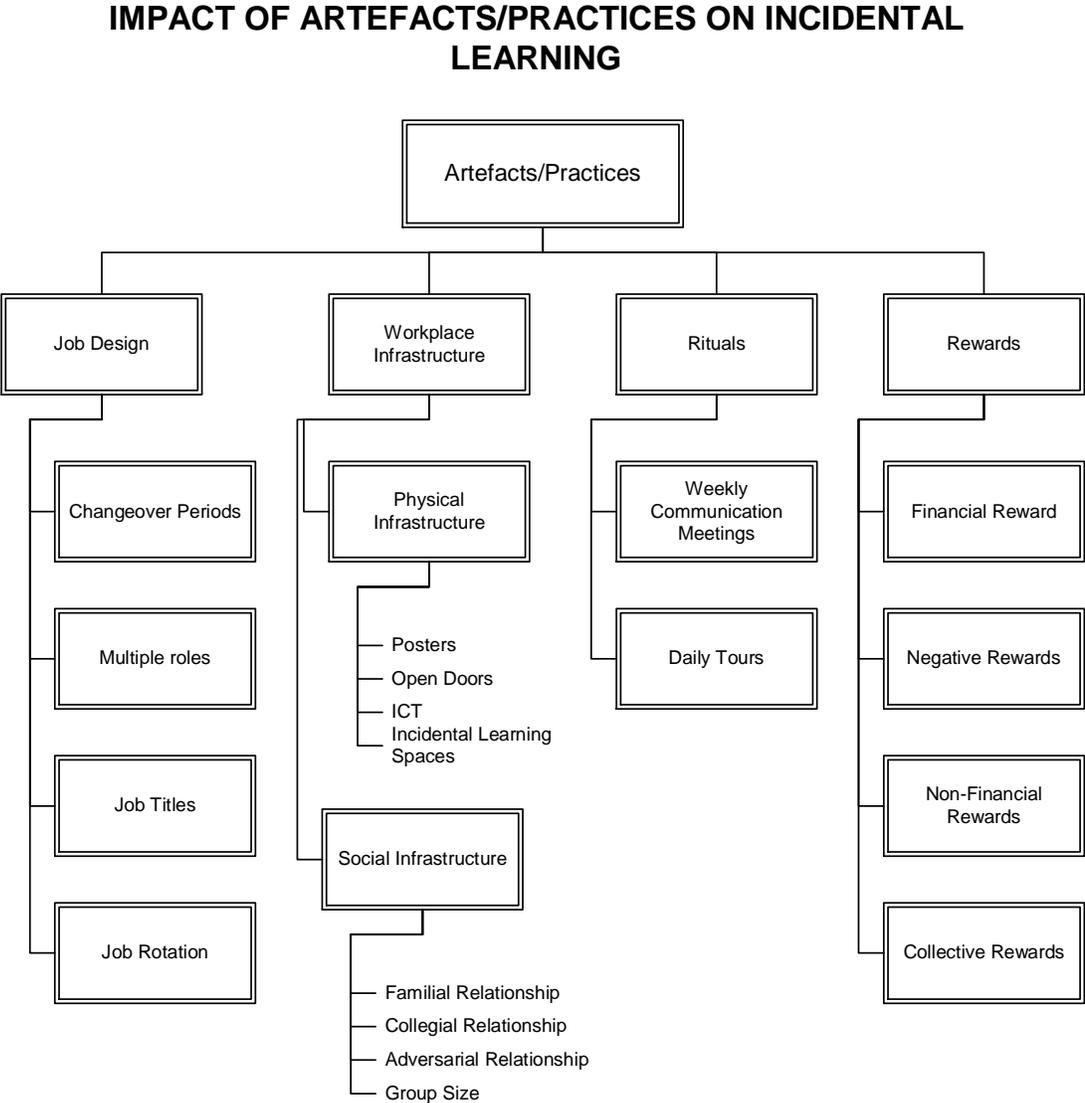
To address the second question, this section presents themes to show how artefacts/practices of the case organisation influence employees' incidental learning. In the operational definition of culture, artefacts/practices are considered as the visible manifestations (physical artefacts and behaviours at the workplace) that represent the values and assumptions of the organisation. From the thematic analysis of the responses

garnered from the participants, the broad categories of artefacts/practices found to support or inhibit incidental learning are described in Table 4.2 below, namely, job design, work infrastructure, reward systems, and rituals. From an iterative analysis of the categories of broad themes and their component sub-themes, a model of the artefacts/practices in the case organisation was contrived. Figure 4.2 below shows the sub-themes identified under each category.

Table 4.2: Broad themes of artefacts/practices

Label	Definition/ Description
Job design	“...specification of the contents, methods, and relationships of jobs in order to satisfy technological and organisational requirements” (Buchanan, 1979).
Workplace infra-structure	Physical, organisational, social, and other structures that afford opportunities or inhibit means of tapping individual and collective knowledge.
Reward systems	Financial payments and benefits to workers such as base salary, gifts and annual bonuses as well as non-financial rewards that focus on needs to varying degrees for recognition.
Rituals	Interactions that have strong symbolic qualities (Deal & Kennedy, 1982) including meetings, lunch breaks, and daily tours that may assume ritualistic aspects.

Figure 4.2: Model of impact of artefacts/practices on incidental learning



This subsection describes the interpretations and the analytic points consistent with the extracts of the coded data relating to the sub-themes under the developmental effects of the artefacts/practices. Thus, the discussions accompanying the findings identify the instrumental role (supportive or inhibitive) of the artefacts/practices with respect to

incidental learning. In that regard, the findings suggest that these artefacts/practices allow the workers to do things and sometimes inspire or discourage them to feel, respond, or act in a certain manner (Vilnai-Yavetz & Rafaeli, 2004). The discussion also includes the aesthetic or symbolic dimensions of these artefacts/practices.

4.3.2 Job Design

Participants reported that opportunities for learning have been both facilitated and hindered by the job titles assigned, undertaking multiple roles, job rotation, and interactions during changeover periods.

4.3.2.1 Job titles - trainees and utility-men:

The evidence indicates that new workers who acquired skills under specific programmes are named ‘trainees’ at the Maintenance department and ‘utility-men’ in the Operations departments. These arrangements were ostensibly perceived as apprenticeship programmes in both departments. Apprenticeship has “been used to describe the journey a person takes from novice to expert in a specific occupational field” by Fuller and Unwin (2008, p.4). As will be seen however, the different job titles are actually indicative of different roles.

Etenar reported that at the Cell Lines department (an operations department), ‘utility-men’ tend to feel unable to learn because their role does not give them opportunities to learn:

“As utility-men, we were assigned ‘general work’ ... you can be pulled at any time to go and perform any manual work ... you can be asked to clean gutter so we don’t learn... we do rough cleaning, that is when we use the crowbar to clean the anodes.” (Production technician)

This finding reiterates Mann’s (2012, p.6) suggestion that apprentices/trainees require opportunities to participate fully in settings that challenge them and “provide quality encounters.” The symbolic dimension of this practice is the designation of a ‘utility-man’ who is perceived as unskilled. Through further abstraction, it was found that this perception was due to the low entry-qualification of the utility-men; hence, they are often deployed to perform low-skilled jobs. This finding is similar to Johnston’s (2008, p.47) presentation about the “history of exploitation” at times attached to apprenticeship, which inhibits opportunities for challenging jobs.

The evidence indicates that maintenance trainees work with unofficial mentors (several experienced colleagues) whereas utility-men in the Operations Departments are officially assigned a mentor as described by Davlamp below:

“I was first given to an old fireman and because there was no written document they were applying their experience and the knowledge they acquired from those who taught them, so I learned as we move along. Sometimes I learn on my own, looking at the equipment, let me try this and see whether it will work.” (Production supervisor)

This impression of inadequate support agrees with Mann's (2012, p.6) succinct suggestion that "Trainees must feel supported to engage in experiential opportunities." More participants from the Maintenance Department reported that more accomplished co-workers readily shared their insights and expertise with trainees. As argued by Nation and Newton (2008), incidental learning is fostered by large amounts of intentional sharing of knowledge. Kaysos receives unprompted sharing as follows:

"When I am working with my colleagues and one of them realizes that I am facing challenges, knowing that I am a trainee, quickly he will leave whatever he is doing and come to me and he will work with me; showing me what to do"
(Maintenance mechanic).

The maintenance technicians seem to work in the environment in which they have responsibility for a set of equipment; thus, there may be more urgency in their efforts to migrate 'trainees' to 'experts.' Some participants intimated that the support process for the maintenance trainees was often through loosely structured relationships between the trainees and the more experienced workers. This evidence accords with Eraut et al., (2004) report that contexts where spontaneous support from whoever was available fosters more incidental learning than from designated trainers. As Eraut (2004) explains, the support provided by accomplished co-workers immediately the need becomes apparent is invaluable. This arrangement at the Maintenance department was perhaps to accommodate the more emerging nature of their jobs.

The findings also show that tasks were designed around the abilities of the maintenance employees in the team to facilitate team members' support for each other. As Kaysos

reported during his training, *“the task assigned was challenging but the assistant manager made sure the trainee and senior-man assigned can do the job and there is sufficient time for discussions during work.”* In this regard, the instrumental dimension of the title ‘trainee’ is supportive because it affords access to jobs and support by colleagues that assist the development of the trainee. Participation in the authentic work is also significant as it encourages the trainee to feel like a ‘worker’ instead of a ‘student.’ The aesthetic dimension portrays an urge by colleagues to help the trainee.

In sum, although the job title ‘trainee’ at the maintenance department elicits facilitation of the learning process, the evidence from the interviews revealed that the title ‘utility-man’ at the operation departments, on the other hand, generates a perception that sometimes inhibits learning by restricting support mechanisms.

4.3.2.2 Undertaking multiple roles

Gedod attributed his current executive status to opportunities to play multiple roles that afforded him the opportunity to informally learn diverse skill sets in the organisation. Gedod was promoted and transferred from Cell Lines to the Technical department and notes that:

“I played multiple roles, senior supervisor, and safety coordinator for Cell-Lines and Potrepair; that background informed the decision that I should move to Technical. I had a fairly good knowledge of both operations, who else than myself to do technical supervising of both operations.” (DCEO)

The positive instrumental dimension of this cultural practice is revealed by Gedod's acquisition of knowledge embedded in the Cell-lines and Potrepair operations, thus facilitating the adjustment into the Technical department that supports both areas. This finding accords with Brody, et al.'s (2007, p.3) conclusion that a learning-supportive environment provides for "a range of roles available to members" that enables employees to acquire "diverse skill sets and knowledge bases." Similarly, Richtaw's narration about operating a forklift in Sub-section 4.2.2.1 portrays how the job design that allowed him to perform masonry and forklift operation afforded him the opportunity to master the skills in forklift operation. The data suggests that the environment/culture in case organisation allowed exposure to multiple tasks and consequently, learning opportunities. As will be seen later, this cultural manifestation is prevalent in some departments more than others.

4.3.2.3 Job Rotation

For this study, job rotations meant lateral transfers without an accompanying change in salary. This definition was intended to differentiate this practice from promotion that is associated with a corresponding upward movement in status and remuneration. Many participants indicated that they have rotated jobs, which gave them opportunities to acquire diverse skills. Joebaid reports on how by rotating jobs relating to sow-casting he learned all the wedge removal operations as follows:

... After acquiring the skill in removing sow wedges, I was asked to scheme (removal of oxides from the top of the hot metal). Every crucible of metal produces about 4 sows. My colleague will scheme three then the last one he will give it to me to scheme. After scheming one from every crucible, I went to two,

whereby I was removing wedge and also scheming in a shift. My partner will also be scheming and doing another job. I went to three, and then finally they left all the four sows for me to scheme. Similar tactics were applied for me to learn the 5 jobs in sow area” (Production technician).

Job rotation in some ways aims to promote learning and therefore implies intentionality; nevertheless, as Malone (2003) found, “accidental learning occurs in such activities as job rotation.” One can argue that some of the learning emerging during job rotation is largely unconscious or incidental as the employees attempt to address more spontaneous and incidental work-based challenges that incidentally promote the acquisition of new and variant skills. Like Joebaid, many participants in the Operations departments recalled opportunities for job rotation, probably because of the huge size of the facility and wide varieties of manufacturing operation as theorised by Eriksson and Ortega (2006).

Although job rotation afforded employees the opportunity to informally gain more understanding of the broader aspects of the business (Eriksson & Ortega, 2006); nonetheless, the broader knowledge could be gained to the detriment of in-depth specialized knowledge. This finding also echoes Bishop, et al.’s (2006) supportive learning culture requirement of expansive and flexible job design that empowers workers to exploit fresh knowledge. It corroborates Sauter’s (1999) results from a study of 500 firms in Germany, which revealed that 83% of participants believe that job rotation was a means of improving workers’ knowledge without formal or structured instruction.

4.3.2.4 Changeover periods

Participants reported that the informal interaction that occurs during shift-change and between the transitions from one task to the next were routine incidental learning opportunities. The reports indicated that this kind of interaction afforded involuntary discussions on equipment and process performance. Joebaid spontaneously learned from colleagues during the changeover periods as follows:

“Some of us work by the furnaces and others in the pit. During the changeover of work activities between the two teams; we are cautioned by our colleagues about what went wrong and the actions they have taken. Any equipment and materials challenges are shared, what they did different and alternative suggestions to resolve problems if any. The information enables us to adopt different strategies.” (Production technician)

The above account shows the positive instrumentality of changeover periods in support of the argument for longer changeover periods to enhance opportunities to exchange information. However, in the literature, there is raging campaign to reduce changeover period because in principle it reduces production time (Abbruzzese, n.d.). As Fuller and Unwin (2003) note, in a learning-restrictive environment, reflection time is considered unproductive. It is argued that the learning during the changeover periods may improve productivity to counteract the time spent on changeover engagements. Obviously, the time for the changeover impacts on the learning but the comparative analysis of the benefits of the learning and reduction of production time may be a difficult study.

Similarly, from the EDC (1998, p.72) project, the team found that “often, workers on one shift developed job performance techniques that could be shared with workers on the next shift.” Some participants also stated that the involuntary information sharing and cooperation practices contributed to imbuing some values of team spirit and identity with excellent production processes. For example, Geonel reported that:

“During casting, quality problems are corrected. Where such a problem is identified ..., that particular casting is stopped. The manager will sometimes seek the assistance of his reliever by way of knowledge during the changeover period to complete such assignments.” (Production supervisor)

The evidence indicates that workers in this department are keen to share knowledge and see regular interaction as key to this performance-enhancing activity. However, another management challenge may emerge regarding facilitating a healthy cooperation between shifts as well as a balanced competition between them.

These findings about the supporting roles of some job designs illuminate Kong’s (2003) conclusion that whereas appropriate prominence is placed on the prescription of duties, sometimes not enough effort is given to opportunities that allow workers to unleash development. Thus, suggesting that some job designs may allow learning to occur.

4.3.3 Workplace infrastructure

Workplace infrastructure was the most cited category of artefacts/practices that influences learning. As Streumer (2006, p.185) suggests, “The work infrastructure is the basis for informal learning.” In accord with that suggestion, the EDC (1998) study

found that organisations with libraries, Internet access, and learning centres in places like cafeterias provide the opportunity for workers to informally pick pieces of information. The EDC (1998) study also found that informal learning is impacted by the frequency and nature of personal interaction among workers. Following Patton's (2004) categorization criteria, Subsection 4.3.3 is divided into social and physical workplace infrastructure parts.

4.3.3.1 Social workplace infrastructure:

The following findings illuminate the conceptual value of social supporters or inhibitors to incidental learning. As detailed below, four constructs regarding social relationships identified in the data are quasi-familial, collegial, adversarial, and group size.

4.3.3.1.1 Quasi-familial relationship

Some participants described the relationship with members in the group as comparable to familial relationships. The data indicates that this quasi-familial identification relates to members in the immediate workgroup. This relationship generated a bond that facilitated collaborative learning as reflected in the following description by Richtaw:

"... Those I worked with are so friendly. For the masonry job, I came to meet Tse and we became more or less like brothers, ... through him I was able to learn many things and work well." (Construction technician)

The relationship between Richtaw and Tse reveals how opportunities to learn were afforded through a quasi-familial relationship. Although the case organisation espouses the "VALCO Family" catchphrase, no deliberate promotion is in place to promote

familial relationships. Richtaw claims that their familial relationships emerged organically from interactions between them; albeit, they speak the same local language. The instrumental dimension of the social processing through this relationship seemed highly conducive to learning because it supported access to knowledge. Similarly, Davlamp reports that a quasi-familial relationship with Dumak (probably because they speak the same local language) has influenced his incidental learning positively:

“I was with Dumak ... the relationship is such that we are almost like brothers so we are always sharing ideas.” (Production supervisor)

The evidence from this report reflects Angehrn, et al. (2005, p.37) finding in Chinese firms, which suggests that:

“Mutual trust and support in the workplace is seen as a familial relationship ... these relationships are a critical aspect of work, with positive and mutual benefits...”

It is argued that the individual trust created through the quasi-familial relation can engender incidental learning because as Chawla and Renesch (2006, p.31) claimed, incidental learning “requires honesty with oneself and with others, a sense of togetherness and trust.” Reflecting on this complex familial dynamics, several issues emerge, including the view that new workers may find a familial relationship as a barrier to learning due to discriminatory practices. Joebaid’s report below supports this view.

“I am a Fanti (language group in Ghana), the Fantis were more in Cast House and they were having the higher positions. So when I joined them, the other colleagues saw it as a threat. For me to learn how to calculate the elements for the heat, they wouldn’t do it when I am around. And I got to know that when his reliever came and asked him in their language that, what is this Fanti guy also doing here? Don’t continue – wait for him to go.” (Production technician)

The evidence indicates that the quasi-familial relationships are stronger in the Operations Departments, perhaps because a majority of the operational knowledge is acquired on-the-job, and there might be the tendency to share with beneficiaries who are close. Although the insight about the quasi-familial relationships may not be important in highly individualist cultures, it may be the core of collective societies in both developed and developing countries.

4.3.3.1.2 Collegial relationships

In the responses, a common trait is the perception that co-equal relationships lead to sharing of information and understanding of the work processes. Illeris (2004) stressed the importance of informal collegiality for learning within the social environment at the workplace. Lave and Wenger’s (1991) concept of "communities of practice" affords a framework for discussing this androgogical method of learning. From that framework, two types of collegial relationships emerge from the data: Peterson’s (2002 cited in Espinoza, 2006, p.215) ‘collaborative collegial’ and Hargreaves and Fullan’s (2010, p.223) ‘professional collegial.’ Regarding the former, Davlamp, a manager in the operations department considers the collaborative collegial relationship with managers from two service departments as facilitating incidental learning and reports that:

“I have learned from my working with the managers from Technical and Maintenance departments on the field; I pick certain things from them and they also pick certain things from me. Sometimes, they use terms that I do not understand; so I ask for the meaning and I think about how to apply them.”
(Production supervisor)

Godamp reflects on the professional collegial relationship between mechanical trainees that facilitated “learning by talking” as follows:

“... when I was working with the trainees, we did discussions using schematic drawings as basis of understanding what we were supposed to do, ... Thus we learned from each other while working. For example, it was difficult for me to understand schematics in hydraulics, the explanations from the colleague trainees did help.” (Maintenance supervisor)

This finding reflects Hargreaves and Fullan’s (2010) suggestion that collegial relationships lead to improve coherence and development among workers. Also in a study of two Primary Care Trusts, Unwin, et al. (2007) found that much of informal learning emerges through collegial activities such as apprentices/trainees reviewing schematics. In the evidence, collegial relationships were stronger in the Maintenance and Support Services departments probably because of the highly technical characteristic of tasks and dominance of professional employees.

4.3.3.1.3 Adversarial relationships

A few participants reported that some workers approached their assignments and co-workers antagonistically. The workplace is composed of various manners of human relationships; unfortunately, some may be negative. It is possible that the relatively few adversarial relationships reported may be due to the interviewer's presence. However, as noted in the methodology chapter, steps were taken to ensure that respondents felt at ease and spoke openly. The adversarial relationship was most prevalent in the Maintenance Department, perhaps because of heterogeneous mix of skills, professions, and chances for promotion. The Maintenance Department has the highest number and variety of professionals, and as presented in Chapter 3, they have the highest number of employees. Godamp's adversarial relationship with a senior colleague inhibited incidental learning when he was a technician in the following narration:

“When there was a problem, the senior man simply said to me, go to the tools room and bring a wrench, by the time I returned the job had been done. I never saw what he did and when I asked him, he said, don't worry the machine is working ...” (Maintenance supervisor)

Five participants (three maintenance technicians, one production technician, and one support service staff) reported that some accomplished employees did not readily share their expertise due to status, job security or personal circumstances. For instance, a maintenance supervisor reports that:

“Some were not willing to share knowledge ... because I believe of struggle for leadership and each of them was ready to just protect his own position.”

This finding supports Bishop, et al.'s (2008, p.13) claim that “under adversarialism, knowledge becomes an important resource to be hoarded, kept from others and used to further one’s own goals while undermining others.” In an organisation, fear mixed with a perception of distrust may create an environment for hoarding of knowledge (Lartey, 2010). An employee may seek to protect his own job or position by refusing to share knowledge (Rodrigues, 2010, p.108). In order to avoid antagonizing such relationships or placing respondents at risk, this study did not interrogate to confirm the underlying basis of the adversarial relationships.

4.3.3.1.4 Group/team size

The group-size of the participants ranged from 2 to 22 members. Comrade, reports that the paucity of membership of his work group size of two has a negative influence on learning:

“Our number of two employees unlike Cell Lines where people are many and there are a lot of people to talk with. When Sodzi was here, we were three; at times he would explain to you the problems he is solving without prompting. He will say I tried this approach but it didn’t work ... and I learn.” (Programmer)

Similarly, Jerlamp complains about working alone as a security officer: *“I go to the KE area to guard and I am alone there, so apart from the parade we don’t have any other person to share problems with ...” (Fire warden)*

This finding about the smallness of the group size supports earlier work by Castronova’s (2002), who claimed that a small group size is a barrier to incidental

learning. She argued that group interaction is critical to incidentally accessing collective experiences to create new knowledge; thus, the incidental learning is inhibited if the group size is too small. However, according to Rising and Watson (1998), a smaller group is more effective. They argue that as the group size increases, participation declines, and level of interaction lowers because the number of group members who did not talk increases. Nonetheless, this latter view relates more to the effectiveness of formal group meetings than to the learning aspect.

In sum, one can suggest from the numerous positive and negative learning experiences that if the learner is liked or has similar career interests/background as a co-worker, then the co-worker is more likely to share, and the learner is also more likely to adopt the information or behaviour transmitted. Incidental learning at the workplace, therefore, is gaining understanding as a “socially constructed” and “socially situated” phenomenon (Marsick, et al., 2008, p.587).

4.3.3.2 Physical workplace infrastructure

Another sub-theme influencing incidental learning covers the physical installations, their arrangements, and other inanimate objects. This sub-theme had four categories: posters and notices; open doors; Information, Communication, and Technology (ICT) infrastructure; and incidental learning spaces.

4.3.3.2.1 Posters and notices

Many participants reported that posters and notices on bulletin boards were a huge source of unplanned learning. Schank and Cleary (1994 cited in Castronova, 2002, p.4) claim that many pieces of information acquired at the workplace, were acquired “in

passing” without an attempt to learn them. Almost every participant referred to a poster or notice in the immediate environments as a source of learning unintentionally and some recalled posters from other departments that helped them in the work. Osofo referred to the poster in Figure 4.3 below and affirms that:

“... This poster ‘Do not work or walk under suspended load’ tells us that if you are using the lift truck, there are things you must not do when you have lifted the fork; suspended load must not pass over humans, employees should not pass under a lifted load ... ” (Warehouse clerk)

Figure 4.3: Forklift operation poster.



The poster portrays the way a forklift operator and a co-worker could contribute to an accident. It reflects the supportive role of the artefact as it contributes to better performance of forklift operation. From the aesthetic dimension, it elicits fear of failure

of equipment and an urge to be safe, thus also contributing to the supportive role. From cognitive theory basis, Marsick et al. (2008, p.587) suggested that “whole-person learning theory integrates feelings and emotions into the cognitive design of the informal/incidental learning framework.” They further argue that what cannot be said in words can be seen in the mind through images. Importantly, this area of incidental learning has not been explored significantly in the literature. The finding highlights insights into aesthetic theory because the art work and accompanying text provoke subjective interpretations. The intended symbolic dimension as stated on the poster is to warn workers to avoid working or walking under suspended load.

Additionally, the account reveals an unintended symbolic dimension to operators of the forklift to avoid moving a lifted rack over any vulnerable item. This evidence illustrates Rafaeli and Pratt (2006) caution that attribution of artefacts from the participants’ perspectives may differ from the intended attribute by the organisation. Nevertheless, both attributions signal the organisational value of the concern for employees’ welfare to be discussed Section 4.4. It is also noted that such visual and aesthetic artefacts might reveal much about the deeper values prevailing within the organisation.

4.3.3.2.2 *Open doors and corridors*

Only management employees commented on the incidental learning opportunities afforded by the open-door cultural practice; most likely because the nature of the non-management work required fewer consultations with employees in the offices. Markoto, a management participant observes that:

“... I know that our offices are normally opened, so you go easily to other offices, ... so that you can provide feedback and also receive some new information and we learn a lot that way ...”

This account illustrates the potentially supportive role of opened doors contributing to provision of feedback or unsolicited information. From the symbolic dimension, the opened doors elicit characteristics of the workplace infrastructure relating to accessibility of learning resources; both human and documents in the offices. In pursuant of this line of inquiry, when Opoboat was also asked how many times he meets his director per day, he responded: *“Many times – I easily walk to his office, and we start chatting. Some may be personal but we often discuss many issues relating to work.”* This finding also exemplifies the concept of spatial transparency, which focuses on the view that as more workers can see each other, the extent of informal/incidental learning increases (Becker, 2007). Becker also found that more open offices supported the naturally occurring incidental learning.

4.3.3.2.3 Information, Communication, and Technology (ICT) infrastructure

In this study, ICT refers to phones and computers and their associated network. As expected in a modern manufacturing facility, e-mail emerged as a valuable source of incidental learning for management employees. Jaypee refers to e-mails that he did not request for as unsolicited and explains that:

“Often I receive unsolicited emails, and it might be talking about something that happened in an organisation which was handled in a way that has landed them into trouble. So I use the information to guide my practice.”

Although the positive instrumental dimension of accessibility to unsolicited e-mails is not in doubt, it is perceived by some non-management personnel as a status symbol for management. This perception will be investigated in section 4.4. The non-management perception agrees with Bishop, et al.'s (2006) assertion that open access to knowledge resources is potentially an important feature of learning-supportive cultures.

Other communication infrastructures at case organisation are telephony systems and two-way radios. Many participants reported that they learned by calling co-workers when they encountered challenges during work. Richtaw narrates how he and a colleague learned incidentally through the telephone: *“Tse had difficulties on the job so he called me in the house and we discussed them and I was surprised by what we learned.”* This finding supports an EU study, which reports that many large organisations are deploying ICT infrastructure to facilitate business operations by enabling knowledge sharing and informal learning (European Commission, 2008).

4.3.3.2.4 *Incidental learning spaces*

Participants reported that useful chat occurred at unusual locations. These locations ranged from the change-rooms, coffee-places, lunchrooms, and bus trips. For Larbqu,

“Our lunch room is a learning place because most of the time during lunch ... the production employees or their bosses would bring a report ... a cell is giving us a problem so we would want you to check it ... so we discuss it and share ideas.” (Quality clerk)

Etenar also stated that improvement practices were spontaneously learned from the colleagues during lunchtime: *“when the job is not going well and we come to the lunch room, we discuss the way we will go about the job and learn from each other how to work perfectly.”* Boud, et al. (2009, p.326) found that some research participants are opposed to considering learning at the lunch room and therefore cautioned about promoting “social places for learning purposes.” However, from Unwin’s (2004), expansive propositions, learning culture may be afforded to employees by giving them the opportunity to reflect on the learning outside the immediate workstation.

For Alhaji, an accountant, the coffee place was an incidental learning space as narrated below:

“You meet somebody at the coffee table and topical issues come up and you discuss it. Sometimes it could be colleagues, your boss, subordinate or somebody unrelated to your department. These were not planned meetings but you solve issues and problem related to the job. As we share ideas, we all learn.” (Accountant)

Notably, simply providing the space is unlikely to be enough if other aspects of the culture such as adversarial relations do not support information-sharing or open interactions. Thus, the extent to which such spaces contribute toward the learning culture will depend on the presence of other learning-supportive values and practices.

4.3.4 Rituals

For this research, practices become rituals when they constitute series of activities, behaviours or actions undertaken regularly and followed invariably by a group (Brown, 2007). This Subsection reviews the cultural practices of daily tours and weekly communication meetings.

4.3.4.1 Daily tours

In the Operations departments, the daily morning walks around the work floor with the departmental directors are routines that provide opportunities for incidental learning, especially during the discussions that took place while touring and after. The members present at these walks include the managers from the department and engineers from other departments. During these walks, the team members spontaneously share ideas on the various observations and reports.

Markoto from an Operating department noted that: *“Everyday, I walk with my Director to the floor and talk about operations, maintenance, and what have you with the workers on the floor.* He intimated that a lot of unplanned learning emerged as they tour. In addition to the positive dimension of incidental learning, these tours have a symbolic dimension. For example, participants of the tour are perceived as experts in the operational processes who can address the technical and human challenges incidentally. Thus, what the ritual stands for may be important to the participants as they may be motivated to share during these tours.

4.3.4.2 Weekly communication meetings

The weekly communication meetings in all the departments have become rituals. Alhaji explains how the meetings can influence learning at the departmental level:

“Every Friday we hold ‘Communication Meetings’, we share the communication from management. After that we discuss the work within the department... so each person comes out with challenges or problems in his or her area. So when the problems come up we discuss it, share ideas, and everyone tries to contribute in a way that provides the opportunity for members to learn.”
(Accountant)

The intended symbolic dimension behind this ritual is the opportunity to share information about the events, performance as well as significant experiences from other departments in order to learn. However, an unintended positive instrumental dimension of incidental learning from the problem-solving sessions emerges.

These findings corroborate Marsick, et al. (2008, p.580) conclusion that incidental learning “is integrated with daily routines.” For Johnston (2008), the most influential factor for the maintenance of social order is not socialization but rituals. Lave (1988) also claimed that “daily routines” are more powerful means of socialization (tacit learning). Therefore, there could be several daily work routines that engender ongoing learning at the workplace that should be intentionally explored. The findings from these explorations can be used for the design of cultural practices that supports the natural learning integrated with the daily routines at work. However, as Brown (2007) notes, intrinsic to this consideration are the identification of the values underlying the rituals.

4.3.5 Rewards

Findings about rewards were not only financial. In the data, non-financial rewards, such as more interesting job assignments and enhanced career opportunities were also strongly related to learning on-the-job. Another categorization in the data relates to individual and collective rewards. A significant finding is the role of punishment or penalty (negative reward) in learning. Consequently, four sub-themes financial, non-financial, collective, and negative rewards shall be discussed.

4.3.5.1 Financial rewards

The majority of the participants claimed financial rewards have supported their unstructured learning as Jobaid explains below:

*“... So far as there are varieties of salaries I will like to progress ... sow casting area (section for poring metal) being the minimum salary in the Department So if you were a bit free you join your seniors to do their jobs – any senior job. Slowly you see you are learning though you are helping”
(Production technician)*

The above account illustrates learning as a by-product of helping a senior; thus, a motivation to learn on-the-job is created by financial rewards through pay rises. Similarly, Unwin et al. (2008) found that learning at the individual level is influenced by giving rewards for skills acquisition through adjustments in salary. This finding also echoes the suggestion of Bishop, et al. (2006, p.23) that encouragement and reward should be given to workers who acquire “useful knowledge.”

This study identified tensions in the roles of rewards in incidental learning. Tonut recalled occasions when significant experiences were not shared because of the fear of losing financial awards as follows:

“Incidents were hidden because they could lose competition for safety awards. I remember an employee was ostracized because he made the area lose an award through injury. Sometimes they don’t share mistakes.” (Safety manager)

This finding illuminates how rewards can undermine learning by incentivizing risk-averse behaviour and the concealment of errors that could be the source of knowledge development if shared more widely.

4.3.5.2 Non-financial rewards

Research indicates that non-financial rewards such as being allocated more exciting jobs enhance informal learning (Skule, 2004; Unwin, et al., 2008). Vicsod reports that:

“... not the extrinsic rewards, but the intrinsic rewards, you yourself feeling that whatever I am doing is being recognized, and maybe I have been asked to chair this group or this committee. In chairing, you learn so many things on your own and from people to perform.” (Production technician)

Such reward practices were not widespread in the Plant and participants from the Operations department revealed that rewards or recognition for learning were not common, and that managers were more accustomed to putting down non-management employees. Participants believed that there was a management perception that

employees in the operations department were not as skilful as their colleagues in the other departments. This lack of recognition seemed to have lowered the morale and motivation to learn of those in the Operations department, thus reflecting in their learning as theorized by Skule.

4.3.5.3 Collective rewards

The case organisation has several arrangements for rewarding collective achievements. The practice affords the teams to win gifts, dinners, and plaques. On the benefits of these arrangements, Joebaid reports that:

We have to meet targets because of rewards associated with improved performance. These rewards let the members open up to tell team members what they have to do to improve performance, so we learn. (Production technician)

The above narration supports Harrington-MacKin's (1996) claim that teams respond to both intrinsic and extrinsic rewards just like individual employees. She claims that more organisations are redesigning their reward programmes to reflect team values. As intimated above, focus on rewards at the group level has the potential to encourage collective learning and information-sharing in a way that individual rewards may not.

4.3.5.4 Negative rewards or penalties

Several non-management participants maintained that they did not share mistakes because of stigmatization or punishment. Rigay stated that: *"I will share a mistake when I realize that nothing can be done to me and if I think that disclosing may cause harm then I will not share it."*

Quarm from the Maintenance Department would not share mistakes because it might be noted in his annual performance appraisal. Although the negative instrumentality of punishment was popular in the interview responses, there was no evidence from the human resource department indicating any recent punishment of employees for mistakes committed on the job. The debate about punishment and its implication on learning theory throws light on stimulation (behaviourism) and incidental learning (James & Taylor, 2006).

In sum, the job design or the work itself was vital to learning that emerged because it influenced the 1) opportunities for meetings that facilitated learning by talking; 2) working alongside established colleagues who facilitated learning by doing, talking, and observing; 3) challenges and difficulties encountered during the work activities that facilitated learning by doing; and 4) the extent to which it was collaborative or individual that facilitated learning by doing, talking, and observing. For new employees at the maintenance department, in particular, their task assignments were found to allow them to reflectively respond to emerging difficulties with opportunities for advice and support from senior colleagues as and when they were needed. Through job rotation and multiple roles at the Operations and Maintenance departments, there were also opportunities to extend the experience of workers through a broader range of tasks. The underlying assumptions that informed these work designs and practices would be identified in the next section.

Irrespective of the department, profession, or tenure, the research evidence indicates that incidental learning at the workplace is supported or inhibited by physical and social infrastructures. The opportunities to learn were linked to mediating objects such ICT and posters/drawings or the workplace with libraries, ‘incidental learning spaces’ and open doors that provide more opportunities for interactions. In reporting about the comparatively large physical infrastructure, an assumption that these facilities automatically engender learning without the appropriate social or team/group climate may not be correct because of the central role played by relationships in the affordances and restrictions of learning. The analysis also confirms that learning at the workplace depends on the accessibility to the infrastructure or learning opportunities. Finally, the analysis shows that reward systems also negatively influenced how workers distributed knowledge, even among co-workers. Significant errors were not shared by some participants because of the fear of losing an award or a reward. Therefore, some workers were reluctant to share information if they were in competition. The extent to which some of these practices form subcultures and cultures at the workplace will be explored in the next section.

4.4 Impact of values/assumptions on incidental learning

4.4.1 Introduction

To address research question three in Subsection 4.1, this subsection illustrates how values and assumptions can support or inhibit employees’ incidental learning and how they are represented as cultures, sub-cultures, and “webs of cultures” in the case

organisation. Toward that objective, a multi-perspective approach grounded on Martin’s (2004) integration, differentiation, and fragmentation perspectives was used in the identification of cultures and subcultures that impacts on incidental learning. The multi-perspective approach revealed interesting insights into the dynamics of culture. First, the data analysis and the examination of other evidences highlighted patterns of assumptions and values, which appear to be shared by all members of case organization or identified groups, thus illustrating cultural integration and subcultural differences. Finally, it presents findings of the ambiguities and fragmentation that characterized some individual cultures, which permeate the different subcultures.

Figure 4.4: Model of cultures and subcultures that impact on incidental learning

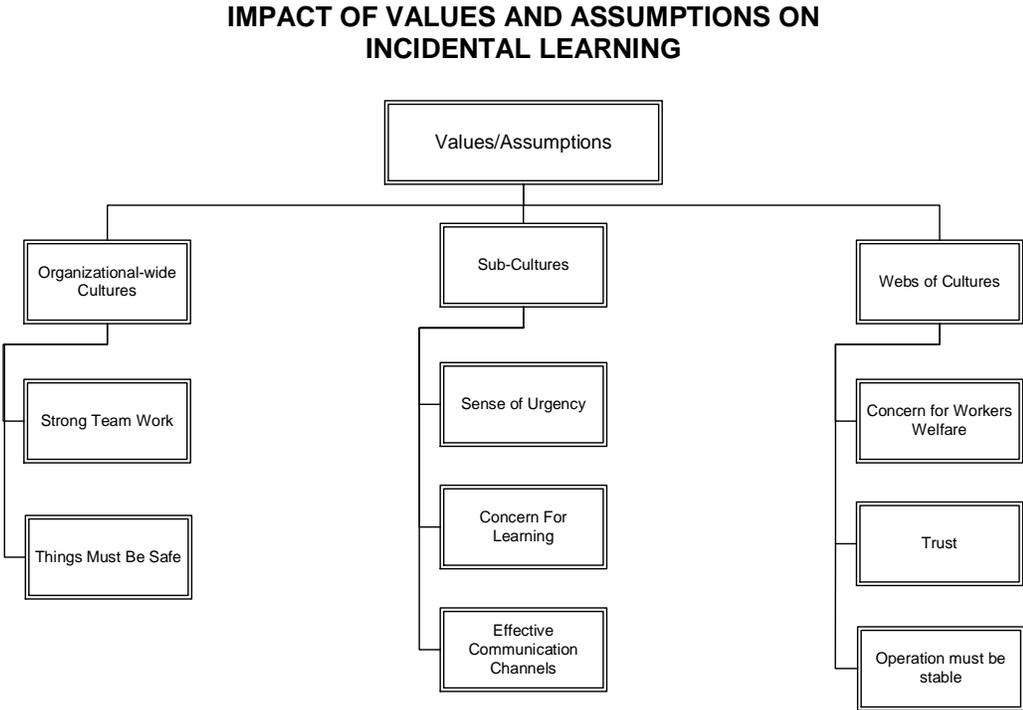


Figure 4.4 above illustrates the delineation of the assumptions/values arising from the data into organisation-wide cultures, subcultures, and webs of cultures using Martin's (2004) framework for analysis of the data. This research focused on the complementary nature of Martin's (2004) three perspectives of culture. Indeed, Martin suggested that these perspectives should be considered simultaneously and not sequentially. Following Martin's conceptualization of culture, the simultaneous influence of these three perspectives may be attributable to various manifestations and convictions attaining different levels of clarity, consistency, and consensus within a group/collective. As seen in this study, it can be employed to delineate assumptions/values of a collective into organisation-wide cultures, subcultures, and "webs of cultures". As such, it represents an important advance over the broader and less developed frameworks provided by others (e.g. Bishop et al, 2006).

4.4.2 Organisation-wide cultures

Evidence from the data and other sources highlight values and basic assumptions that appear to be shared across case organisation with little dissent. This Subsection describes the way case organisation members seem to emphasize "strong teamwork" and "things must be safe" assumptions.

4.4.2.1 Strong teamwork

Teamwork at case organisation is strongly espoused. Five cultural manifestations illustrate the assumption of strong teamwork, namely, team goals, collective awards, group reflection, social infrastructure, and rituals. These manifestations are discussed below.

Joebaid mentions that team-members work together to meet the team goals, thus spurring on knowledge sharing, and spontaneous team-learning. He explains that:

“I will emphasize that goals set for teams to achieve makes learning easy because everybody opens up. So it doesn’t help to keep information because when you do that, you starve the whole crew, every morning we discuss whatever we did the previous day. If quality fell somewhere we ask why, why and come out with solutions.” (Production-technician)

Joebaid intimated that their department sets targets for the teams, such as producing at less than 0.6% of material loss². Thus, team-members help each other to ensure minimal wastage. The account above illustrates incidental learning at the team level to accomplish the organisational goal, hence providing some support for Unwin’s (2004) prescription for an expansive environment in which workplace activities are aligned to organisational goals potentially resulting in individual development and enhanced organisational capability. It also echoes Marsick and Watkins (1990, p.39) belief that “collective learning may be the distinguishing feature of workplace learning, and that it plays a particular strong role in informal and incidental learning because people learn through interaction in bounded social groups that are connected by common organisational goals.” This finding is significant for practice because there has been an increase in empirical evidence suggesting that collective learning produces better results but the challenge regarding how to help the learners create new knowledge prevails (Gan & Zhu, 2007).

² Material loss refers to the percentage of aluminium metal that is lost during the process of value addition in the department normally through spillage.

When the non-management focus group members were asked if they believed team spirit resonates with members of the case organisation, Nana confirmed with the following:

“Once we received cathodes that we were to empty the containers before 5:00 p.m. otherwise the company will be charged. We did not have the equipment used in loading the container, so we discussed and designed a special bolt and sling connection to draw the cathodes with a lift truck. It was marvellous how the team members contributed new ideas to the design.” (Warehouse-clerk)

From the evidence, participants intimated that they could achieve the groups’ performance goals through the incidental learning emerging through team members’ innovative contribution and coordination.

The VALCO Business Plan affirms management’s belief in the importance of teamwork as follows:

“Belief that individual achievement is good, but Team accomplishment is better.” (VALCO Business Plan, 2011, p.6).

The above finding manifested through arrangements of collective rewards (see subsection 4.3.5.3) is significant because as Schein (2010) noted, if the espoused values agree with the basic assumptions, then advocating these values may facilitate organisational cohesion. On the other hand, the literature is replete with statements indicating that what companies espouse about their core values does not necessarily reflect the real values by which they operate in practice (ibid).

Kwagyan, a management staff also alluded to the assumption of teamwork spurring incidental learning during plant official meetings by noting that:

“I think our performance is also due to teamwork because of synergy. When we belong to one group, you bring your idea and I bring my idea so that we all harness our thoughts. So if you don’t talk at meetings and yours is within you how do we get the information from you” (Programmer).

Kwagyan’s reference to the benefits of ‘*synergy*’ and ‘*harness our thoughts*’ is similar to Eraut’s (2000, p.130) suggestion that participation in team discussion usually entails “deliberative thinking” about the subject, fast understanding of what the other team members have said, and fast judgement about participants’ contributions. These benefits depend principally on the common goal assigned to the team, and the relationship among team members afforded by the culture (ibid).

As illustrated in Section 4.2.2.5, incidental learning often emerges when working with more experienced persons in a team. Rigay, a maintenance electrician expressed amazement at the kind of learning that emerges and exclaimed that: “*Sometimes when they dismantle the thing, how they fix it; ‘eh’ (excitatory exclamation) you would learn.*” Rigay further intimated that when a group of technicians are installing or repairing equipment, teamwork is valued resulting in immense close coordination and mutual dependence. Consequently, transitory lapses in synchrony or automation are restored through spontaneous group reflection leading to tacit learning (incidentally).

Further, Joebaid disclosed that employees value teamwork to the extent that they help each other perform their individual assignments by stating that:

“... so even when the jobs are assigned individuals to perform ... if somebody finishes his work and sees that the rate at which I am working will hinder the achievement of that the team’s goal, ... he will come and show me how to speed up my work” (Production-technician).

It is presumed that as team members help each other, the underperforming colleague will incidentally learn from the others. This finding illustrates the haphazard nature of incidental learning (Marsick & Watkins, 2001).

Members undertaking the daily tours at the operational departments described in Section 4.2.4 normally include members from other departments and the symbolic meanings of these tours may be consistent with importance of teamwork. Members’ contributions during the tours toward the solution of operational problems facilitated knowledge sharing and collective incidental learning. This finding illustrates the “linked to learning of others” nature of incidental learning (Marsick & Watkins, 2001, p.28). Additionally, the physical arrangement of open doors prevailing among the management group throughout the plant irrespective of position may go some way toward reinforcing the teamwork assumption.

Notably, some consequences of the ‘Team VALCO’ value seem to have the potential to impede incidental learning. For example, it often created the perception that case organisation members are ‘experts’ and do not need the support of other local

organisations as shown Subsection 4.2.3.1. This finding suggest that in the environment of cooperation and development of a strong team spirit, the emphasis on participation and improving employees' dedication to the team is sometimes to the detriment of learning from outside. Parallel may be drawn to Coleman's (1988 cited in Adler & Kwon, 2002, p.22) concept of "bonding social capital," which makes a strong team or network cohesive, but "its use is excludable" as they may create barriers to accepting people or knowledge from outside. Shortie, who is 18 months old with the company, has experienced both easiness and difficulty with learning from team members and reports that:

"... when I came, the laid down system was that I came to meet this and is always done this way by the team, why should I do it another way. What if it fails, so the more I bring it up and it is challenged, so I will keep quiet"
(Mechanical-technician).

Shortie decided to 'keep quiet' because his suggestions were being challenged by the team. Paradoxically, he also reported about collective learning with the team as follows:

"For start they will show you the job steps, what to move first and what next. Sometimes we exchange ideas and I tell them what I know and they also tell me what they know. If a new idea is accepted then we change the job steps."
(Mechanical-technician)

Shortie's learning experience above reflects Eraut (2000) argument that some of the previous knowledge of the new worker is resituated in the present situation and the new

knowledge acquired through participation is integrated with the prior knowledge. Accordingly, a strong teamwork culture may result in the expansion and even transformation of the knowledge of the new-comer and older team-members.

Departures from this strong teamwork assumption are apparently resisted. For example, employees who hide mistakes that may affect the team are not countenanced. This perception is captured by Joebaid:

“If you do something wrong and your colleagues see it and you come to daily pep-talk and don’t say it, your colleague will say it, so that we all learn from the mistake because we work in teams. When something goes bad it affects the team and the colleague won’t allow it to continue.” (Production-technician)

This resistance is important because as Martin (1992) explains, integration perspective sometimes acknowledges conflicts and interprets them as justifications for more a powerful unanimity. The researcher argues that the resistance to the conflicting behaviour may illustrate the strong and wide acceptance of teamwork to success of the organisation; therefore, a deviant member is seen as not belonging.

The findings in this subsection confirm the claim by Amelung, et al. (2007 cited in Konetes, 2011, p.21) “that collaboration and working together are primary situations that incidental learning happens through.” The findings presented here support the conclusion that the ability to operate within an environment of shared goals, values, and assumptions is significant toward the development of situations and relationships that allow incidental learning to emerge. However, teams with a strong cohesion can also have a downside, in terms of being resistant to learning from outside sources. So, strong

teams might promote within-group learning, but inhibit between-group learning in the organisation.

4.4.2.2 Things must be safe

In a manufacturing environment, safety is, unsurprisingly, commonly viewed as a primary concern. Management is seen to be committed to this culture through manifestations such as safety posters, policies, and programmes. One of the core values of management espouses:

“High Safety Standards: demonstration in word and deed that Safety of the individual and equipment is as important as actual operations.” (VALCO Business Plan, 2011, p.5)

Gedod, a mechanical engineer claimed that: *“Everybody in the Plant here even to the lowest level is taught the safety principles of the department before allowing him to work.”* Following the training, workers are expected to comply with the rules and policies; otherwise, they may be disciplined for non-compliance (VALCO conditions of service, 2010). According to Kasworm, et al. (2010, p.254), *“to ignore power and authority at work is to ignore the realities of what it is to be an employee.”*

From the interviews, senior managers perceive these policies as important for efficient production as accidents cause disruption of operations as well as a way of avoiding injuries, and hence having to pay out employees' claims. Both management and non-management employees reported that the safety policy of certification bars uncertified employees from performing certain tasks, thereby inhibiting incidental learning. For

example, two participants cited inhibitions to learn as a result of the Mobile Equipment Operations Policy. Jaypee complains about the negative instrumental dimension of the certification policy as follows:

“... an employee’s work involves operating mobile equipment but then he cannot operate without being certified and authorized ... if an employee is even licensed to drive in town, he needs to go through VALCO’s certification ... these certification processes restrain employees, sometimes in challenging times by experimenting you’re going to learn ...” (Administrator-manager).

Similarly, Vicsod complains about perceived departmental restrictions to informally acquire other skill sets based on the certification policy in the following narration:

“You get the lift truck but there is no operator. I tell my boss I am a certified lift operator so let me take it and operate it. He will say no, no, no!!! Process control we don’t operate lift truck.” (Production-technician)

The account above further illustrates the gap between espoused values and values-in-use. Though the espoused value allows a worker to operate the forklift in any department provided he is certified, the process control manager would not authorize his certified employee to operate. This finding suggests that if policies are implemented too rigidly, they turn to affect employees’ authority to react quickly in challenging times; thereby creating a restrictive culture. Thus, although such policies of an organisation define the controls required to enhance safety, they may also become sources of frustration and undermine “management support for learning” (Skule, 2004, p.14) if they are not applied appropriately. This learning-inhibitive effect was

confirmed by both focus group discussions. For example, Nana, a non-management employee confirms that:

“Here the Asst. Manager doesn’t want any blame, for example, if a person does not use fork truck for regular job but can operate fork truck, even if he is certified, it is no” (Warehouse-clerk).

In this study, the important features of the integration are manifested in cultural assumptions relating to strong teamwork and safe work environment among the organisational members as illustrated in the findings above. Moreover, ambiguities were viewed as “not part of the culture” (Martin, 2004, p.5).

4.4.3 Subcultures

Although the findings presented above reflect widely shared values and assumptions by members of the case organisation, there appears to be differentiated responses to three areas/themes of culture. In the following account, some participants questioned the organisation’s commitment to the basic assumptions of sense of urgency in operations, concern for workers, and effective channels of communication. In resonance with the differentiation perspective, the following account exposes differences and conflicts in these cultures within some groups with implications for incidental learning.

4.4.3.1 Sense of urgency

The smelter operations cannot be stopped because it costs several millions of dollars to restart, thus a ‘sense of urgency’ is the implicit basic assumption generally presumed to guide behaviour at the case organization. Many participants reported that often tasks are

time bound because of the time-pressured nature of the operations, which sometimes impact negatively on the time for critical reflection on their experiences and time allowed for task assignment. Comrade from a support services department reported on time limitation to explore or reflect as follows:

“We have a format in VALCO called CQQR and when I am given a project, do I have the skills and time for it. Because of time limitation to explore or think through, you don’t give the best in you” (Programmer).

The CQQR model requires that tasks must have Context, Quality/Quantity of deliverables, Resources assigned, and Time for completion; thus, every task has a prescribed time for completion. From that model and nature of operations, the duration of assignments and pacing of activities have become subjects of symbolic interpretations. Kofosu maintains that:

“At VALCO, everything is emergency! The real culture is that people are always in a hurry, sometimes not enough time to think.” (Administrator)

Kofosu’s view of negative instrumental dimension because of ‘not enough time to think’ at case organisation accords with the role of time for reflection highlighted by Schon (1983 cited in Le Clus & Volet, 2008, p.31). Schon suggest that workplace learning requires time for employees “to experience surprise, puzzlement, or confusion in a situation.” This finding is in accord with Cseh, et al.’s (1999) suggestion that the lack of critical reflection hinders incidental learning.

Regarding the nature of operations, employees from the Maintenance and Operations departments seem to share the assumption that case organisation is an apotheosis of an organisation in motion. Rigay engages in ‘trial and error’ and explains that:

“The manager will request that assignment should be completed in 30 minutes but I may not. I press the knob then I expect the contact to close, if it doesn’t close, I continue to find why it is not closing. I keep on trying until it works and I discover new troubleshooting technique” (Maintenance-technician).

This finding shows that an appropriate level of pressure of workload may spur incidental learning. However, as earlier found, the pursuit of urgency in line with the strictures and timetable of the production process may restrict the opportunities for self or group reflection. Thus, although the Operations and Maintenance departments seem to embrace the sense of urgency, it might result in more incidental learning in some instances or less incidental learning in others.

Some participants from the Support Services departments reinterpret the jargon ‘ma try ma kwe (trial and error)’ as an indication of lack of sufficient knowledge. Alhaji maintains that the sense of urgency prevailing in the maintenance departments is not accepted at the Accounting department and affirms that:

“It’s (trial and error) not popular because there are procedures and steps in doing the activities. If you are to process a cheque for payment, there are various steps you have to follow and you cannot by-pass them.” (Accountant)

Further, they also question the reality of case organisation's commitment to sense of urgency. The assumption, they claim, is in conflict with the requirement to follow procedures to ensure order in operations. During the non-management group focus discussion, Baka, a maintenance technician attempted to counteract the emergence of conflict by stating that: "*Production is ongoing ... The procedures and job steps are written down but we have to be on alert to work faster and smarter.*" This discourse is comparable to Sackmann's (1992, p.156) findings that:

“. . . if a more differentiated cultural perspective is applied, “strong cultures” could turn out to be less consistent, less strong, and less homogeneous than they appear to be.”

In summary, it appears the sense of urgency is a defining feature of the sub-culture of the Maintenance and Operations departments because they work closely together and are often in the same building as theorized by Sackmann (1992). As noted above, this feature had sometimes negative implications for learning opportunities and was also much less of a feature in other departments within the organisation. This finding is important because as Schein (2010) claims, time orientation is a helpful means of distinguishing cultural differences.

4.4.3.2 Concern for learning

Some participants reported that the provision of learning resources such as access to libraries, magazines, and ICT infrastructure demonstrates management commitment to learning. There is a central library located at the centre of the plant and departmental libraries in some departments. These libraries contain textbooks relating to the

aluminium reduction process and technical manuals of the pieces of equipment installed. Davlamp narrates the benefits of the library this way:

“When I came, Pedon (supervisor) took me to the Plant Library. ... anytime I read something I try to bring it to the field to see whether it will work to improve the process. Sometimes it works and sometimes it doesn’t. That has pushed me very up that I was picked among the rest of the guys ...”
(Production-supervisor).

Davlamp’s narration illustrates how incidental learning may emerge from a conscious attempt to learn. If what he reads from the library does not work, then he has learned incidentally what does not work. Also through the reading process, Davlamp incidentally may obtain new information and their context, which he unconsciously and unintentionally stores ‘*that has pushed him up*’. This finding resonates with Webb’s (2008) suggestion that incidental learning may emerge as a direct derivative of intentional learning.

The library at the Maintenance and Engineering Department is more accessible than those in the rest of the departments; the library is located at the centre of the plant and its door is always opened. Godamp complementarily describes the Maintenance and Engineering Department’s library as follows:

“Information is there and is easy to reach. I went through the equipment files for maintenance instructions and I saw something; the reason why this

equipment was changed or this part was changed and so on. Now I can easily tackle the problems from what I saw” (Maintenance-supervisor).

Godamp’s descriptions demonstrate Maintenance department’s provision of documentation to facilitate work. However, participants in the Support Service Departments claim that some incidental opportunities for learning have been hindered by inaccessibility of their libraries. For example, Larbqu from the Technical Department reported that: *“We have a library at the laboratory but they are not things that we go there for reference ...It’s too far, leaving here to the lab is difficult.”* Consequently, significant opportune learning periods could be missed.

Additionally, Alhaji from the Finance department reported that some of the accounting manuals are in offices, which are sometimes locked. Thus, the concern for learning culture is “action inconsistent” along departmental boundaries; hence differentiated (Martin, 1992). This finding at the Support Service departments accords with Bishop, et al.'s (2006) suggestion that if all members do not have easy access to knowledge resource, then the environment may be considerably less learning-supportive.

Multiple approaches to learning in the discussion below seem to resonate with the assumption of concern for learning. Tonut describes his initial training as follows:

“... my manager believed in hands on, so I went round on audits with him. After some time I gained confidence, did audits on my own and submitted reports to him. ... especially the first three months. From the beginning we didn’t go to

classroom but later there were arrangements for classroom training. (Safety-manager)

Tonut might have '*gained confidence*' in auditing through implicit learning from the manager. Additionally, from Tonut's account above, the orientation and initial training that occurred was not organized in accordance with only didactic instructions but informal and incidental learning processes took place as well as learning on-the-job. The induction experience seems to be shaped to a large extent by managers, who may differ in their approaches. This is important as it potentially means that managers have a role in shaping differing induction experiences to another – and reminds us that learning subcultures may be shaped to some extent by managers, and hence be different from one department to another.

Additionally, the practice of multiple roles and job rotation described in Section 4.3.2 are consistent with culture of concern for learning. The finding illustrated Unwin's (2004, p.2) expansive environment in which access to learning is neither restricted to location nor "uni-dimensional." However, such a diversity of learning opportunities could not be said to be available uniformly across the organisation. For example, a mechanical technician, Jakquarm has not played a different role since 1981 and has attended only one training session as he reported that: "*Since I came I have been to training only once, one lecture at training So all the time I use our experiences to do my jobs; the little I learn and have acquired here.*" He also intimated that he has never served on any committee in the plant. Vicsod, another non-management employee working with the Operations Department also complains:

“Let’s take cell lines for example all the committees we have – confined space, elevated work, molten material – I wonder if there is any lower level employee on any of these committees, so how can we learn these things?” (Production technician)

The findings above show that the concern for learning assumption cannot be generalized across non-management employees. This finding is significant as Bound and Lin (2011) reveals that when blue-collar employees are given such learning opportunities they were motivated to raise their skills and attain a superior sense of responsibility. They reported that:

“The trainee baristas at the Café Co were trained in all stations and thus were able to multi-task and undertake multiple roles when the store was busy. They displayed initiative and actively looked out for things to do, without being instructed by their supervisors” (ibid, p.3).

If we consider these comments in light of the findings presented above, we can perhaps see that not all employees within the case study organisation were exposed to the diversity of tasks and opportunities considered important to incidental learning and career development. The above findings indicate that multiple approaches are subject to influences such as departmental, professional, and status in the organisation. Although multiple approaches to learning affirms management’s concern for learning assumption because it provides an expansive portrait of learning delivery, the differentiated perceptions above indicate that getting the right combination of opportunities for the different professions and departments is crucial (Bolt & Graber, 2009). Furthermore,

the type of combination that arises seems to some extent dependent on the prevailing local (sub) culture.

4.4.3.3 Effective channels of communication

Case organisation has installed facilities and practices that some view as evidence of promoting effective channels of communication that has influenced learning. As mentioned in Section 4.3.3.2.3, the installed physical communication facilities include computer network, telephony, and two-way radios. Additionally, social communication practices such as daily start-up, weekly communication meetings, and various social relationships that influence communication were highlighted in Section 4.2. These are supported by several policies such as ‘VALCO’s internal and external communication system’ grounded on the basic assumption that effective communication channels would enable employees to work collaboratively, disseminate ideas, and foster social connectivity.

With respect to telephony, these collaborative technologies are assumed to link employees to mentors and experts who they could not have collaborated with otherwise. The accounts indicate the extensive use of telephony to communicate problems and status of operations to members. However, one management staff observes, “*there is no infrastructure to facilitate the off work communication between non-management employees.*” Similarly, as noted in Section 4.3.3.2.3, the computer network promoted hierarchical differentiation as non-management employees do not have equal access to the ICT facilities

Atta, a non-management member reported that lack of access to computer equipment was due to the policy requirement of authorization: *“It is only the Management group who are authorized to take advantage of these means of learning”* (Human resource clerk). There is a common perception among non-management participants that the policy on e-mails restricts access to only management employees. Two non-management personnel affirmed as follows:

“The e-mail is not accessible but our assistant manager is hooked to the e-mails. If there is something we need to learn he brings it across.” (Warehouse clerk)

“I don’t have access to email. ... regarding safety documents unless I go to an assistant manager and ask him.” (Production technician)

There seems to be an emphasis on management access to e-mail; thus, apparent management/non-management divide in terms of how they experience this effective communication channel exists. Therefore, rather than promoting networking and cooperation, the e-mail system has created an inherent sub-cultural power relationship within the organisation.

Regarding social communication practices, participants recalled several official and informal meetings that afforded opportunities for learning. The findings in Subsection 4.2.3.1 shows that the quasi familial relationships exist in the Operations Departments and mainly among non-professionals. As noted earlier, this relationship emerges from the dependence of the experience of co-workers because most of the skills at the

Operations department are learned on-the-job. This perception was confirmed by Jannan at the focus group discussions:

“Yes, we have familial relations in Cast House (Operations department) when somebody on duty has a challenge he calls a friend at home and they compare notes at all times and share ideas.” (Metallurgist)

However, in the Maintenance and Support Services departments some of the jobs are characterized by individualism. This character was more prevalent in the Maintenance department where adversarial relationships exist due to hoarding to further individual goals. As stated by a maintenance supervisor in subsection 4.3.3.1.3, some colleagues did not share their knowledge as *“each of them was ready to just protect his own position.”*

These findings suggest that in a complex environment such as the case organisation, the cultures may be divided into components of hierarchical, functional, and occupational sub-cultures (Van Maanen & Barley, 1985). The defining elements of inconsistency across cultural manifestations and sub-cultural compliance portray sub-cultures that either support or suppress incidental learning. Thus, it is not the case that all individuals within the organisation will be exposed to exactly the same learning culture. For example, employees observe a pervasive management/non-management divide in accessibility of communicating channels and conflicting departmental manifestations of multiple approaches to learning. The benefits derived from the use of this perspective resonate with the argument for the management of departmental/group boundaries to allow for ‘good practice’ to flow between them for enhancement of incidental learning.

The findings from this study may also be useful in understanding the differences in the assumption/values between sub-cultures leading to enhanced knowledge sharing among different subcultures. In brief, the positive learning sub-culture promotes social interaction and makes learning resources available to the subgroup but the negative learning sub-culture suppresses social and discriminates in the emphasis of learning opportunities. Some of these cleavages such as e-mail and telephony systems were vertically defined between managers/non-managers probably due to narrow conception of workplace learning. These subcultures may be shaped by the preferences and dispositions of managers. Other cleavages, such as libraries and special relationships in the Operations and Maintenance department were drawn along departmental lines perhaps due to the nature of the jobs. Finally, the special relationships may be shaped randomly and organically out of the history of social interactions within the departments.

Both integration and differentiation perspectives are insufficient when it comes to understanding the inevitable ambiguities and inconsistencies that permeate organisational life. The findings suggest that to view either cultures or sub-cultures as clear-cut, clearly defined, and entirely consistent would be to misunderstand them and their impact on incidental learning. The next Sub-section illustrates the exploration of the inconsistencies and ambiguities associated with some of the manifestations.

4.4.4 Webs of cultures

The operational definition of culture used in this study treats it fundamentally as a collective or group phenomenon. Thus, it is (in theory) adopted by organisational

members through their mutual experiences to assist them in understanding the organisation and how they should behave in it. So, if it is contested, contradicted, and lacks credible consensus in practice, then it may not (in the integration view) be presumed to be the culture. Following that line of thinking, Schein (1985 cited in Miller, 2012, p.92) does not favour the study of culture from the fragmentation perspective; he argues that “unless we search for pattern among the different underlying assumptions ... we cannot claim that we have described or understood the group’s culture.”

It could be argued, however, that an understanding of an ambiguous or indistinctive pattern among referent values and assumptions is a useful description of a group’s culture, especially if it is linked to another concept such as incidental learning. Miller (2012, p.88) also suggests that a fragmented culture should be seen “as a normal, salient, and inescapable part of organisational function in the contemporary world.” Schein, moreover, concedes that often cultures are fragmented (Miller, 2012). In this study, some individuals form nodes of transient webs because they temporarily share assumptions/values with other undistinguishable nodes or individuals. Therefore, when issues relating to certain assumptions/values come up, specific but indistinct patterns of connections and nodes become relevant. The discussion below illustrates three webs of culture that were seen to influence incidental learning at the case organisation: concern for workers, trust in some co-workers, and right first time.

4.4.4.1 Concern for workers welfare

Arguably, employees at the case organisation are very well taken care of in terms of remuneration, physical safety, and social services in comparison with other Ghanaian

organisations. From that perspective, the case organisation's concern for employees has been described as 'VALCO family' because of the closeness of the "VALCO Team" members and perceived contentment of employees (VALCO Business Plan, 2011, p.6). However, some participants expressed reservations about the understanding of this family metaphor. Although most employees at the case organisation have heard the rhetoric about the 'VALCO family' in public statements by senior managers, there seems in reality to be a deficiency in the holistic concern for workers welfare. Some participants reported that older employees (close to retirement) were not treated well and others were not satisfied with how employees were selected for redundancy; thereby affecting how they share their knowledge.

Alhaji, an accountant reported that: *"People do not reveal their mistakes because they fear they would be the first to go when there is a redundancy."* When Opoboat, another management employee from the Operations department with similar status and age as Alhaji was asked to confirm the report during the focus group discussion, he contrasted the view:

"... That is not the culture here. You see people sharing in their meetings. Maybe I am yet to see what you are talking about, from what I see I know people are always ready to share" (Process engineer).

During the focus group discussion, Baka, a non-management employee agreed with Opoboat's position by recounting when a tyre repair man who has been asked to proceed on redundancy stayed to share his knowledge with another person. He recounts that:

“My tyre repairman at redundancy era, when he was told that tyre-repair was not going to be a full time job, he stayed for few weeks to team up with the mechanic whereby he trained the mechanic. The relationship, trust and approach to the repairman made him open up to share his experience very well” (Mechanical technician).

This account portrays that a non-management personnel agreeing with management’s judgement with respect to his selection as redundant employee contrary to Alhaji’s position. Another non-management employee, Nana thinks the assumption about treatment of older employees is subjective and provides a departmental dimension regarding employees close to retirement:

“Some don’t share because of the way they are managed. Let’s dwell on the guy nearing retirement; the way his last years are managed will go a long way to determine how he releases what he knows. Sometimes when people are getting to retirement, the department, where they find themselves, manages them in such a way made them believe that they have come here to waste their time” (Warehouse clerk).

These evidences indicate that the assumptions that hold in one situation, with one group of people at one time may not hold in another situation, place or time. It is thus sometimes difficult to identify some assumptions as stable or constant as a coherent culture or subculture. In the accounts above, participants’ concerns were related to job security and its influence on spur-of-the-moment sharing of knowledge.

Employees from the case organisation have gone through several redundancy exercises, which tend to influence their perception about management's concern for workers. The finding reveals that the culture of job insecurity may have created an environment for knowledge hoarding. As Atwood (2009, p.38) found "Overcoming the hoarding of knowledge by people who fear they'll sacrifice job security if they let loose what they know is a key in creating a climate that nurtures sharing." Although the evidence shows that the area of job security seems to significantly influence knowledge sharing and incidental learning, the confusion that emanated from the inconsistent standpoints does not allow the drawing of clear sub-cultural boundaries. Rather, there appears to have been the formation of a loose web of perceptions and assumptions regarding the insecurity of the organisational environment; the specific impact of this on people's behaviours and learning opportunities seems to have been highly contingent on a range of factors, such as the subjective dispositions of individual managers and employees.

4.4.4.2 Trust in some co-workers

Many participants reported that opportunities to learn were afforded or frustrated by trust in some employees. Although the word "trust" is easily referred to in conversations, there is no agreed definition of the construct in the literature. Rather, different researchers have used "trust" to describe different things to suit their research objective. The three dimensions of "trust" identified in the evidence compares to the three popular components of "trust" found in the literature: integrity – cognitive, social – affective, and competence – behavioural (Kramer & Cook, 2007). These dimensions seem to be related, though, they reflect disparate sentiments of contribution toward the functional assessment of its impact on incidental learning.

Cognitive trust relates to character with a focus on integrity and refers to the transmitter's opinion about the learner's adherence to the set of assumptions that transmitter accepts (Lee, et al., 2008), thus allowing openness. Gedod, a mechanical engineer claims that *"This is a culture I have noticed in VALCO over the years; very, very permissive. Everybody is willing to help because we trust each other."* Primarily, Gedod's view is that everybody at the case organisation may be displaying a sense of cognitive or social trust, thus willingly offered ideas to co-workers. Some participants drew attention to the porosity of his definition of "we-ness" (Kahn, 2013, p.182). Markoto, for example, wondered if everybody shows cognitive or social trust of co-workers and states that:

"Sometimes you spot an event and ask the question, the respondent will tell you he is too busy or there is an emergency. First of all, it depends on the relationship and trust you build between you and that person." (Process engineer)

Markoto's view indicates that opportunities for incidental learning could be lost because some employees may not be willing to sacrifice their working time to provide explanations to co-workers they do not trust. This attitude may portray double standards by some members of the Operations department because the propensity to offer assistance depends on a relationship, perhaps familial. The identity of such people could be described as "fluid/processual" that may be constructed in a context of contradictory demands (Toarniczky & Primecz, 2006, p.16). They may also be seen as having multiple identities that are loosely coupled to situations.

During the Management Focus Group discussion, members were divided on the influence of office politics on cognitive trust and learning. Jannan claimed that *“If the person you are working with thinks you can over pass him, he will hide some things from you” (Metallurgist)*. He intimated that some people were not willing to share ideas because they believed the individual may use it for personal gain. Contrarily, Geodod responded that *“It was the opposite in the Cell Lines. At Cell Lines they want to ship the job to you as immediately as possible” (Mechanical Engineer)*. Geodod’s assertion is not consistent with Markoto’s earlier view although both management employees work in the Cell Lines. In that light, the distinctness of boundary (Cell lines) of this cultural assumption proposed by Gedod may be ambiguous.

At the Non-management Focus Group discussion, Nana from the Support service department affirmed to the existence of office politics and ‘cognitive mistrust’ by reporting that:

“When this new guy comes and I start sharing my experience with him and we are made to understand that he is the superman although I am training him. Then the shortest possible time he is going to take my place, it will affect the way I will open up” (Warehouse clerk).

Nana’s view about the newcomer becoming a superman accords with Ismail and Yusof’s (2010) finding that some individuals are reluctant to share their knowledge because of lack of cognitive trust in people who tend to take unjust credit although aspects of the culture of the organisation encourage it. Nana’s attitude of selective

disclosure reveals the “hidden biases” and complexities in industry cultures (Martin, 2004, p.14).

During SI investigations, some non-management employees doubt the intention of management. In that view, Tonut reports that:

“If somebody doesn’t tell you the truth, the learning would be missed because we didn’t have the opportunity to know the real problem and would be rather solving a different problem. If there are obvious consequences especially accidents ... sometimes do they trust management to give all information?”
(Safety manager)

It seemed the employees sometimes did not trust (cognitive) management because they believed that the investigator was finding culprits to blame rather than opportunities to learn. Therefore, some employees may not be giving all information. This character of inconsistency relating to assumption of cognitive trust suggests the possibility of selected forgetting in the accounts and unpredictable behaviour of employees.

The familial relationships based on language identified above seem to illustrate affective trust with a focus on one’s enthusiasm to help a colleague based on tribal relationship (Lee, et al., 2008). Contrarily, Baka, another non-management employee reported the following:

“I was paired with somebody who speaks my language, by appearance I don’t look like my tribe, somewhere along line then I spoke the language, and he said

I don't like such boys to pair with. So I could not get to know some of his little tricks in the job" (Mechanical technician).

Interestingly, these narrative accounts demonstrate the inconsistency regarding incidental learning influenced by affective trust, which is grounded on the culture of quasi-familial relationships based on speaking the same tribal language at the case organisation.

Gedod from his experience in Cell Lines also asserted that:

" ... everybody is prepared to talk to you and support you with the understanding that we are moving the process forward so everybody is prepared to chip in and support you" (Mechanical engineer).

However, Comrade reacted as follows: *"I remember, at the Cell Lines, when I asked Kujo a question, what he told me was that you think when you ask a question then we teach you everything; not so fast" (Programmer).* This finding shows inconsistency relating to the manifestation of trust from the same department. The inconsistency may be due to mistrust (cognitive) between newcomer (Comrade) and established co-workers (Kujo). Ironically, Comrade's account of cognitive mistrust in the Cell Lines (Operations department) is consistent with Nana's cognitive mistrust of the 'new guy' at the Support service department; perhaps, an indication of an apparent web of subculture.

Although the management of case organisation espouses the promotion of sound co-worker relations based on mutual trust, some employees do not sometimes trust each other enough to share knowledge (VALCO Business Plan, 2011). This finding articulates how incidental learning is influenced by various dimensions of mis/trust and illustrates Huang's (2006, pp.54-55) assertion that, "The most important implication for incidental learning is the need for openness to the surprises that are characteristic of practice ... openness is illustrated in the unexpected learning from others."

4.4.4.3 Stable operations environment

In the manufacturing industry, recommendations in the literature indicate the need for stable operating environments in order to be efficient (Hollins & Shinkins, 2006). Hollins and Shinkins found that major manufacturing organisations value the concept of stable organisation to ensure consistent processes. In this study, the assumption of a stable operating environment is underpinned by the compliance with standards and prescribed procedures and emphasis on 'right first time' culture.

Regarding compliance with standards, as described in Section 4.2.2.4, some employees do not engage in 'trial and error' because the Job Safe Practices (JSPs) and Standard Metallurgical Practices (SMPs) are authorized procedures they are told to follow. Joebaid explains that some of these practices hinder incidental learning:

"How to go by task is spelt out in the JSP and we need to follow that. And any deviation from the JSP or SMP you're warned could have an effect either on the environment or product sometimes you fear to do something different"
(Production-technician).

The findings show that some non-management staff accords with management's emphasis on the maintenance of stable operations; thus, activities and decisions from employees emerge from following detailed technical policies and procedures. It illustrates Schon's (1987 cited in Coffield, 2000) "technical rationality paradigm," that focuses on applying predefined policies to address challenges at the workplace. However, when an employee encounters an unstable situation, there may be the need to improvise, adapt or invent outside the prescribed procedures to overcome the obstacle, which may then trigger incidental learning. Thus, as Shortie described in Section 4.4.2.1, the same team-mates who insisted on the 'laid down system' would at other times allow for changes in job steps. In this instance, some team members tend to have fluid or multiple identities constructed by contradictory demands at the workplace (Toarniczky & Primecz, 2006). Hence, "one moment a person thinks of himself or herself as belonging to one subculture, and a minute later another sub-cultural membership becomes salient" (Martin, 1992, p.10). Workers perceived culture may fluctuate in this manner as they encounter complexities from inescapable contradictions.

Management has embarked on the initiative to drive a 'right first time' culture into the processes and activities of case organisation toward attainment of stable operations. In view of that objective, the case organisation has a value-statement in the VALCO Business Plan (2011, p.6), which states that:

"VALCO has in place at all times ... the right number of qualified people doing the right jobs right the first time."

Some participants express the belief that workers have integrated this principle into their working culture, to the extent that it impedes incidental learning. For instance, Etenar, a non-management employee from the Operations department states that:

“When you come to cell lines, we don’t have anything called ‘trial and error’ because you have to go and do the right thing right the first time so that you don’t have a problem” (Production technician).

Similarly, Jaypee, a management employee from the Support Service reports that:

“... the philosophy of VALCO is ‘doing things right the first time’ so you try as much as possible to always do things right at the first attempt ... So there is that zero tolerance for mistakes” (Administrator).

The findings show that some non-management and management employees from different departments expect that things are done right the first time. The value-statement seems to elicit fear resulting in a negative instrumental dimension on incidental learning to the extent that mistakes are not tolerated. This finding confirms the conclusions that a ‘first time right’ culture where mistakes are considered risky would not encourage incidental learning (Marsick & Watkins, 2001; English, 2002). However, other findings suggested that all individuals learn incidentally from mistakes even in the ‘right the first time’ culture such as the case organisation. For example, Joebaid reported that *“... even in the bus when we are going home we think about what happened ...”* For Aquaye, *... in the washrooms we keep on discussing the job over there and in the process maybe some ideas which somebody did not unearth at the work*

side will come up ...” From a mishap or mistake, the persons involved may reflect over it in odd times, such as while driving or in the washroom. In the process, incidental learning emerges as they attempt to rationalize what happened. If an individual mulls over it alone, individual learning occurs but collective learning may be inhibited.

The findings also indicate that the ‘right first time’ culture negatively influences the extraction of learning during investigations of significant incidents. Tonut reported that:

“We do investigate SIs so we learn and prevent recurrence; sometimes you hear rumours, you follow up and no one is willing to confirm. So we cannot investigate and learn from the occurrence” (Safety manager).

Although the ‘right first time’ value is espoused by management; nevertheless, the real culture on the ground also reflects that learning from mistakes seems to be strong among employees. Probably, the strong learning from mistakes culture emerged from two important management publications, namely, “We learn from experience” and “Significant Incidences,” which draw attention to lessons from mistakes. These publications and the finding in Section 4.4.1.2 show that such an environment in which making and learning from mistakes is encouraged is often promoted as part of learning-intensive models of organisation as pointed above.

It is argued that the non-alignment between ‘right first time’ culture and the two publications is a good example of what can happen when two conflicting values are espoused by management. It may cause ambiguity and confusion, and may leave employees unsure about what the desired (and also actual) cultural values really are. In

such instances, employees try to interpret which of the competing values is most significant. In these instances, some may draw on the two publications and take those as the indicators of the dominant value. The multiple positions highlight the ambiguity, complexity, inconsistencies, and perhaps contradiction of the varying perception of culture in the case organisation.

An important feature relating to the identified organization-wide cultures – ‘strong teamwork’ and ‘thing must be safe’ is that there is consensus in interpretations of some espoused values and these interpretations agree with the participants’ manifestations. Consequently, in discussing these assumptions participants expressed views that would be welcomed by organizational executives, such as “*members contribute new ideas,*” “*harness our thoughts,*” “*colleagues won’t allow it to continue,*” etc. This conclusion confirms Erdem and Satir (2003) finding that manufacturing organizations have strong team feelings among workers. Additionally and perhaps, the long history of the perception of the case organization being well established in safety and quality performance may have influenced these underlying assumptions.

The subcultures that influenced incidental learning were based on managerial and departmental groupings. However, as the evidence shows, it will be incorrect to assume similar learning cultures to a group. For example, although the maintenance department seem to share the “sense of urgency” and “concern for learning” values that facilitated incidental learning; nonetheless, power interplay that inhibited learning was also common. Following the findings of such divisions within subcultures, Morgan and Ogbanna (2008) suggested the need for further analytical delineation of the subculture construct to include the range of groups that may share similar underlying assumptions.

Finally, some emerging cultural values such as “concern for workers” and “operations must be stable” contributed to ambiguous interpretations that made it problematic for the presentation of coherent pictures of cultures and subcultures. Although major groups identified in the study seem to share certain assumptions such as “concern for workers” and “trust” that facilitated incidental learning, they also maintained other distinct beliefs as tribal groups, which were not sometimes in agreement with the core organizational values. Another common feature of the cultural practices that emerged from the analysis relates to what Beattie (2006, p.109) refers to as “psychological security.” It covered personal elements relating to job security and social bonding that influenced individual interpretations and manifestations resulting in contradictions among workers. These findings suggest various implications, contributions, and conclusions, which will be discussed in the next chapter.

Chapter 5 – Conclusions

5.1 Introduction

Based on anecdotal evidence, existing literature has recognized that cultures at the workplace can either support or inhibit workplace learning (Ellinger, 2005; Marsick, 2011). However, genuine systematic and empirically based connections between workplace learning and culture have not been explicitly made; albeit, in recent times researchers have begun to explore this connection (Bishop, et al., 2006). In spite of these studies, questions relating how incidental learning occurs and how specific aspects of culture promote learning same still linger on. Thus, making the current study that provides models for understanding the relationship very relevant.

The problem is that organisational executives and employees may not be aware of the experiences of incidental/informal learning (Le Clus & Volet, 2008). Despite these difficulties, this study contributes to the current debate on the “confusing concept” of workplace learning by examining how incidental learning emerges in an authentic workplace (ibid, p.1). Incidental learning is often considered as one of the three types of informal learning; however, some of the factors employed to draw the boundaries overlap (Eraut, 2000; Schugurensky, 2000; Bernett, 2012 cited in Giust, 2013). Particularly, the assumption by Schugurensky and Bernett that incidental and implicit learning are two different types of informal learning is problematic. Eraut (2004) affirms that implicit learning involves implicit transfer and sometimes implicit processing of information. It is argued that since both activities are unintentional, the resultant learning is incidental.

Although Marsick and Watkins arguably proposed two types informal learning, they posited that distinguishing between informal and incidental learning is problematic. This study assumed that incidental learning is the unintentional part of a dichotomous view of informal learning. The other part is intentional learning with attributes of informality such as setting. Utilising such an assumption resulted in the development of a new theoretically informed dichotomous understanding of informal learning as well as elaboration of the concept of incidental learning. Further, the study illustrated how incidental learning emerges in a real life context by drawing on the empirical contributions to elaborate on the theoretical understanding of incidental learning as implicit, unplanned, or spontaneous acquisition of knowledge and skills by individuals or groups without an initial intention to acquire them.

Despite the increasing recognition of the role of workplace culture on workplace learning, the examination of the influence has been hampered by the debates on the nature of culture. As Bishop, et al. (2006, p.12) noted, “Some deep-rooted epistemological and methodological differences” exist between researchers of culture. The questions in the literature revolve around whether culture (and its impact on incidental learning) can be understood, described, or managed. The current study assumes that the influence of cultures on incidental learning may to some extent be understood through methodological triangulations and multi-perspective examinations. Considering the nature of the research questions in Section 4.1, the general research design was based on a phenomenological approach informed by qualitative inquiry of a single-case organisation. Purposive sampling method was employed to select a subpopulation of 30 participants for a multi-layer data collection using in-depth interviews, focus group discussions, and documents review. Themes were identified to

help classify the data for analysis (Braun & Clarke, 2006). The study drew on behavioural (observations), cognitive (reflections), and socio-constructive (relationships) theoretical perspectives to explain various means of incidental learning. It also drew on Schien's (2010) three-level and Martin's (2004) multi-perspective views to interrogate the relationship between the two complex constructs; workplace culture and incidental learning. It is expected that the findings would provide specific artefacts/practices, values, and assumptions for a general understanding of the learning/culture relationship; therefore, an empirical base for constructing models for learning-supportive and learning-inhibitive cultures.

The rest of the chapter is presented in seven main parts. Section 5.2 draws conclusions based on findings with respect to the first research question – how incidental learning occurs in the organisation. Section 5.3 outlines the roles of aspects of cultures and subcultures by addressing the second and third questions. Section 5.4 draws attention to caveats in addressing the third question. Section 5.5 summarizes the academic contributions of the research to the existing body of knowledge. Sections 5.6 and 5.7 describes the implications of the findings for policymakers/practitioners and future research respectively. The chapter ends with some general conclusions in Section 5.8.

5.2 How incidental learning occurs in the organisation

Generally, findings from the study suggest that incidental learning occurs through a triad model: “learning by doing” - relating to participating in authentic work activities; “learning by talking/listening” – relating to talking, especially by asking questions; and

“learning by observation” – relating to observing others and things. This is broadly in line with the findings of other studies that have explored the concept of learning.

Learning by doing: The study further drew three major findings relating to learning by doing. ‘Practice’ was found to play a critical role in incidental learning. Drawing on the behavioural explanations, the finding indicates that employees acquire skills naturally by working, thus employees with more opportunities to practice become more accomplished in their tasks. There was evidence also to the effect that valuable incidental learning emerged through repetition of tasks accompanied by opportunities for reflection and improvement. However, not all who engaged in repetitive tasks learn from them, an indication that incidental learning does not occur automatically. It may be argued, therefore, that employees unintentionally learn from the manifestation of Engeström’s (2001) third order learning by reflecting on the experiences to find means of doing a better job.

Employees also learned individually by doing as they accessed large and varied range of jobs and performed multiple roles. For both management and non-management employees, therefore, important means of creating opportunities for learning is by accessing prospects for expansion of job roles and job rotation to facilitate the exposure to more skills and knowledge.

Learning by talking: The critical role of ‘talk’ in everyday learning was established in the current study. Findings from the study suggest that workers often learn during daily work activities through official meetings and conversations/chats at the workplace. However, a workplace environment characterized by spontaneous and voluntary

engagements was more difficult to achieve within the inter-organisational settings because the relationships may be laced with strong competition and mistrust. An important value of everyday conversation or chat is the illustration of the natural and organic nature of incidental learning. Thinking about incidental learning in that view draws attention to the several relationships that facilitated or hindered the social interaction at the workplace. Thus, it draws attention to the notion that incidental learning may be embedded in the relationships at the workplace and through these relationships transfer of knowledge occurs.

Learning by viewing: The viewing/reading of notices, posters, policies, and procedures resulting in incidental learning highlight the haphazard or random nature of incidental learning. The spontaneous recall and utilization of information read informally or accidentally at the workplace demonstrates the occurrence of incidental learning through observation. This finding draws attention to the importance of notices, posters, and professional literature in the learning process.

Employees learned new practices and perspectives by observing co-workers to acquire tacit knowledge such as walking energetically and problem-solving skills. According to Eraut and Hirsh (2007, p.26) *“this mode of learning, is extremely important for the knowledge that underpins routines and intuitive decisions and is difficult to explain.”* As employees observe what is being done and said, sometimes accompanied by explanations, they develop explicit and tacit understanding. These findings draw attention to the natural opportunities for incidental learning through observation afforded by the cultures and subcultures during normal work; otherwise it may be very difficult to justify in terms of money and time (ibid).

5.3 The impact of workplace culture on incidental learning

The study offers detailed and specific accounts of the artefacts/practices, values, and assumptions that influence incidental learning and thus form part of the learning culture. It highlights the aspects of workplace culture that support or inhibit learning.

5.3.1 The role of artefacts/practices in promoting or inhibiting learning

As theorists of culture observe, the visible aspects of culture (artefacts/practices) can reveal much about the fundamental characteristics of a culture or subculture. In this study, it was seen that practices and artefacts have powerful effects on incidental learning. To take one example, job titles (artefact) used in some departments generated perceptions that supported or inhibited learning. As described in Chapter 4, the title utility-man and trainee elicited different influences on sharing. Maintenance trainees had opportunities to access lengthy apprenticeship programmes including on-the-job exposure for the development of skills. However, the development programme for utility-men in the Operations departments largely lacked exposure. Their jobs were seen as requiring significantly lower levels of skill and were designed in a way that involved less variety. Their unskilled tasks neither exposed the utility-men to technical insights of their operations nor the broader workings of the organisation. Bing (2001) observed that within an organisation, employees generally view job titles as an indication of status that also describes and influences how the employee is regarded by co-workers. In accordance with the above view, a job title that elicits symbolism to share is more appropriate for apprentices. On the other hand, a job title that connotes the apprentice as an unskilled person seems to have the capacity to present an impediment to learning.

Social relationships at the workplace prompt or inhibit incidental learning. Thus the formal or informal interpersonal relationships among employees play a significant role in facilitating incidental learning. For example, the quality of relationships between workers seems to have an important impact on the sharing (or not) of knowledge and information. Access to information and knowledge is shown to be influenced by the gate-keeping activities of employees. The conducive-environment offered by quasi-familial and collegial relationships for incidental learning also serve as barriers to learning in some instances due to discriminatory practices against outsiders. Adversarialism is also an important influence on the practice of hoarding of knowledge. These examples provide empirical evidence, which show that learning emerges or is hindered by diverse social interactions. Hence, the way workers interacted and participated in workplace activities may disclose peculiar but important socio-cultural processes that could influence the effectiveness of learning. Following that line of thinking, effective incidental learning may therefore reflect on the cooperation between the workers. It is concluded that the quality or nature of the relationships between employees determine the social affordances or hindrances to incidental learning.

Incidental learning is also seen to be facilitated by a strong workplace infrastructure, such as massive ICT infrastructure and incidental learning spaces. The learning spaces, such as lunchrooms and change rooms as well as changeover periods contributed to the provision of feedback or information. It is maintained that workers need opportunities to understand what their colleagues are doing right and receive feedback on what they have done wrong. According to Streumer (2006, p.58), “it is critical to make time and space available so that people can learn while they work.”

5.3.2 The role of values/assumptions in promoting or inhibiting learning

One core assumption that appeared consistently to manifest itself within the organisation, and which underpinned some learning-supportive practices, was that of the value of strong teamwork. These practices include mechanics and electricians working together in a maintenance team. The above findings indicate that incidental learning emerged among team workers as they participated in the teams' activities. They illustrate synergistic team learning as they work on special or regular assignments and also demonstrate "collective insight when the group experiences learning that is holistic and collective" (Bratton, et al., 2004, p.63). Some experiences of learning are facilitated by collective organisational and sectional goals and collective rewards in accordance with the strong teamwork values.

Further, from the integration perspective, the findings show consistency in the manifestations that reflect the assumption that 'things must be safe.' Although the assumption sometimes seems to hinder learning as cultural manifestations of certification portray, the participants share in the need to ensure operations run safely. Notably, such cultural manifestations were not characterized by conflicts and resistances.

From the management employees' perspective, the massive ICT infrastructure facilitates incidental learning across the organisation because of the impact on the more powerful management group. Such a finding underplays the concerns of the non-management group because the differentiation perspective presents evidence contrary to this view. Evidence from the study also shows that the assignment of multiple roles and

job rotation cannot be generalized across non-management employees. Consequently, the way management and non-management employees are exposed to opportunities to learn were different; illustrating how important discriminatory practices influence the effectiveness of incidental learning.

Significantly, it was also noted that only the employees from the Operations and Maintenance departments seem to embrace the 'sense of urgency' culture. The employees from the Support Services department did not believe in the sense of urgency; therefore did not acquire the manual skills through the engagement of trial and error practices. Regarding the assumption of sense of urgency, the complexity and urgency of the maintenance operations was highlighted as an important trigger to incidental learning.

Finally, from the fragmentation perspective, while many employees seem to share the assumption relating to 'concern for workers,' they also claimed that certain behaviours of management were not always consistent with the core concern for workers. Probably, this assumption may be too broad to be fulfilled across the possible dimensions. Thus, there appears to be lack of consensus in the holistic concern for workers welfare. For example, some employees feel resentful as they believe their contribution to organisational performance is not valued enough to assure job security. Such employees may be inclined to hoard their knowledge to probably 'create' a value for their contribution to organisational performance. In addition, the study shows inconsistency relating to the assumption of trust from the management personnel and employees from the same department. Nonetheless, the study shows that high mutual trust among all

categories of employees and most especially between management and non-management employees is a critical pre-requisite for effective learning.

5.3.3 Summary

Unwin (2004, p.6) proposed a model consisting of a table with a column each for expansive and restrictive characteristics depicting the way culture may influence the development of workers(learning cultures). Bishop, et al. (2006, p.23) also developed a table of two columns describing some assumptions, explicit beliefs, and artefacts/practices that might constitute learning supportive culture. However, in both models, there were no indications of the type of learning that emerges or could have emerged. In view of the complexity about the connection between incidental learning and workplace culture, as an upgrade of the earlier works done by Unwin (2004) and Bishop, et al. (2006), the current study proposes two tables with three columns each (Table 5.1 and Table 5.2) of artefacts/practices (surface level), assumptions/values (deep level), as well as the nature of the occurrence or prevention of incidental learning. The rows in the table provide the connections between artefacts/practices – assumptions/values - nature of occurrence/prevention of incidental learning, which provides a rich picture of the incidental learning – workplace culture connection. This subsection is a summary that brings the two previous subsections together to illustrate one of the main theoretical contributions of the current study (see details in subsection 5.5). In that light, the study essentially provides for two models: one of learning-supportive culture and one of learning-inhibitive culture.

Table 5.1: Model of connection between artefacts/practices – assumptions/values - nature of occurrence of incidental learning.

Artefact/practice	Underlying assumption/value	Occurrence of incidental learning.
Multiple roles	Concern for learning	Random learning through informal exposure to diverse skill sets and knowledge base
Job rotation	Concern for learning	Random learning through informal exposure to diverse skill sets and knowledge base
Job title (apprentice)	Concern for learning	Spontaneous learning through support immediately a need becomes apparent
Change over periods	Strong teamwork	Involuntary information sharing from other shift members
Quasi-familial relations	Trust in some co-workers	Promotes involuntary knowledge sharing
Collegial relations	Trust in some co-workers	Promotes collaborative learning (communities of practice)
Open doors	Effective communication channels, Strong teamwork	Inadvertent learning during casual conversations with co-workers
ICT infrastructure	Concern for learning, Effective communication channels	Opportunities for unsolicited information through open access to

Artefact/practice	Underlying assumption/value	Occurrence of incidental learning.
		knowledge resources
Incidental learning spaces	Concern for learning	Spaces for impromptu meetings with co-workers
Daily tours	Strong teamwork	Implicit learning during tours
Daily start-up meetings	Strong teamwork, concern for learning, effective communication channels	Spontaneous or unprompted learning from colleagues
Working with more knowledgeable person	Concern for learning, Trust	Spontaneous or unprompted learning from colleagues
Trial and error	Sense of urgency	Serendipitous or spur-of-the-moment learning
Posters	Things must be done safely	Haphazard reading
Collective goals	Strong teamwork	Collaborative learning
Learning resources – library, lobbies with magazines, etc.	Concern for learning	Opportunities for unplanned knowledge acquisition due open access to knowledge resources
Publications – ‘We learn from experience’ and ‘Significant Incidents’	Concern for learning	Opportunities for unplanned knowledge acquisition due open access to knowledge resources

Table 5.2: Model of connection between artefacts/practices – assumptions/values - nature of hindrance of incidental learning.

Artefact/practice	Underlying Values/assumptions	Hindrances to incidental learning.
Job title (utility man)	Lack of concern for learning	Lack of random learning due to inadequate exposure to diverse skill sets and knowledge base
Quasi-familial/Collegial relations	Mistrust of co-workers	Discriminatory practices hinders involuntary knowledge sharing
Small group size	Lack of concern for learning	Opportunities for unplanned knowledge acquisition restricted by group size
Rewards (punishment/financial)	Right first time/concern for workers	Fear of punishment or losing a reward may undermine accidental learning by incentivizing risk-averse behaviour and the concealment of errors
Certification	Things must be safe	Fear of punishment may undermine accidental learning by incentivizing risk-averse behaviour.
Not learning from outsiders - selective disclosure	Strong teamwork, Mistrust of co-workers	Psychological barrier created by belief in “no-invented-here” hinders reception of involuntary knowledge from outsiders
Standard procedures/practices	Stable operations environment; things must be safe	Inflexibility hinders serendipitous or spur-of-the-moment learning
Short-time bound assignments	Sense of urgency	Not enough time for “reflective learning that usually occurs incidentally” (Marsick, et al., 2008).
Inaccessible learning resources	Lack of concern for learning	Opportunities for unplanned knowledge acquisition hindered by inaccessibility to knowledge resources
Job insecurity	Lack of concern for workers	Protecting one’s competitive advantage hinders involuntary knowledge sharing

The tables above describe some possible features of learning-supportive and learning-inhibitive cultures, based on the analysis of experiences from a large manufacturing firm. This has been attempted through a relatively systematic way; first, by identifying cultural manifestations in terms of artefacts/practices that afforded or inhibited learning. Eventually, some of their underlying assumptions/values that might constitute such a culture were identified. As illustrated, some artefacts/practices are influenced by more than one assumption/value at the deeper level. As Bishop, et al. (2006, p.24) maintained, “The relationships between the different levels are complex, overlapping, and mutually reinforcing.” Although these artefacts/practices are examples of how learning-supportive and learning-restrictive cultures may manifest in an organisation; nevertheless, they may have limited impact of learning unless they are established by supportive assumptions and values. The models provide evidence-based information toward the future compilation of an exhaustive list of learning-supportive/restrictive cultures.

5.4 Caveat: cultural complexity and ambiguity

The ‘answer’ to the research questions is a bit more complicated than the summary presented in Subsection 5.3.3 could imply. Findings from the study show that the evidence about workplace culture involves more levels of ambiguity and complexity than was first conceived by the researcher.

Subsection 5.3.3 suggests that workplace culture influences incidental learning. This suggestion demonstrates that when consensus emerges in interpretations of some

cultural assumptions, and when these assumptions are consistent with the assumptions and related manifestations of other participants, then members act in harmony. Yet when some workers perceive some relevant assumptions to be inconsistent with other assumptions then sub-cultures emerge. Finally, when ambiguity of interpretations and assumptions emerge leading to confusion in actions and reactions by organisation members, then webs of cultures emerge.

5.4.1 Subcultures and differences between departments and groups.

From the integration perspective, the practices supporting incidental learning that appears to be consistent across the organisation are changeover periods, open doors of management employees, plant official meetings, and collective goals. On the other hand, certification of employees plant-wide seems to inhibit incidental learning. These artefacts/practices were grounded in the organisation-wide assumptions identified, namely, strong teamwork and things must be safe. Through these values, management may ensure consistency (safe/orderly operations) and consensus (teamwork) often thought to yield commitment (Keyton, 2011). “Managers often prefer a culture in which values are shared, believing that widely held values will lead to organisational harmony, and, thus, organisational effectiveness will be enhanced” (ibid, p.54). However, one can conclude that as employees work in an environment that values consistency and consensus there may be less value on questioning and creativity.

There was evidence of valuable incidental learning experiences for most employees. Nevertheless, some subgroups may be experiencing incidental learning opportunities more than others. Thus, subcultures were identified along functional/departmental and

hierarchical lines. For example, three learning-supportive practices, namely, multiple roles, job rotation, and access to ICT, which are related to the assumption of concern for learning favoured management employees. Thus, from the differentiation perspective, one may conclude that multiple cultural values may manifest in ways that favour the more powerful.

Despite the organisation-wide prevalence of learning culture, the findings also demonstrate that employees from the Maintenance department display more of learning culture than the others. Practices such as the elaborate apprenticeship programmes for the trainee, engaging in trial and error, accessible library, and working with more knowledgeable colleagues seem to prevail in the maintenance department. The evidence shows that this local sub-cultural difference may be traced back to highly skilled employees and the complex nature of tasks in that department. As Keyton (2011) suggested, “Employees in the supportive and innovative subcultures were more willing to emphasize learning new skills and applying them in their day-to-day work.”

Alternatively, workers in the Accounting and Technical departments were less willing to emphasize learning new skills, perhaps because of their more bureaucratic practices.

5.4.2 Tensions and ambiguity in culture

Although the differentiation perspective suggests that some subcultures were divided along functional/departmental and hierarchical lines; nevertheless, the fragmentation perspective indicates that some subcultures were not so neatly divided. Regarding the cultural issue of concern for learning, it appears the history of redundancies has created an unhealthy competition that has influenced employees’ perception of some

assumptions. Some employees reported that employees do not share because they fear being declared redundant while the person he or she trained is retained. Ironically, a non-management employee voluntarily trained another employee even after being declared redundant.

With respect to the culture of trust, some subcultures that seem to appear were later found to have permeable boundaries as members from the same group provided contradictory evidence. Employees seem to trust co-workers based on issues ('office politics), personalities ('trusted friend'), and circumstances ('finding culprits'); therefore, they shift coalitions. Some employees were connected by strands of shared assumptions. In this sense, it is argued that the description 'webs of cultures' communicate the complex and dynamic nature of culture.

Significantly, this study illustrated the tension that can emerge when two conflicting values 'we learn from experience' and 'right first time' are espoused by management. It caused ambiguity and confusion, as some interpreted the 'right first time' value to imply zero-tolerance for mistakes, whereas 'we learn from experience' publication imply that making and learning from mistakes is encouraged. In this instance, some employees draw on the two publications whereas some others seem to take 'right first time' as the indicator(s) of the dominant value.

Additionally, although several employees assume that the culture of trust built on familial relations based on language supports learning, Subsection 4.4.4.2 shows that sometimes this type of familial relationship is not tolerated by employees. Therefore, some employees must develop relationships that are different from those suggested by

the dominant cultural practice. Also some employees develop multiple identities in the face of contradicting work demands. These alternative relationships or identities may lead to multiple selves which are fragmented. According to Ipe (2003), the high incidence of cultural complexities and ambiguities within an organisational system is an indication of more diverse cultural assumptions/values that influence the employees' practices.

In sum, the study demonstrates that employees may have overlapping or multiple identities that sometimes makes it difficult for the identification of sub-group consensus or subcultures. Essentially, cultures and the impact they have on learning are rarely best understood as entirely unitary or simple constructs “but as mixtures of cultural manifestations of different levels and kinds” (Alvesson, 2003, p.191).

5.5 Summary of academic contributions

Findings from the research offer insights for consideration in terms of theory. These findings and the synthesis of ideas in the literature have resulted in theory building. Particularly, it suggests a framework of the relationship between workplace culture and incidental learning based on the case study of a Ghanaian manufacturing firm.

The unintentional nature and embeddedness in workplace activities are the two theoretical explanations primarily assigned to incidental learning. This study's granular view portrayed in the findings and the contributions aforementioned offers insights for consideration of implications for wider theories. The study contributes to the

unintentional or unplanned characteristics through the enrichment of its core construct - incidental learning. Marsick and Watkin's (1990) theory of incidental learning focuses on the individual's initial learning from an internal or external trigger followed by increments of reflective learning that they suggest emerges incidentally. This study confirms that workers discover incidental knowledge during the process of performing a task or performing another task. In some instances, the learners did not even know that they learned something new until they encountered a situation that required the utilization of the information that was acquired during the performance of the previous task. Similarly, Reber (1993) empirically found that learning episodes not recalled by the learner were nevertheless deployed later to influence performance.

The study also offers a richer conception of incidental learning; in previous research incidental learning is often assumed to be related to theories about memory (Eraut, 2004). For example, incidental learning emerges during problem-solving and observation (Cahoon, 1995), by talking to or watching experts or co-workers perform their tasks (van den Tillaart, et al. 1998), and from implicit meanings of workplace procedures and policies (Leroux & Lafleur, 1995). This research complements the understanding by suggesting that incidental learning is also related to physical conditioning, including acclimatization and physical skills as exemplified by practice of working in the transformer referred to in Chapter 4. Besides becoming accustomed to the temperature in the transformer, the physical skills acquired may include dexterity, coordination, speed, and strength.

This study also takes a broad view of the construct of embeddedness. The researcher suggests that this construct has two dimensions, namely, tacit and social dimensions.

The first dimension contributes to tacit knowledge theory whereby workers may not be aware of the knowledge that they have acquired as it is embedded in their everyday work activities, such as a team of mechanics and electricians working together. Marsick, et al. (2008, p.593) alludes to this view by referring to incidental learning as “work embedded learning.” It is noted that employers and employees both take this knowledge for granted because it is to some certain extent implicit.

The second dimension contributes to the social theory of learning by sharpening its relevance in embeddedness. Although much of the learning is related to the individual, the context for learning relates to the interaction of a pair or group (Kanes, 2010). This study expands the concept of embeddedness of learning in social activities by highlighting on how effective learning due to collegial relationships may be socially embedded.

As demonstrated in Chapter 4, the study addresses some specific debates in the literature. For example, the study provides empirical evidence relating to self and group practices that address the debate about the roles of theory and practice as well as acquisition and participation metaphors in employee development. Specifically, it sheds light on the assertion that knowledge at the workplace is not only propositional understanding of theory but also to a considerable extent involves the intellectual and emotional capacities/dispositions of employees and teams. Thus, all workplace knowledge cannot be theorized before application.

This study adds to knowledge in organisational theory and the study of incidental learning within the manufacturing environment by specifying a theoretical framework

for how aspects of workplace culture influence incidental learning. For example, the study confirms the influence of environmental factors (Lohman, 2000), opportunities for individual and group reflections (Cseh et al. 1999), and physical arrangements at the workplace (Brown & Duguid, 2000). But these works did not specifically address the question of how incidental learning emerges in authentic work settings, and they have also invariably focused only on one aspect of workplace culture. Addressing this gap, the study explored various means of incidental learning and the emergent theoretical framework illustrates the empirical evidence of the means by which workers experience incidental learning. This framework makes fundamental contributions to the concept of incidental learning by illustrating two important characteristics: means of incidental learning and influences from a workplace culture perspective.

Another determination relates to Harteis, et al.'s (2008) finding that little empirical evidence exists regarding the cultures that frustrate or facilitate learning from 'intelligent' mistakes. This study fills that gap by throwing light on how the culture of "right first time" inhibits learning through mistakes whereas the assumption of "we learn from experience" facilitates learning from mistakes.

As noted in Chapter 2, there are not many empirical studies that have been done on the culture/learning connection. Marsick and Watkins (2001, p.28) concluded from conceptual studies that incidental learning is incorporated in daily routines. This study adds details about how the practice of daily tours and the discussions during and after tour among the tour members as well as with employees on the floor created opportunities of spontaneous team learning. This cultural manifestation is supported by strong teamwork. Additionally, daily start-up and weekly communication meeting

routines supported by espousing of the value ‘we learn from experience’ facilitate learning. Again, from a review of various research work that used the DLOQ, Marsick and Watkin’s (2003, p.133) paper on the learning/culture connection shows that organisations derive benefits by implementing various types of learning such as collaborative and team learning. The current study adds to this body of knowledge by showing how these forms of learning can be facilitated by specific aspects of culture, such as effective communication channels and trust of co-workers. Marsick and Watkin’s work attempted to link the learning to financial performance but such benefits may not be realized if they do not also deal with the elements of the culture, such as adversarial relationship that inhibit learning.

The mixed findings in the study regarding the roles of some aspects of workplace culture also provide some challenges to the theory of expansive/restrictive continuum as the same construct can be assigned to both sides of the continuum. Further developing on the expansive/restrictive continuum, Unwin (2004) claimed that “the cultural differences determine the character of the learning opportunities on offer in an organisation.” However, the expansive/restrictive continuum did not establish clarity by delineating how the different aspects of culture influence learning. Based on Schein’s (2010) assertion that culture consists of observables, espoused-values, and assumption levels, the distinct influence of various aspects of workplace culture on incidental learning was demonstrated in this study. The study also attempts to go beyond Bishop, et al.’s (2006, p.23) “possible features of a learning-supportive culture” and Lohman’s (2000) environmental inhibitors to learning to provide empirically informed learning-supportive and learning-inhibitive models of learning.

Although several research works have found learning from outsiders very successful, in contrast, findings in the current study show that incidental learning did not tend to emerge from dialogue with staff from other companies in Ghana (Van den Tillaart, et al., 1998). In illuminating this contrasting picture, this study's contribution highlights the phenomena of agency and 'group think' aspects of organisational theory. Perhaps, this may be likened to the culture that Argyris (1987) refers to as an organisational defensive routine that blocks the detection and correction of error but in this case with respect to the learning that could emerge from outsiders.

The framework shown in Tables 5.1 and 5.2 above, shows that the learning-supportive and learning-restrictive cultures characterize the way in which the infrastructure (social and physical) and organisation of work translate into employees' development or otherwise. However, the study shows that in spite of management's efforts to forge a unitary or cohesive view of the espoused values and assumptions of an organisation, employees may not respect or uphold these values and assumptions for various reasons; thus, creating cultures of tension and ambiguity.

Although the proposed model adds to the existing view of learning-culture connection; nonetheless, the ambiguities and tensions identified advances on current studies by showing that employees may have multiple and overlapping identities, making it difficult to define clear ways to follow. Any theory of the impact of culture on incidental learning must therefore provide for cultural variation within one organisation and not begin by assuming that cultures (at any level) will necessarily be internally consistent.

5.6 Implications and recommendations for policy and practice

This section outlines practical implications for policy makers and human resource practitioners as despite the growing importance of informal learning, both policy makers and practitioners are still grappling with the nature of informal learning and how to promote organisational contexts that support it.

In many countries, skills development policies are still heavily skewed by arrangements that emphasize the acquisition metaphor (Sfard, 1998) although the learning discourse is shifting from the unilateral emphasis on training. This study adds weight to the argument that policy makers should rather adopt a view that recognises the crucial importance of informal, contextualized, workplace learning in the development of work skills. In policy terms, this view is highly problematic because the migration from the certification approach requires an acceptance of a holistic consideration to the development of strategies for skills development. Also it requires the recognition that both employees and employers should be supported to maximise the learning opportunities at the workplace. It is noted that it may be more difficult to reorganize the production process, encourage social interactions, and redesign jobs than to organize formal training programmes. Currently, human and financial resources are normally made available for the training programmes and not for informal/incidental learning facilitation. Therefore, Governments are encouraged to facilitate the design and funding of initiatives that would help organisations in the reconfiguration and reorganisation of work to afford incidental learning instead of the concentration on helping individuals acquire more certificates.

The findings of this study, as summarized in Tables 5.1 and 5.2 above could provide an initial step in helping governments and organisations to do this, by highlighting the cultural practices, value, and assumptions that can facilitate incidental learning. Organisations may analyze their culture to determine where and how they conform to the tables to create policies that may make them more learning-supportive. In sum, the current study identified 18 artefacts/practices such as multiple roles, job rotation, and hiding of mistakes previously mentioned in the literature as supporting or inhibiting learning. Further, the findings identified about eight artefacts/practices that have not been explicitly mentioned in the literature relating to culture/learning connection. They are job titles, open doors, posters, in-house publication of significant incidents, in-house certification of employees, time bound assignments, and job insecurity. These findings therefore provide helpful suggestions for design and development of the workplace environment, policies, and practices. However, such surface-level practices and artefacts are unlikely to have much effect if, at the more fundamental level, cultural values, and assumptions do not support and underpin them.

Following the observation in the literature about the dearth of information about workplace learning in the developing country, the findings from this study would be useful for academic institutions and recognized bodies in Ghana, such as the Institute of Human Resource Management Practitioners and Ministry of Education to help organisations to develop employee development strategies, which are embedded in the work activities. The learning-supportive model can be employed in the analysis of workplace learning culture of individual organisations. Artefacts/practices such as incidental learning spaces, posters, daily start-up meetings as well as publications of ‘we learn from experience’ may be established. These cultural manifestations should be

supported by assumptions such as ‘concern for learning.’ These strategies should enable organisations to move closer toward the learning-supportive environment at the workplace. However, problems such as cultural inertia due to the reluctance of employees to adopt a different culture may emerge.

Regardless of the status of the employee, this study indicates that, ‘natural’ learning at the workplace contributes significantly to the development of work-related knowledge and skills of employees because much of the learning accounts of participants were not related to formal training. Human resource practitioners need to recognize informal/incidental learning as a critical dimension to employees’ development. In accordance with the literature, the study confirmed that workplace infrastructure is at the centre of the hindrances and opportunities for incidental learning (Carliner, 2012). From the social infrastructure perspective, for example, organisational executives could regulate incidental learning by designing policies and procedures to foster participation in teamwork and working with others that affords employees the opportunities to listen and observe each other at the workplace to learn new perspectives and practices. For example, the special teams set up in the maintenance department of the case organisation may be replicated for accounting audit, development of products, and responding to customers’ demands to acquire some of the co-workers’ tacit knowledge. However, as cautioned earlier, the creation of new practices must reflect the peculiarities of the demand and needs of the targeted department, group, or organisation.

Regarding workplace infrastructure, it is recommended that the strategic objectives of human resource systems should facilitate the production of the job designs and other

workplace infrastructures that produce and sustain incidental learning by employees. It is suggested that work floors with situational cues such as open offices, corridors, and ICT may generate powerful learning-environments. Similarly, the review of reward systems with emphasis on collective rewards would facilitate team accomplishment through collective learning. The researcher also suggests that human resource practitioners can create proactively a programme for acclimatization and acquisition of multiple types of skills.

The finding about the influence of posters supports the existing assertion that workplace artefacts can have an impact on learning. This study highlights posters as effective source of incidental learning. Although this approach to facilitating incidental learning may be successful in large firms with enough space for several posters, the use of posters may not be successful in small firms due to lack of space for varieties of posters.

However, difficulties emerge in using cultural labels to describe organisational factors that impact on incidental learning without exploring the basis of the influence. This challenge also raises important questions regarding what could be considered as appropriate intervention strategies by practitioners toward the enhancement of the quantity and quality of incidental learning. The challenge highlights the best practice – best fit argument regarding how to select the appropriate cultural artefact/practice, espoused value, and basic assumption for an organisation.

5.7 Implications for future research

This study offers three major contributions for future research into incidental learning. First, some aspects of cultures and subcultures at workplace were found to have mixed influence on incidental learning. They include quasi-familial relations, strong teams, standard procedures, and sense of urgency. It is recommended that future research on incidental learning should give more focus to these aspects to determine whether insights into the bases of their influences will provide clues relating to why they provide support or suppress learning. Regarding implications for research on quasi-familial relations, it is noted that tribal identifications may not be widespread in some countries, especially with high individualist cultures. However, in collective societies, differences in tribe enhance the perception of trust or distrust. For example, Skok and Tahir (2010) wrote that Arabs have a tradition of sharing knowledge with only tribesmen. With the increasing recognition that most learning is natural, research into knowledge sharing may need to explore the influence of human grouping such as tribes, learning networks, or communities of practice. Irrespective of the labels, an exploration of the various human groupings to identify factors that create sufficient levels of trust to allow sharing of knowledge to take place naturally may be helpful.

Second, the findings relating to ambiguities and tensions in culture have theoretical implications. They illustrate the problems relating to the distinction of culture as something that an organisation 'has' or 'is' (Smircich, 1983). This study refrained from reducing culture to something that an organisation 'is' or 'has' without a view of the organisation as a culture. It therefore illustrates the benefit of not making a priori assumptions about the unitary or stable nature of culture before commencing the

research. However, there are problems associated with the dynamism or fluidity of individuals in an organisation because “the fluid identity has different degrees, from flexibility across situations, to the simultaneous holding of contradictory and ambiguous selves which are created and recreated within the process of interaction” (Toarniczky & Primecz, 2006, p.12). Following this line of thinking, future research should seek to acknowledge and investigate the tensions and ambiguities inherent in cultures and subcultures; the flawed assumption of cultural unity and coherence should be avoided.

Third, from the qualitative approach, this study presents a huge and important step relating to an understanding of the means of incidental learning and perceptions about how they are influenced by workplace culture. However, it is of a relatively small-scale nature and exploratory. It does nevertheless provide the beginnings of a framework for analyzing the impact of culture on incidental learning, which could perhaps be used to construct quantifiable categories for use in survey research within organisations. Such future studies may have practical implications for organisations in terms of assessing the strengths and limitations of their cultures and in terms of supporting and promoting incidental workplace learning.

5.8 Concluding remarks

Research on workplace learning has recently advanced, and there is currently a better understanding of how some structural and institutional aspects of the workplace context shape and impact on learning opportunities. Nevertheless, such research has rarely

focused specifically on incidental learning and empirical studies of the connection between such learning and workplace cultures have been similarly sparse. It is this deficiency that this study sought to address by investigating and delineating the different aspects of cultural artefacts/practices, values and assumptions, and systematically exploring their impact on the incidental learning of employees. The main outcome of the study has been a clarification of this relationship and a more detailed specification of learning-supportive (and inhibitive) cultural facets. This can help to guide researchers in future analysis of the relationship between culture and learning, and also provide practitioners with an indication of what steps might need to be taken if they wish to promote a learning-supportive culture within their organisations. As suggested by Marsick and Watkins (2001, p. 32), “informal and incidental learning can be enhanced with facilitation or increased awareness by the learner...while much is known about these pervasive forms of adult learning, much remains to be learned.”

It is also evident from the study findings that a redesign of work systems and structures to include social and interactive aspects will improve on learning. The qualities of the relationships between co-workers generate opportunities or restrictions for incidental learning to emerge. However, more in-depth qualitative research is required to understand the bases of some of these relationships and how the nature of these relationships affords or constraints incidental learning. In addition, the nature and quality of workplace infrastructure co-contribute toward the support or suppression of incidental learning. It appears that informal/incidental learning is the most pervasive form of workplace learning hence policymakers and practitioners can enhance this form of learning with cultural interventions that might move organisations toward a more learning-supportive future.

The study, of course, has its limitations. Methodologically, for example, only one organisation was studied and this limits the extent to which conclusive generalisations to other organisations can be made. There is also the issue of the reliance on the individual self-accounts. However, using the focus group discussions as a triangulating measure helped in curbing the shortfall. Also the use of the qualitative approach provided information overload that made it difficult and tedious to synthesize. Nonetheless, the varied information provided through the various qualitative methods enriched the content of the study.

Research has shown that the workplace is the most important setting for employee's work-related learning; nevertheless, organisations may not be doing enough to create supportive learning environments for the workers. Firms have different cultures, subcultures, and knowledge distributions that combine to create environments that support or inhibit learning. To create the environment that support learning, research that explores how employees learn in these setting are useful to policymakers and practitioners. It is contended that this study has made a systematic contribution in this respect by adding further detail to our understanding of how particular aspects of culture in organisations can promote or inhibit everyday workplace learning.

Appendices

Appendix 3.1

FULL VERSION INTERVIEW GUIDE

INTERVIEW SECTION A:

The first interview section covered provision of personal profiles of participants and general information about how the participants acquired knowledge and competences utilized during present and previous working life. The 'Interview Section A' questions for each participant were as follows:

A1. Introduction of the session:

- I. Exchange greetings.
- II. Communicate the duration for the interview session.
- III. Describe the stages of the interview process.
- IV. Remind participant about key ethical issues discussed during the meeting that resulted in the signing of the Informed Consent Form.

A2. Sample questions

- I. Describe your academic educational background.
- II. Describe your professional training background.
- III. For how long and where have you worked in your entire working life?
- IV. Describe the positions that you have occupied at VALCO and the kind(s) of work involved.
 - I. How did you acquire these pieces of knowledge and skills for the each kind of work assigned at VALCO?
- V. I have observed that the following are your current major things you do at work – A, B, and C. Are there other things you do that you consider major in your work? How did you learn to perform these things
- VI. For each kind of work, which people have you been working most frequently and why?

INTERVIEW SECTION B:

The second interview section covers the description of participant's incidental learning experiences. The questions for 'Interview Section B' have been grouped under 7 interview guides as follows:

- B1. Description of participant's unintentional learning experiences. (Explanation of the concepts intentional and unintentional learning.)
- B2. Unintentional learning during formal meetings.
- B3. Informal official and social interaction co-workers
- B4. Trial and error and intelligent mistakes during individual or group task assignments.
- B5. Learning through unsolicited e-mail exchanges, information on bill and notice boards.
- B6. Incidentally learning new things during formal training
- B7. Incidentally learning through difficult assignments and situations

The specific interview questions to be addressed by each participant for each interview guide are as follows:

- B1. Description of participant's unintentional learning experiences. (Explanation of the concepts intentional and unintentional learning.)
 - I. Sometimes we experience unintentional or unconscious acquisition of knowledge. Can you describe some of these learning experiences at VALCO.

- B2. Exploration of unintentional Learning through engagements at formal meetings or gatherings.
 - I. Which formal meetings were you attending in the plant during the performance of the various roles?
 - II. Have these formal or gatherings in the organization contributed to your unintentional learning on the job and consequently improvement of your performance? If no, are there reasons why?
 - III. If the answer to question B2-ii is yes, then which experiences of learning at the formal meetings or gatherings in the organization have contributed towards improvement of your performance? Give examples of what you learnt and describe the extent of their contribution with specific examples?
 - IV. Are there situations in which opportunities for unintentional learning at the meetings or gatherings been hindered? For example, hindrances because others were not willing to share their opinions and experiences or employees were not allowed to ask questions because of rank, language or expertise.

- B3. Explore unintentional Learning through informal official and social interaction with colleagues or supervisors in lunch rooms, change rooms, offices, shop floors, corridors, etc.
 - I. Have the informal official interactions in the organization (a. shop-floors, b. lunch-rooms c. change-rooms for non-management staff or periods; a. offices, b. shop floors and corridors for management) provided pieces of information or feedbacks that have contributed towards your unintentional learning or resulted in improvement of your performance? If no why?
 - II. If the answer to question B3-i is yes, then describe carefully the learning experiences at these informal social interactions that have contributed towards the improvement of your performance. Give examples of what you learnt and describe the extent of their contribution with specific examples? Are these learning experiences unintentional and why?
 - III. Are there situations in which learning from the colleagues during the social interaction have been hindered? If yes, provide examples and explain how.
 - IV. Can you identify informal social interactions that have added to your knowledge? If yes, provide examples and explain how.

- B4. Exploration unintentional Learning through Trial and error and intelligent mistakes during individual or group task assignments.
- I. How has the 'trial and error' process popularly called 'ma try ma kwe' in this organization helped you to learn new things on the job? If yes, provide examples. If no, are there reasons why?
 - II. Have you committed mistakes during your individual or group task assignments that in your opinion have provided you personally or the organization/group the opportunity to learn from experience? If yes, provide examples. If no, why do you think you are not committing mistakes?
 - III. Do colleagues openly discuss mistakes in order to learn from them? If yes, provide examples. Give examples of what you learnt and describe the extent of their contribution with specific examples? Are these learning experiences unintentional and why? If no, why do you think they don't share their mistakes?
- B5. Unintentional learning through e-mail exchanges, information on bill and notice boards.
- I. Do you receive unsolicited e-mails from employees in the organization?
 - II. Do you
 - III. Do you read information on in-plant bill and notice boards from employees that have informed your decisions at work? If no, what is hindering the flow of such information?
 - IV. If yes, give examples of what you learnt and describe the extent of their contribution with specific examples? Are these learning experiences unintentional and why?
 - V. Do you receive lessons learned in your profession or industry from the organization through e-mail exchanges, information on bill and notice boards? If no, what is hindering the flow of such information?
- B6. Incidentally learning new things during formal training or coaching.
- I. Describe the formally organized learning opportunities and training available in the organization.
 - II. Do you get the opportunity to learn things outside prescribed syllabus or core curriculum during the formal training or coaching programmes in the organization? If yes, give examples of what you learnt and describe the extent of their contribution with specific examples? Are these learning experiences unintentional and why? If no, why?
- B7. Difficult situations and assignments that give rise to learning through browsing through plant policies, procedures, manuals, drawings, magazines and the Internet
- I. Are you sometimes confronted with difficult assignments or situations that call for browsing of plant policies, procedures, manuals, drawings, magazines, Internet or consulting other more knowledgeable individuals? If no, why?
 - II. If yes, are there policies and procedures, and settings that have hindered opportunities to learn from documents, colleagues or internet facilities on the plant?
 - III. How about policies, procedures, and settings that have enhanced the opportunities to learn from documents, colleagues or internet facilities on the plant? Give examples of what you learnt and describe the extent of their contribution with specific examples? Are these learning experiences unintentional and why?

Appendix 3.2

Stage one – Everything audible transcript

- EL: Good morning sir, Mr. Sanni Alhassan
- SA: Good morning
- EL: How are you?
- SA: Oh by God's grace we are doing well
- EL: Doing well? Fine! For how long have you worked?
- SA: Well, actually I would say I have worked for almost 11 years now and precisely in VALCO
- EL: So you worked for 11 years precisely at VALCO. What work have you been doing? What are your tasks?
- SA: My tasks include system administration, programming, facilitating safety, and then giving support services to operations
- EL: Which people have you been working mostly with?
- SA: Well, mostly I work with the Cell Lines operations team because the system administration I am doing here is more related to the reduction process. This group consists of all classes of people.
- EL: Talking about all classes of people and then as a system administrator what is your background?
- SA: Well, I did Computer Science at KNUST. I have been an oscillating employee or student. Started with Science at O levels, diverted to Arts at A-level and back to Science at the University
- EL: Ok. Thank you so much. Now you say you are a system administrator and programmer and I believe that must be your core function. How did you learn to become a system administrator and programmer?
- SA: Actually we were given some basics at school and what I realized was when I was in school the idea was like you go to a workplace they already have their settings and you have to play alongside with it and I do remember some of my lecturers and friends telling me that for programming people already have good programmes written elsewhere and they buy that one so why do programming. But upon coming to VALCO I

Appendix 3.3

Stage two – Cleaned and highlighted transcript

- EL: Good morning, Mr. Sanni Alhassan
- SA: Good morning
- EL: How are you?
- SA: By God's grace we are doing well
- EL: Doing well? Fine! For how long have you worked?
- SA: Actually, I have worked for almost 11 years now and precisely in VALCO
- EL: So you worked for 11 years precisely at VALCO. **What work have you been doing? What are your tasks?**
- SA: My tasks include **system administration, programming, facilitating safety**, and then **giving support services** to operations
- EL: Which people have you been working mostly with?
- SA: Mostly I work with the Cell Lines operations team because the system administration I am doing here is more related to the reduction process. This group consists of all classes of people.
- EL: Talking about all classes of people and then as a system administrator what is your background?
- SA: I did Computer Science at KNUST. I have been an oscillating employee or student. Started with Science at O levels, diverted to Arts at A-level and back to Science at the University
- EL: You say you are a system administrator and programmer and I believe that must be your core function. **How did you learn to become a system administrator and programmer?**
- SA: Actually, we were given some basics at school. I realized that when I was in school, the idea was that workplaces already have their settings and you have to play alongside with it. I do remember some of my lecturers and friends telling me that people already have good programmes written elsewhere and that they buy so why do programming. But upon coming to VALCO I

Appendix 3.4

Stage three - Validated version transcript

NAK: That team plays a key role in shaping and supporting safety in the plant. I bring **issues and the team builds upon them; an issue that may seem small may looked at by the team from the view point of a bigger picture.**

EL: Then you find people going deeper as well as all the diversions!

NAK: Yes, that is good and **it challenges your thinking.**

EL: Why do you think that these top management meetings are a lot more open; you bring something small and they look at the bigger picture.

NAK: **I think that culture is good and helping the plant. Nobody is victimized for expressing his thoughts.** That culture that has developed in VALCO is lacking in other organizations where the team leader talks and it becomes law. In VALCO other people's opinions are respected. It is a culture we have to safeguard and protect. If we lose it we can't learn anything except in the classroom or theories.

EL: Research has shown that more than 70% (depending on your theoretical background about 30%) of the things we apply we learn them from the job.

NAK: In my case I support that finding.

EL: It has been empirically proven. You learn a lot. But there is a concept. You still need the formal thing to give you the foundation even if it is irrelevant. However coming back to the meetings, do you think that, that culture runs through the safety meetings you have with other colleagues in the plant. I am asking whether that culture reflected.

NAK: Yes, it is there. **It transcends through all other meetings. People are encouraged to express their view and opinions freely.**

EL: There are a few people who may want their views heard. There are some people I know at meetings may not talk if you don't prompt them. Some people if their ideas are not taken they think that it is not a good meeting

NAK: **We may have a few people who may want their views heard, some may want their views override others', and some may not talk until prompted.** You need the skills to harness all the divergent views to reach a consensus guided by the Plant's strategic direction. Today we had a meeting to review Log out Tag Out failure SI. A colleague came up with an issue about which divergent views were expressed. Finally, however, we reached a consensus and the relevant inputs were included in the SI report.

Appendix 3.5

Stage four – Ready for analysis transcript

Left margin	Validated transcript	Right Margin
	<p>NAK: That team plays a key role in shaping and supporting safety in the plant. I bring issues and the team builds upon them; an issue that may seem small may looked at by the team from the view point of a bigger picture.</p> <p>EL: Then you find people going deeper as well as all the diversions!</p> <p>NAK: Yes, that is good and it challenges your thinking.</p> <p>EL: Why do you think that these top management meetings are a lot more open; you bring something small and they look at the bigger picture?</p> <p>NAK: I think that culture is good and helping the plant. Nobody is victimized for expressing his thoughts. That culture that has developed in VALCO is lacking in other organizations where the team leader talks and it becomes law. In VALCO other people's opinions are respected. It is a culture we have to safeguard and protect. If we lose it we can't learn anything except in the classroom or theories.</p> <p>EL: Research has shown that more than 70% (depending on your theoretical background about 30%) of the things we apply we learn them from the job.</p> <p>NAK: In my case I support that finding.</p> <p>EL: It has been empirically proven. You learn a lot. But there is a concept. You still need the formal thing to give you the foundation even if it is irrelevant. However coming back to the meetings, do you think that, that culture runs through the safety meetings you have with other colleagues in the plant. I am asking whether that culture reflected.</p> <p>NAK: Yes, it is there. It transcends through all other meetings. People are encouraged to express their view and opinions freely</p> <p>EL: There are a few people who may want their views heard. There are some people I know at meetings may not talk if you don't prompt them. Some people if their ideas are not taken</p>	

Appendix 3.6

Data analysis: Both left and right margins completed

Left margin – Occurrence of Incidental learning	Validated transcript	Right Margin – practices, artefacts, espoused values, etc.
<ol style="list-style-type: none"> 1. Unsolicited emails. 2. Forwarding e-mails. 3. Challenging assignment 4. Applying knowledge more than is required to solve a problem. 5. Find something unrelated to task assigned. 	<p>Q. Do you receive emails that you didn't ask for? Emails that your boss or a colleague worker sent to you that helped you to learn new?</p> <p>A. I have been receiving mails of that nature and I have been forwarding mails but as for the internet I don't have access. In the house I have this PC and this MTN modem that I also use to access the internet because I realized that the nature of my job requires an internet access I don't have it. In the house I look for some of the materials and their properties because at times my boss would call me and ask me for the specifications of some particular bricks. Sometimes he would want me to check whether some specifications meet the Valco standard and I have to get additional info on my own in the house through the net.</p> <p>Q. Over here we have notice Board, bill Boards, posters on electrical fitting, etc, do those things help?</p> <p>A. Sure.</p> <p>Q. So start with the bill Board and the posters.</p> <p>A. When you come to our lunch room right now we have a lot of load posters on the board. We have somebody with a load and descending a stair-way but cannot see his way forward so he tripped from the stairs. We relate this to the pit work where at times we go in with load in hand or even when we are picking the material across the conveyer and we want to use the</p>	<ol style="list-style-type: none"> 1. Intranet 2. No internet for some. 3. Internet at home. 4. Notice boards, bill boards and posters. 5. Lunch room. 6. CBI

Appendix 3.7

Requesting for permission letter to study VALCO

VALCO

P. O. Box 625

Tema

17th July, 2012

Deputy CEO

Human Resources and Administration

VALCO

P. O. Box 625

Tema

Dear Mr. Acheampong:

PERMISSION LETTER TO STUDY VALCO

I am writing to request your permission to interview some of the employees in the VALCO plant. I am undertaking a doctoral programme in Informal Learning with the University of Leicester and propose to explore how organizational culture elements facilitate or frustrate incidental learning in the workplace. I have selected VALCO as the site for this research because it is a complex manufacturing facility in Ghana with affordances as well as constraints on informal learning.

For data gathering purposes, this research will employ interview sessions with individual participants and focus group discussions with a select group of participants. The target population for this study will be about 30 employees to be selected from the various departments. The participants will be purposively selected by the researcher. Permission letter requesting for the approval to release selected employees will be sent to their managers in the various departments. It is proposed that the distribution of the participants in the various departments will be as shown in the following table.

The duration for each interview session is approximately 90 minutes. The study will also require reviewing VALCO's non-confidential documents that espouses the values and beliefs of VALCO management such as Mission and Vision Statements, VALCO Core Values, Policies and Procedures.

I have enclosed a copy of the informed consent form for this research. Should you have any questions or concerns regarding this letter or my research, please I will be available for discussions at your convenience. You may also want to contact Dr. Daniel Bishop, my primary professor, at telephone: +44 (0) 116 252 2749 or email: dan.bishop@le.ac.uk for further discussions if necessary.

Sincerely yours,

Emmanuel Lartey
Doctoral Candidate

Appendix 3.8

Response to the request for permission letter to study VALCO



July 19, 2012

Mr. Emmanuel Lartey (Doctoral Candidate)
VALCO, P.O. Box 625
Tema

Dear Mr. Lartey

RE: PERMISSION LETTER TO STUDY VALCO

We are pleased to inform you that your request to interview some employees of VALCO as part of your research work in fulfillment of the requirements of your doctoral programme has been granted.

Please do not hesitate to let us know if there is anything you would need us to do for you to facilitate the conduct of your planned interviews.

With every good wish.

Yours faithfully,

A handwritten signature in blue ink, appearing to read "Dan Acheampong", is written over a faint, illegible stamp or watermark.

Dan Acheampong
Deputy Chief Executive Officer
Human Resource/Admin, Legal and Public Affairs

Appendix 3.9

Request to departmental managers for the selected participants

VALCO
P. O. Box 625
Tema
17th July, 2012

Deputy CEO
Finance and Commerce
VALCO
P. O. Box 625
Tema

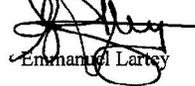
Dear Mr. Gaisie:

PERMISSION LETTER TO INTERVIEW EMPLOYEES IN YOUR DEPARTMENT

I am undertaking a research in Workplace Learning and propose to explore how organizational culture elements facilitate or frustrate incidental learning in the workplace. I have selected VALCO as the site for this research.

For data gathering purposes, this research will employ about 90 minutes of interview sessions with individual participants and focus group discussions with a select group of participants. The participants have been purposively selected by the researcher in consultation with some managers of the participants. This letter is requesting for permission to interview the following selected employees:

Sincerely yours,


Emmanuel Larbey

Appendix 3.11

INFORMED CONSENT FORM

I, the undersigned, confirm that (please tick box as appropriate):

1	I have read and understood the information about the project, as provided in the Project Information Sheet attached.	<input type="checkbox"/>
2	I have been given the opportunity to ask questions about the project and my participation and I am satisfied with the answers	<input type="checkbox"/>
3	I voluntarily agree to participate in the project.	<input type="checkbox"/>
4	I understand I can withdraw at any time without giving reasons and that I will not be penalised for withdrawing nor will I be questioned on why I have withdrawn.	<input type="checkbox"/>
5	The procedures regarding confidentiality have been clearly explained (e.g. use of names, pseudonyms, and anonymisation of data) to me and I am satisfied with the procedures.	<input type="checkbox"/>
6	I have agreed to share my thoughts as part of the data collection for this project. No separate terms of consent for interviews, audio, or other forms of data collection would be required and I am satisfied with this arrangement.	<input type="checkbox"/>
7	I have agreed to the arrangement for the interpretation and analysis of data explained to me.	<input type="checkbox"/>
8	I have agreed to the arrangement for the storage, distribution, and use of the data in research and publications explained to me.	<input type="checkbox"/>
9	Select only one of the following: <ul style="list-style-type: none"> • I would like a specific pseudonym used and understand what I have said or written as part of this study will be used in reports, publications and other research outputs so that anything I have contributed to this project can be recognised. • I do not want any specific pseudonym used in this project. 	<input type="checkbox"/> <input type="checkbox"/>
10	I, along with the Researcher, agree to sign and date this informed consent form.	<input type="checkbox"/>

Participant:

 Name of Participant Signature Date

Researcher:

 Name of Researcher Signature Date

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