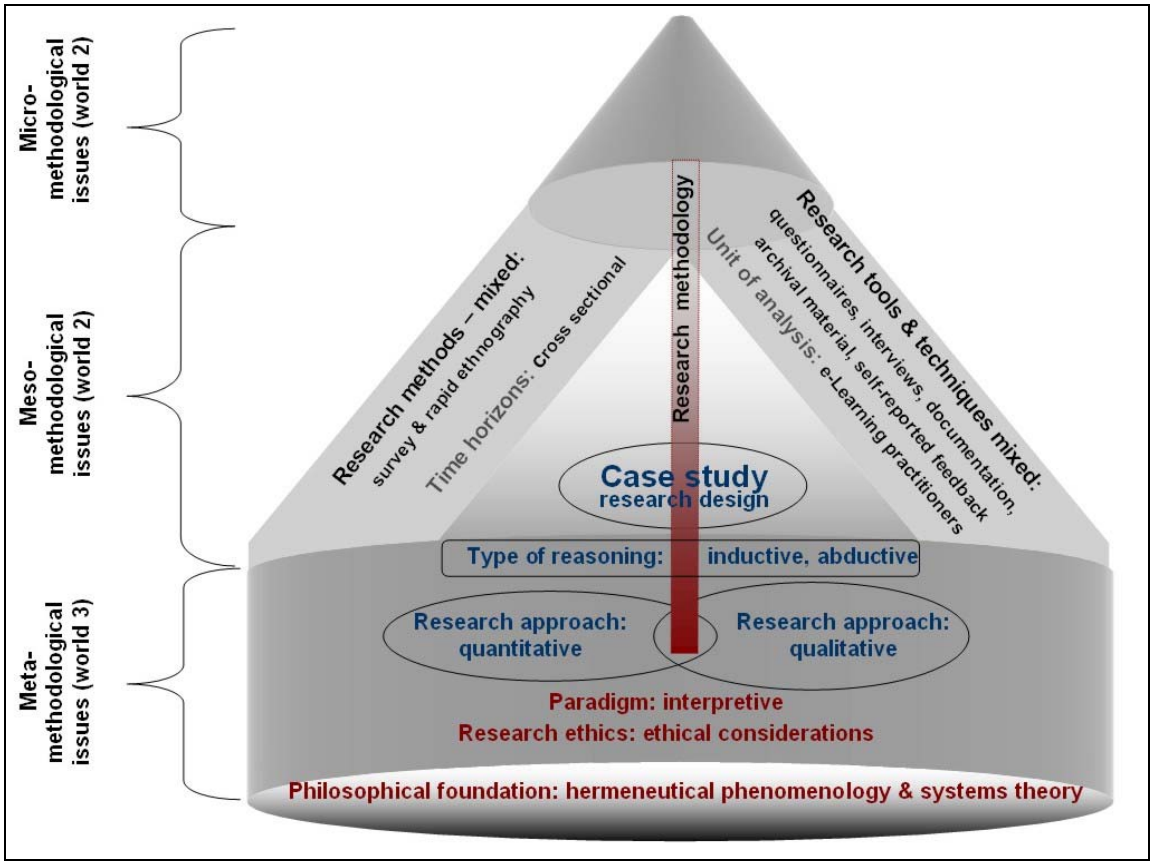
Chapter 3: Research approach and methodology

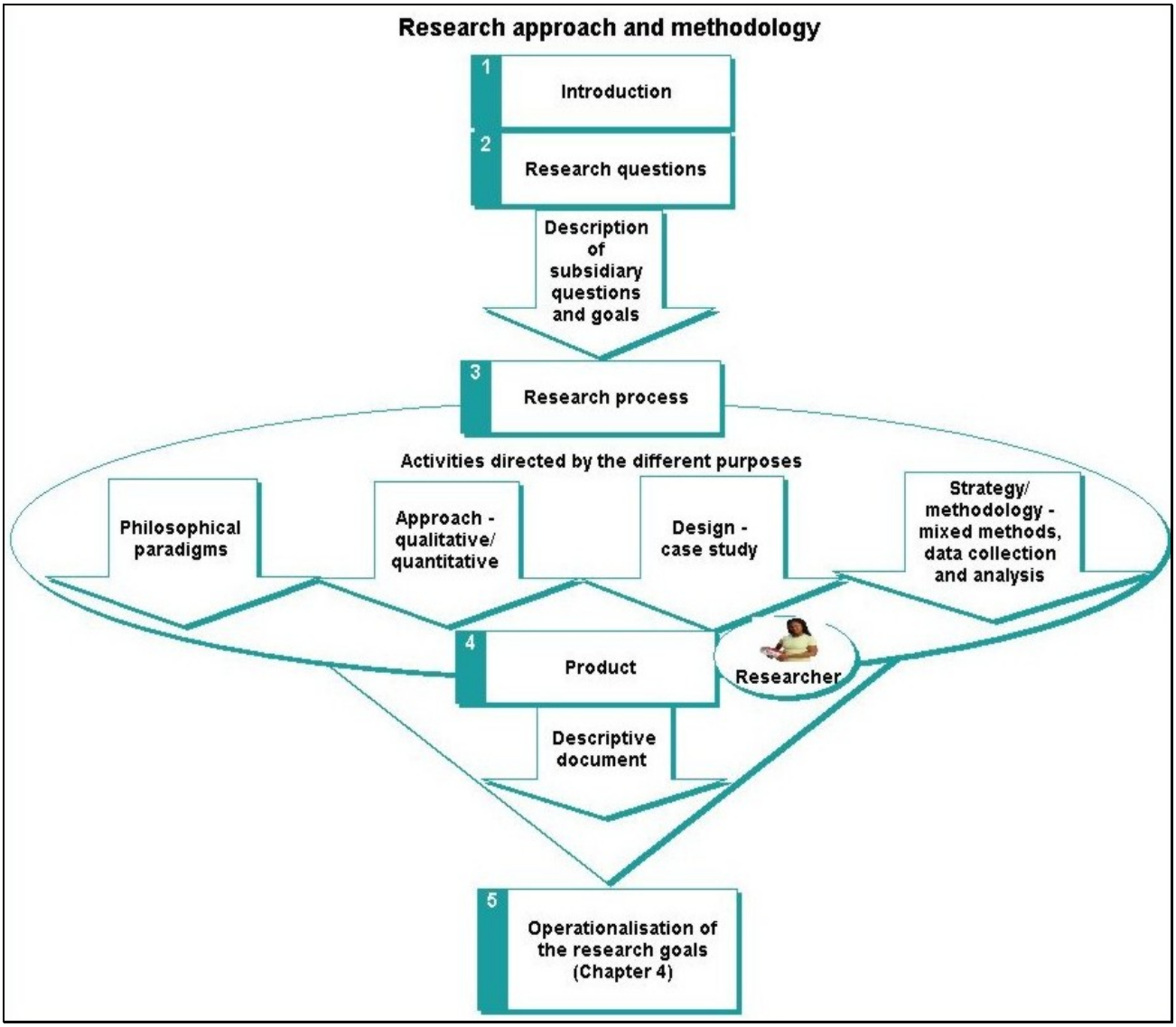
In Chapter 1, the research **problem, rationale** and **purpose** were discussed**,** and the **research questions and objectives**, and **research design** mentioned briefly. This chapter presents the research process and an outline and justification for the design and methodological choices made to answer the research questions. The focus of the first section is on the explanatory detail of the subsidiary research questions, the specific research objectives (goals) and considerations in this regard (Tables 1 and 2). This is followed by a discussion of the different components of the research process (see Figure 3.1 for graphical presentation).

Figure 3.1: The research process



The research process includes the research philosophy (section 3.3.1), research approach (section 3.3.2), research design (section 3.4) and strategy/methodology (section 3.5). The latter is described in terms of methodological protocol, mixed research methods (section 3.6), data collection, sources of data and data analysis techniques and instruments for operationalising the research goals. The chapter concludes with a report on quality criteria and the ethical considerations adhered to in this study. Figure 3.2 provides a graphical representation of the layout structure of Chapter 3 and provides a bird's eye view on the process and its product.

Figure 3.2: Graphical presentation of the layout structure of Chapter 3



3.1 Introduction

Figure 3.1 presents a macro-overview of the methodology, methods, tools and techniques used to create a comprehensive picture of the e-learning practitioner construct and focuses on how the study was conducted as well as the reasons for doing so. The following sections will expand on these and also sketch the research design that linked the research questions and the methodology for this study.

3.2 The research question

The purpose of this research study is to uncover the latent structure of the e-learning practitioner construct in order to answer the question:

What is the latent structure of the e-learning practitioner construct?

3.2.1 Research subquestions

The following research subquestions were formulated to answer the main research question.

What is the latent structure of the e-learning practitioner construct in terms of person attributes? (Chapter 4.3)
What is the latent structure of the e-learning practitioner construct in terms of the work environment context? (Chapter 4.4)
How do the work environment- and person attributes fit together in the structure of the e-learning practitioner construct? (Chapter 4.5)

Tables 1.1 and 1.2 provide explanatory detail of the subquestions and the research goals. Action plans for operationalising the research goals are outlined and discussed in section 3.4 on research design, and the general research plan is set out in the sections on research methodology (section 3.5) and research methods (section 3.6). A description of the research process contextualises these elements.

3.3 Research process

The integrated model of social research (Mouton & Marais, 1992:21) positions the research process in a three-subsystem framework. The framework distinguishes between intellectual climate (the nature of reality/ontological assumptions), the cost of intellectual resources (the nature of knowledge/epistemic status of knowledge doctrines) and the research process itself (nature of how one comes to know/methodology). Figure 3.1 illustrates the research process in

terms of the macro, meso and micro methodological issues. The research process included 11 phases, which have been indicated with letters for easy reference to Figure 1.2, namely (A) the exploratory phase, (B) the pilot phase, (C) the survey phase (D) the decision-making phase, (E) the design and development phase, (F) the implementation and data collection phase, (G) the data analysis phase, (H) the consolidation phase (I) the documentation phase, (J) the reporting phase and (k) the closure of the study (see Figure 1.2).

On a macro level, assumptions from hermeneutical phenomenology and systems theory philosophy form the philosophical foundations for this study. This implies that the research paradigm and the approaches, reasoning, design, and strategy/methodology were coloured and influenced by these philosophical assumptions. The research design is the **action plan** that links the macro, meso and micro levels, focusing on the logic of the research, in other words it is "the logical sequence that connects the empirical data to the study's initial research questions and ultimately, to its conclusions" (Yin, 1998:236). The research methodology/strategy is the **general plan** that focuses on the steps in the research process and includes the methods, tools and techniques to be used (Mouton, 2002:56).

Therefore the contextualisation of the research means that a framework for the research is built not only in terms of the information that the researcher is going to include or eliminate, but also in terms of choices about the foundation of the research, the **point of departure**, the **research approaches** and the **methodology** to use. These choices are presented in the paragraphs below. In order to make informed choices about the philosophical and methodological approaches, the researcher has to stand back and examine his/her own stance on these issues. In particular, if the focus is on qualitative and mixed method research, the researcher has to clarify ontological, epistemological and methodological issues in his/her own mind to avoid confusion. Walsham (1995:80) calls on researchers to "reflect on their own philosophical stance, which should be stated explicitly when writing up their work". I conducted an extensive literature review on research as a scientific process. I studied various views and explanations of the research process, including the possible approaches, research philosophies, paradigms and methodologies, in order to position my own research. Some of the important aspects that guided my choices in this regard are discussed in the following paragraphs.

3.3.1 Research philosophical and paradigm issues

> The world of lived reality and situation-specific meanings that constitute the general object of investigation is thought to be constructed by social actors. That is, particular actors, in particular places, at particular times, fashion meaning out of events and phenomena through prolonged,

> complex processes of social interaction involving history, language and action (Schwandt, 1994:118).

A combination of hermeneutics and phenomenology was chosen as a philosophical underpinning for this study. Combining hermeneutics and phenomenology provided me with a foundation not only for understanding, but also for interpreting the phenomena under study. To defend my choices in this regard I will briefly discuss the characteristics of phenomenology and hermeneutics, whereafter I will defend my choice.

In the Phenomenology Inquiry online Max van Manen outlines phenomenology as the study of our experience, or as Martin Heidegger states, "the structure of everydayness', or 'being-in-the-world" (Phenomenology, n.d.; Van Manen, 2002a; van Manen, 2002b). **Different perspectives** were added to this study by "understanding behaviour from the participants' own subjective frames of reference" (Bradford University Online, 2005:6). Assuming that people place their own meanings on events adds further **enrichment** value.

Elements of phenomenological focus as described by the *Stanford Encyclopaedia of Philosophy*, (n.d.) also characterised this study:

> … studies the structure of various types of experience ranging from perception, thought, … social activity, including linguistic activity. Thus, phenomenology develops a complex account of awareness of one's own experience (self-consciousness, in one sense), self-awareness (awareness-of-oneself), the self in different roles (as thinking, acting, etc.),. social interaction and everyday activity in our surrounding life-world (in a particular culture).

In seeking to determine the 'latent structure of the e-learning practitioner construct', the study not only described the **experiences** of e-learning practitioners at TUT, but also focused on their **interpretation** of their e-learning **environment** as demonstrated by their own communications. Adding a hermeneutical approach therefore meant that the experiences were interpreted because, as explained by Ross (2002), hermeneutics is the "theory and practice of textual interpretation", taking an approach that will communicate and "articulate the knowledge embedded in our practice" (Byrne, 2001). The stories of the e-learning practitioners as presented by the practitioners themselves were described and interpreted in their different contexts.

Combining hermeneutics and phenomenology means that **hermeneutical phenomenology** is concerned with understanding through the description of lived experience, with the addition of

an interpretive (hermeneutical) element that is applied to the phenomena described (*Stanford Encyclopaedia of Philosophy,* n.d.). Hermeneutical phenomenology attempts to build a "full interpretive description of some aspect of the world" (van Manen, 1990); this includes the art, skill and theory of understanding and classifying meaning (*Oxford English Reference Dictionary*, 1996). As **these considerations are most important for this study, this was the philosophical point of departure that was chosen.**

A short summary of the scope of hermeneutical phenomenology may help to clarify the philosophical foundation of this study.

Hermeneutical phenomenology originated from the method described in Heidegger's *Sein und Zeit*, according to which human existence is interpretative but also emphasises hermeneutics or the "method of interpretation" (Centre for Advanced Research in Phenomenology, 2005). He dissociates from the notion of objectivity as proposed by Husserl and assumes that understanding mounts up from fore-knowledge accumulated from experience, an assumption that was built on by Gadamer, who assumed that pre-understanding involves the use of one's preconception before interpretation can begin (Mallery, Hurwitz & Duffy, 1986:5-6). I concur with Mak and Elwyn (2003) that "[r]ather than considering this pre-understanding as potential bias, it is a pre-condition to the truth" (Mak & Elwyn, 2003:396). I further agree with the beliefs of Heidegger and Gadamer in that the focus of understanding **depends on language as well as history** (past experiences) (Quigley, 1998). My research goals caused me to focus on both these "essential components of understanding, [because] they create the **environment** within which human understanding is made possible " (Schwandt, 1994:121). This study describes the e-learning practitioners' experiences through their language communications to provide both understanding and knowledge (Byrne, 2001). Therefore the inquiry becomes a "dialogue" (Mallery *et al*., 1986:12) which creates meaning through interaction between me and the text (Quigley, 1998).

However, to 'understand' one needs pre-understanding: "have a stance, an anticipation and a contextualisation, this is what is known as the hermeneutic circle" (Lye, 1996). Schwandt (1994) expands on the ideas of Bleicher (1980 in Schwandt (1994:121)) by saying that the hermeneutical circle here is an "ontological condition for understanding" and that it is concerned with the participants' viewpoint verified against etic and emic perspectives. I have therefore chosen hermeneutic phenomenology for this study because it provides a philosophical grounding for the interpretive approach that was applied not only in telling the stories of the e-learning practitioners and their e-learning practice, but also in understanding the deeper structure beneath them.

Important for this study

Assumptions from hermeneutical phenomenology are relevant to this study in terms of the research participants' **being-in-the-world** which is connected by their **work environment** and the specific **roles** that they played in that environment. This study uses the hermeneutic method of interpretation to interpret the participants' descriptions of their 'selves' and their environments.

Textual descriptions of '**lived experience**' by the e-learning practitioners in their '**world of work**' (e-learning practice) at TUT focus on the use of language to **communicate meaning** from the e-learning practitioners to the researcher. Knowing comes from interpretation, thus the "primary aim of textual analysis is **understanding**, [and] not explanation" (Quigley, 1998). The model for communication is **dialogue** between the e-learning practitioners and the researcher, brought about by the "sharing of an author's thoughts expressed through the text" (Quigley, 1998). For a successful process of dialogue, the grammatical and context aspects of **interpretation** are important here**.** Grammatical aspects are important for understanding the individual words in order to understand a sentence, but the individual words are understandable only in the context of the sentence (Applied Hermeneutics, 1999 ; Quigley, 1998). Furthermore, the expression of a subjective experience implies that "we can not understand the thought or concept of an author without understanding the general biographical and historical context in which the thought or concept arose" (Quigley, 1998). It is not possible to properly understand any one part of a work until one has understood the whole and *vice versa;* we must understand the parts in order to grasp the whole.

Apart from being a philosophical foundation for interpretivism, hermeneutical practice involves the methodology of textual interpretation and explanation as a data analysis technique. The **hermeneutic circle** is an important part of this process and of this understanding. This means that the researcher reads the text (essay, answer to a question etc.) in its entirety to project meaning onto the text, and then goes back to the parts of the text to either confirm or reject that meaning. I followed a process of interpretation suggested by Denzin and Lincoln (2003:37): "The researcher creates a field text, consisting of field notes and documents from the field, moving to research text (notes and interpretations based on field text), recreating the research text to a working interpretive document to try and make sense of what is learned, finally the researcher produces the public text that comes to the reader."

The projected meaning is conditioned by the researcher's background and biases (Applied Hermeneutics, 1999 ; Ross, 2002), as the interpretive process uses pre-understanding and fusion of horizons. If there is no constraint in reality on interpretation, the hermeneutic cycle can spiral out of control (Ross, 2002) or, by contrast, "if the range of hermeneutic interpretation is limited by a text, … or by anything else, then it is possible for the hermeneutic cycle to narrow

down instead of spiralling out of control. The “limit” of the spiral, whether it is reached or not, is the principle of objectivity and reality” (Ross, 2002).

During data analysis the researcher’s horizon of understanding intersects with that of the text. Successful interpretations involve a “fusion of horizons” (Applied Hermeneutics, 1999 ; Blacker, 1993:3), which means that dialogical hermeneutics is primarily **descriptive** rather than prescriptive (Applied Hermeneutics, 1999) and can be used to understand “what” the characteristics of the e-learning practitioners are, “how” they were influenced by their job environment and “why” they reacted to these influences in the way that they did.

On the other hand, self-reported behavioural styles, as captured by the DISC data collection instruments using the survey method, reflect to some degree the phenomenological assumption that “facts exist prior to, and independently of research, and can be discovered by asking questions and recording answers systematically” (Buckingham & Saunders, 2004:20). Trait theorists agree that human behaviour and personality can be organised into a hierarchy (Pervin & John, 1997:6) where traits can be defined as “consistent patterns of thoughts, feelings or actions that distinguish people from one another, and that these tendencies remain stable across the life span” (Carlton, 2000). These tendencies were captured by the PPA and were communicated to the researcher in the form of computer-generated work behavioural style reports in narrative format.

My position as researcher in this regard is important. As instructional designer I am involved with the e-learning practitioners and their e-learning practice at TUT. In my role as instructional designer and part-time coordinator of the P@W programme, I was also very closely involved with the Partners over the year that they were on the programme. As such I could relate to them in the different roles that they had to play whilst on the programme; I could understand their position, environment, programme demands, ‘history’ and also their ’language’. I could therefore interpret the material that they generated in the specific context. However, to ensure credibility in the study I used a number of techniques, for example member checking and collecting data from a variety of sources (see section 3.10 for a detailed discussion on applied quality criteria).

Arguments that “advances such as the system theory have only become possible through phenomenology as alternative philosophical model of science to positivism” (Edwards, 2001:4), **align with my reasoning for including systems theory principles in the theoretical integration of this study,** and also to link systems philosophy with hermeneutical phenomenology. Systems theory offered me a useful approach to the analysis of the research problem not just in terms of a philosophical model but also in terms of the systems thinking approach. **Systems inquiry** incorporates three interconnected spheres, namely **systems**

theory, systems philosophy and systems methodology. However, systems methodology, using a formal step-by-step method of inquiry, was **not** applied in this study because case study methodology was the preferred choice. Reasons for this are discussed in section 3.5.

Systems philosophy focuses on a systems view of the world, and "recognises the primacy of organising relationship processes between entities (of systems) from which emerge the novel properties of systems" (Banathy, n.d.). This worldview values the whole as being more than the sum of individual parts (Patton & McMahon, 1999:135). Patton and McMahon (1999) quote Plas's (1986:3) definition of the underpinnings of systems theory, also relevant for this study:

> This newer thinking is much more concerned with patterns of functioning. Searching for the cause of human activity ceases to be important. Inductive and deductive logic make room for other types of rationality, such as **reasoning by analogy**. Understanding human language patterns is critical. Everything is viewed as dynamic rather than static. Spontaneous change can be expected under certain circumstances. Working with wholes instead of pieces of the whole is fundamental (Patton & McMahon, 1999:135).

Systems theory developed from different sources and in different disciplines and is perceived as the basis for constructing a new worldview built on a variety of assumptions about systems themselves and how they are organised (Patton & McMahon, 1999:134). It is important to note that systems philosophy presents the underlying assumptions that provide the "perspectives that guide us in defining and organizing the concepts and principles that constitute systems theory" (Banathy, n.d.). Bellinger (2004) adds that "systems thinking is an approach for developing models to promote our understanding of events, patterns of behavior resulting in the events, and even more importantly, the underlying structure responsible for the patterns of behavior".

Through the discipline of systems thinking, I attempted an understanding of the influences and interrelationships in the system, perceiving the "system as a whole whose elements 'hang together' because they continually affect each other over time and operate toward a common purpose" (Senge, Kleiner, Roberts, Ross & Smith, 1994:90). Interdependencies within the system illustrated by the dynamics in the system suggest more than a single right answer to any question. "The art of systems thinking includes learning to recognize the ramifications and trade-offs of the action you choose" (Senge *et al*., 1994:91). Some of their thoughts on the practice of systems thinking are:

- "There are no right answers". The nature of the outcome scenarios is dependent on a specific viewpoint which implies that changes in the one will influence the other. Therefore a number of scenarios, depending on the viewpoint, may present as output of the systemic process.
- "You won't be able to divide your elephant in half – you can't redesign your system (the elephant) by dividing it into parts, everyone must look at the whole together." The three legs of the triad in the e-learning practitioner system cannot be functional if divided into separate independent entities.
- "Cause and effect will not be closely related in time and space" (Senge *et al*., 1994:91-93). Leverage for improving the match between the person and the job lies partly inside and partly outside the system. Some interventions such as changing the nature of the environment (inside) to customised staff development programmes (outside) may improve the match.

Although Capra (1997) reflects some of these ideas in his view on the key characteristics of systems thinking, his focus is more on system definition, which is also applicable for this study. This definition implies that systems thinking is not only a shift in perspective from the parts to the whole, where the whole is more than the sum of the parts, but also a shift of focus from objects to relationships. If these relationships are mapped, the results display recurring configurations displayed as patterns. This is not a quantitative approach but a qualitative one, as the study of relationships not only includes the system's components but also its environment.

Capra (1997) highlights three important questions to ask if one wants to define a system. These are: What is the structure of the system?; What is its pattern of organisation?; and What is the process involved? "The process is the activity involved in the continual embodiment of the system's pattern of organization. Thus the process criterion is the link between pattern and structure" (Capra, 1997). Capra (1997) therefore summarises systems thinking as both "contextual and process thinking".

Important for this study

Berens (1999) reiterates Capra's ideas by defining systems as "patterns of relationships that are organized"; this definition is also applicable for this study:

Patterns are the interrelationships within a system. Every system, including the e-learning practitioner system, is defined by essential characteristics. The characteristics of the e-learning practitioner system reflect the characteristics of the two subsystems, namely those of the e-learning practitioner and the e-learning practice. Each of these subsystems displays its own characteristics, which are uniquely patterned for each subsystem. The configuration of

relationships between these two subsystems forms the patterns in the system. For example, the work behaviour patterns or styles of the e-learning practitioner and the profiles of the e-learning job determine the nature of their interaction and their relationship styles within the system.

The **processes** in the system are the interactional activities that the system engages in. Through a process of interaction the e-learning practitioner and the e-learning job define certain types of relationships in a particular environment. For example, the positive or negative influence of the environment in terms of the structuredness continuum, system drivers, such as motivational influences, or the job demands, distracters or releasers.

Structure is the way in which the patterns in the system are expressed, and reflects the system output. The input contributed by the two subsystems results in an output that reflects the consequences of the interaction within the system. For example, congruence between the e-learning practitioner and the e-learning job results in a good P-J fit. This goodness of match influences the work performance of the e-learning practitioner system as a whole. To enhance the 'goodness of fit' (work performance of the system), knowledge and understanding of leverage points in the system are crucial in order to plan the most efficient interventions. This is an ongoing process of change, growth and development.
This process relates to the **purpose** of the system, which is the holistic theme of striving towards 'best fit'. As already pointed out, the aim of this study is not to plan or report on work performance or practical interventions to enhance P-J fit.

Patton and McMahon (1999:141) point out that systems thinking involves two important themes in systems theory, which need attention. These issues are related firstly to our epistemological stance and secondly to the language that describes our knowledge. Assumptions about knowing and the limitations of language are at the core of understanding systems theory.

Roode (n.d.) writes that assumptions about the grounds of knowledge entail ideas

> about what forms of knowledge can be obtained, and how one can determine what is to be regarded as 'true' and what is to be regarded as 'false':
>
> Indeed, this dichotomy of "true" and "false" itself pre-supposes a certain epistemological stance. It is predicated upon a view of the nature of knowledge itself: whether, for example, it is possible to identify and communicate the nature of knowledge as being hard, real and capable of being transmitted in tangible form, or whether "knowledge" is of a softer, more subjective, spiritual or even transcendental kind, based on

> experience and insight of a unique and essentially personal nature (Roode, n.d.).

The epistemology of interpretivism advocates the use of a multitude of research methodologies (case study), methods (survey method, focus group), and tools and techniques (questionnaires, interviews, documentation) (Creswell, 1998). The level of analysis for interpretivism is social groups (Vatis, 2002) and interpretivism locates subjects and objects within intersubjective social fields which structure and constrain activity. Vatis (2002) summarises the interpretive paradigm as "seeks to understand the behaviour of different social communities".

The epistemology of interpretivism believes the best way to know something is through personal experience or interviews with those who have experienced it. Assumptions about the grounds of knowledge pertaining to the interpretive paradigm are that the researcher interacts with that being researched (observer intersubjectivity), therefore the researcher is subjective and empathetic, (Creswell, 1994:5; Myers, 1997; Gough, 2002:6). The interpretive orientation conceives many possible realities, each of which is relative to a specific context or frame of reference (Chiang, 1998).

In education today there are several competing paradigms, but one generally accepted list includes three, namely **post positivism**, **critical theory**, and **interpretivism/constructivism** (Myers, 1997:3; Heinecke, Dawson, & Willis, 2001:295: Gough, 2002:6). Chiang (1998) writes that the interpretive approach as a paradigm for social research is a compilation of diverse philosophical and sociological traditions. Assumptions from the interpretive approach are important for this study, and **include the notion of the internal reality of subjective experience, and that reality is socially constructed and is concerned with meaning, the patterns of meaning and the understanding of a person's definition of the situation** (Myers, 1997:3; Heinecke, *et al*., 2001:295; Gough, 2002:6). My research goals directed me towards a number of activities focused on the analysis of *inter alia* documents, archival material, essays and self-reported feedback from e-learning practitioners. One of the aims of these activities was to **construct meaning** from the participants' social constructions, for example language in the form of texts, and to **understand** the interaction and relationships between e-learning practitioners and their e-learning practice. I therefore adopted a mainly qualitative interpretive approach.

It is important to link the issues mentioned by Patton and McMahon (1999:142) to the paradigm of interpretivism. The interaction between the observer and the observed is coloured by *inter alia* their particular frame of reference, their observational capacity, the contextual environment and the describing language. Knowing comes through interpretation. This may raise questions

about the validity of these observations and therefore is addressed within systems theory by "interobserver reliability" (Patton & McMahon, 1999:142). Furthermore, our knowledge and understanding are linked to the issue of language, and sensitivity and awareness of these may reduce the limitations of each. Section 3.10 provides a detailed account of the measures that were taken in this research study to enhance credibility.

Important for this study

My interpretive research goals for this study are focused on the enrichment of the personal profiles of the e-learning practitioners, the HJA of the e-learning job and the description of the e-learning environment as experienced by the e-learning practitioner population at TUT. Although Burrell and Morgan (1979) point out that the four paradigms for the analysis of social theory are mutually exclusive, my research approach may show at different stages elements of all four quadrants of the sociological paradigm matrix as they propose (Burrell & Morgan, 1979:25). For example, in many of the functionalist theories understanding comes from the use of analogies, such as using systems thinking to understand human beings; asking "why" questions not to explain but to enrich my understanding of the phenomenon under investigation, at the level of interpreting subjective experiences explaining the "What is" questions; and asking "how" questions to explore relationships in an ever-changing environment. As part of the literature review process in particular, enquiries about the scope of the research problem require a number of questions to explore the field, and therefore the researcher will not accept "assumptions associated to only one question, and defy assumptions of all the other questions" (Roode, n.d.).

Different approaches have differing special strengths, and each compensates for the weaknesses of the others. It is often most useful to 'work both sides of the street', "tapping into the rich variety of theoretical perspectives that can be brought to bear on the study of human social life" (Babbie, 2005:41). On the other hand, to avoid a broad incoherent mixture of choices it is important to weigh each choice very carefully in terms of its value to and usability in the holistic research approach. For this reason systems theory was chosen to provide **structure** for both the approach to the study problem and for the conceptualisation process, but I adopted a mainly **qualitative interpretive approach** to **understand** the problem.

3.3.2 Research approach

Although quantitative research and qualitative research represent two opposite approaches, a combination of the two was the preferred choice for this study. Combining these approaches provided me with a flexible paradigm that allowed for a multidimensional research study. To defend my choices in this regard I will briefly discuss the characteristics of quantitative and qualitative research, whereafter I will defend my choice.

Olson (1995) cites Wildemuth (1993), suggesting that the "difference between positivist and interpretive paradigms is that the former recognizes an objective reality not dependent on the researcher and the latter views reality as subjective and socially constructed". Livesey (2003) explains further that the difference lies in the ultimate research aim and says that the quantitative paradigm concentrates on what can be measured. This involves collecting and analysing objective (often numerical) data that can be organised into statistics to **explain**. The qualitative paradigm concentrates on investigating subjective data, in particular the perceptions of the people involved. The intention is to illuminate these perceptions and, thus, gain greater insight and knowledge with the aim to **describe and *verstehen*** (Livesey, 2003; Chenail, 1997).

My **paradigmatic preference** for this research is multidimensional; richer and more complex than a dualistic paradigm with an either/or dichotomy where research must be either quantitative or qualitative (McKereghan, 1998). Qualitative methodologies for research enquiry, as well as a combination of qualitative and quantitative methods, tools and techniques, were used to collect and analyse data. Although a mixed method design was used in this study, the study displayed a single dominant paradigm, namely the qualitative approach, with only a small component of the study being drawn from the quantitative paradigm. Creswell (1994:177) calls this model of combined designs the "dominant-less dominant design". Although a number of researchers believe that one cannot be both positivist and interpretivist (Sale, Lohfield & Brazil, 2002:47), others believe that mixed method research takes a pragmatic approach (Rocco, Bliss, Gallagher & Perez-Prado, 2003: 21; Johnson & Onwuegbuzie, 2004:17). Johnson and Onwuegbuzie (2004:17) define mixed method research as

> [t]he class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts or language into a single study. It is inclusive, pluralistic and complementary, and it suggests that researchers take an eclectic approach to method selection and the thinking about and conduct of research.

The purpose of such combinations is to complement each of the methods in such a way that it contributes to achieving the optimum answers for the research questions.

Important for this study

The survey method was preferred for the screening and pilot surveys that were conducted in the exploratory phase of this study. This proved to be advantageous in that it (1) allowed for testing on a small scale and (2) did not dominate the paradigm picture. Furthermore, the survey technique was used to gather information for the PPA and HJA and for quantitative analytic procedures in this regard. In focusing on the social reality of the e-learning practitioners at TUT,

qualitative research was used to explore their work behaviour and the perspectives and experiences of the people studied. Behaviour is determined by the way in which people interpret and make sense of their subjective reality (Gittens, n.d.:2) and the case study methodology was chosen to explore the subjective reality of the e-learning practitioner practising e-learning. Qualitative data collection and analysis procedures, for example the rapid ethnographic technique, were used.

Del Siegle (n.d.) presents a summary of the main ideas about qualitative research from the work of Spradley, 1979; Marshall and Rossman, 1980; Lincoln and Guba, 1985; Glesne and Peshkin, 1992; Creswell, 1994 and. Merriam,1998. These ideas are discussed in the context of this study.

Qualitative research is an inquiry process of understanding, based on a threefold purpose of contextualisation, interpretation, and understanding participants' perspectives.

A qualitative approach was followed for this research because the aim was to study the e-learning practitioners in their natural settings in an attempt to interpret the interaction between them and their e-learning practice against the background of the e-learning context at TUT. Holistic understanding of the research phenomena was enhanced by the meaning created and attributed to events by the participants through their communications (texts).

The nature of reality: Realities are multiple, socially constructed and holistic.

As already discussed, the assumption of multiple, socially constructed realities implies that these constructions are the result of participants' experiences and interactions with others. e-Learning practitioners involved in e-learning practice at TUT experienced different realities in different e-learning-related situations and responded to these situations by displaying their own unique work behaviour styles. Interactions between the e-learning practitioners and their e-learning practice (jobs) resulted in a variety of matching patterns that refer to various realities and scenarios (possible future realities).

Qualitative inquiry underpinned by ontological perspectives of systems thinking holds that personality is a living system embedded in the human system (part of a whole). Work behavioural styles are seen as a specific expression of personality within the work context. Unique characteristics of the participants' personalities influence their behaviour in (responses to) different work situations differently because they react differently to different aspects of the same events. Systems thinking promotes our "understanding of the underlying structure responsible for the patterns of behaviour" (Bellinger, 2004).

The relationship of knower to the known: Knower and known are interactive, inseparable.
Qualitative interpretive inquiry assumes that I as the researcher am a participant observer and that the events are understood through the process of interpretation using language to interact – knowing comes through interpretation and therefore the inquiry is value-bound and subjective. Knowledge sources relevant to the study that I used to interact with were informal discussions with e-learning practitioners on the nature of e-learning at TUT, and participation in a process of data collection and analysis to gain insight into the world of work of the e-learning practitioners. The roles that I played as researcher (being part of the world of work) as instructional designer (for e-learning practitioners at TUT) and participant in the P@W programme (instructional designer and part-time coordinator) made me an integral part of the e-learning community at TUT.

The possibility of generalisation: Only time- and context-bound working hypotheses are possible.
The e-learning practitioner case study at TUT is bound by time and context and therefore no generalisations are possible. Furthermore, the small number of participants might affect the overall ability to generalise the results and generalisation is not intended. This study does not include e-learning practitioners from institutions other than TUT.

The possibility of causal linkages: All entities are in a state of mutual simultaneous shaping, so that it is impossible to distinguish causes from effects. Variables are complex, interwoven, and difficult to measure.
The aim of this study is not to investigate causal linkages, but to gain insight in the 'what?'. What are the characteristics of the e-learning practitioner and the e-learning practice and how do they fit together? Further studies may focus on cause-effect consequences as a result of the implementation of certain interventions at leverage points in the e-learning practitioner system.

Type of reasoning involved – usually inductive.
In this study inductive reasoning is used to search for patterns in the research data. The ways in which I looked for patterns included using the **frequencies** of person and job attributes and **structures** by asking questions such as: What are the characteristics of the e-learning practitioner and the e-learning practice? What are the different types of personal profile of e-learning practitioners? and What are the job structures of the e-learning practice?

Another type of reasoning, namely abductive reasoning, was also applied in this study. In contrast to inductive and deductive reasoning, which are both linear in their application, abductive reasoning involves processes of lateral thinking and is concerned with patterns and relationships (Bateson, 1979). See section 3.3.3 for a detailed discussion on the relevance of

abductive reasoning in this study.

Outcome: Illuminates the situation and explores what is assumed to be a dynamic reality.
Qualitative research describes the case as a dynamic reality but does not claim universality.

Researcher roles:
Personally involved
- the researcher is directly and personally involved

Interested in meaning how people make sense of their lives, experiences and their structures of the world
- having a concern for the e-learning practitioners involved

Interested in the process, meaning and understanding gained through words or pictures with the aim to describe
- focusing on trying to understand the e-learning practitioner construct

Using details to build abstractions, concepts, hypothesis and theories, through inductive processes
– using details to build person-job fit scenarios through inductive and abductive reasoning processes.

Approach to validity: Truth seen as context bound (socially constructed).
In this case there were good reasons for choosing the interpretive qualitative orientation. Firstly, it not only conceives many possible realities, each of which is relative to a specific context or frame of reference (Chiang, 1998), but it secondly also advocates an eclectic approach using a multitude of research strategies (case study), methods (survey method), and tools and techniques (questionnaires, reflective diaries, and interviews). Thirdly, because the focus of the research questions was on “what” and “how” to try and describe the phenomena under investigation and not on answering “why” in causal terms.

The French word *bricoleur* describes a handyman using available tools to complete a task (Kincheloe, 2001:680). Since qualitative research involves multiple methodologies, the research itself is often referred to as a bricolage. The researcher is therefore, the *bricoleur*. According to Levi-Strauss (1966:17), being a *bricoleur* means you are "a kind of professional do-it-yourself person". You create the bricolage, that is, a "pieced-together, close-knit set of practices that provides solutions to a problem in a concrete situation" (Denzin & Lincoln, 1994:2). The researcher-as-*bricoleur* analogy necessitates that the product of one’s work be "a complex,

dense, reflective, collage-like creation that represents [one's] images, understandings, and interpretations of the world or phenomenon under analysis" (KU Communication Studies, n.d.).

A bricolage of methods, tools and techniques was selected for this study, which, as has already been pointed out, was grounded and guided by the research philosophy, the theoretical integration of P-J fit theory, the principles of the systems and interactionist theories, and the conceptual framework. The relevance of these will be discussed in subsequent sections of this chapter.

3.3.3 Logic of reasoning

A combination of inductive and abductive reasoning, a more metaphoric reasoning, was the preferred choice for this study. This mode of reasoning provided me with the scope to generate a number of useful metaphors that helped me to map knowledge from one systems domain onto another. To defend my choices in this regard I will briefly discuss the logic of this type of reasoning, whereafter I will defend my stance.

"**Abductive reasoning** is the process of generating the best explanation for a set of observations" (Johnson & Zhang, 1995) and it deals with the issue of reasoning toward meaning (Shank, 1998). Shank (1998) continues by saying that when we consider the world as a "lived world", the things we observe take on significance. To determine their significances these observations need to be 'read'. This act of reading consists of treating "observations not for themselves, but as signs of other things" (Shank, 1998). He is of opinion that we do not know for sure what they signify, therefore we can only guess, which implies that we see the world not in terms of truth but in terms of significance (Shank, 1998). Shank (1998) continues by saying that we do not experience a world of facts but one of signs and therefore should pursue the notion of semiotics, "which represents a methodology for the analysis of texts regardless of modality" (Wikipedia, 2006b). An example of this process of reasoning is the analysis of written textual data, for example blogger entries, essays or open question responses, to **identify "signs" of work personality characteristics in the e-learning practitioners. These texts are significant not in themselves but as signs of a deeper hidden structure** (Jorna & Smythe, 1998).

Patterns are explored for their relationship to each other and for their relationship to other similar patterns (Patton & McMahon, 1999:144). For example, the relationship between the characteristics of the e-learning practitioner resulting in pattern types of work behavioural style and the relationship between the characteristics of e-learning practice resulting in job structures are explored within each subsystem as well as their relationship to each other within the e-learning practitioner system.

> If ***abduction***, a more metaphoric reasoning, is accepted on a par with induction and deduction, a new logic – "AID" (***Abduction***, Induction, Deduction) – may enrich the scope of rationality. When logical space is expanded to include abductive logic, the use of metaphor becomes legitimate in inquiry (Sawada, Kieren & Olson, 1990).

Shank (1998) argues for six distinct modes of abductive reasoning, that is, reasoning to the clue, reasoning to the metaphor or analogy, reasoning to the pattern, and reasoning to the explanation. Some researchers also consider the induction step as a consequence of a successful analogy (Kokinov, 1994:3). Kokinov (1994:3) provides a generally accepted definition of analogy saying that "analogy is a mapping of knowledge from one domain (the base) into another (the target), which conveys that a system of relations that holds among the base objects also holds among the target objects".

For this study, analogue thinking was also applied to **systems theory** and the

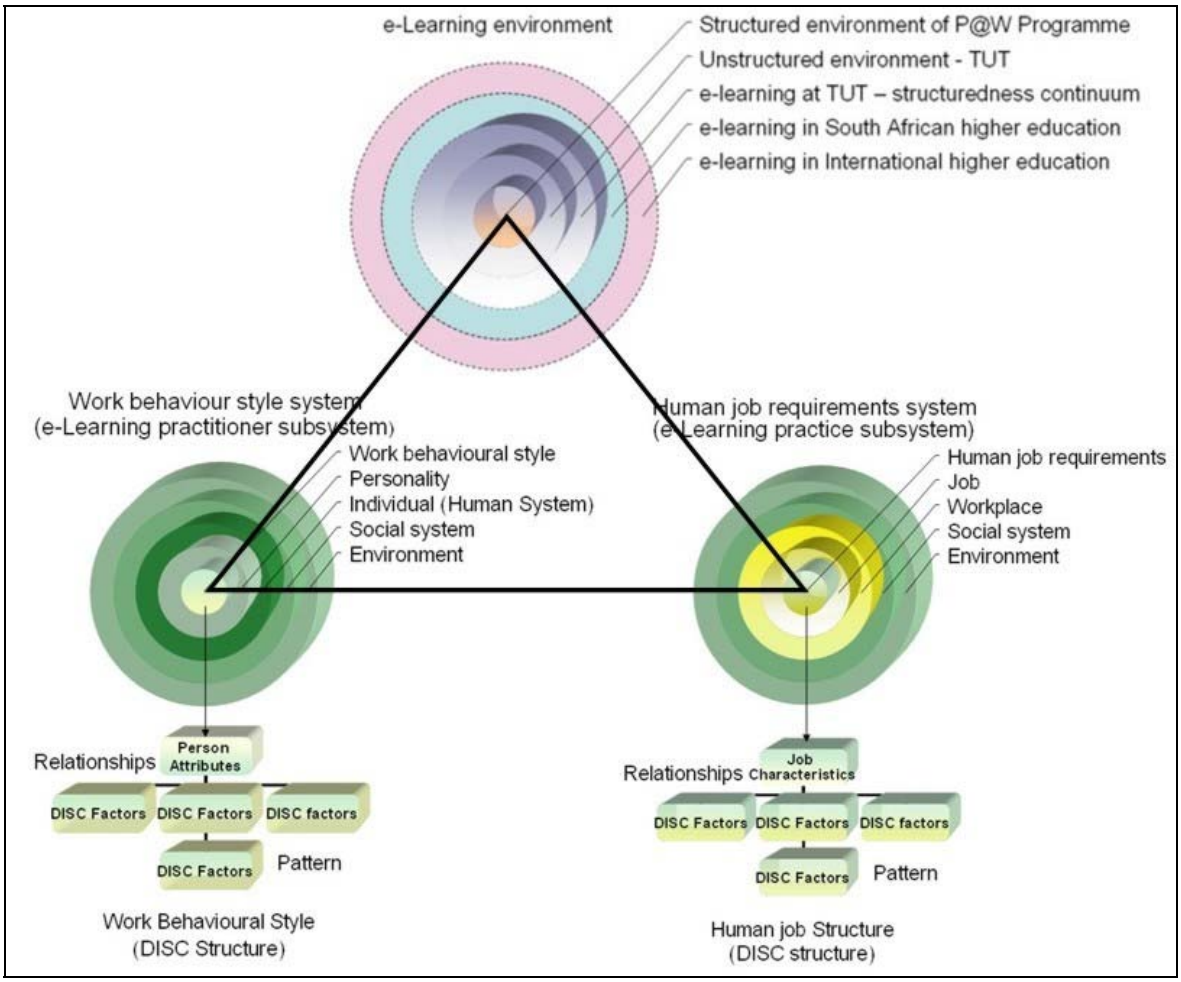
- DISC application to identified **work personality characteristics, relationships and patterns**;
- job characteristics model to stimulate thinking about **job characteristics**;
- P-J fit conceptualisation to identify **pattern matching**, and
- person-situation interactionist model analogy for **conceptualising an enriched HJA.** [4]

Understanding the triad of the e-learning practitioner construct is locked up in understanding the meaning of the words that describe the construct. These were discussed in detail in Chapters 1 and 2 but for this discussion it is important to realise that the three dimensions of the triad, namely the e-learning environment, the e-learning practitioner (person) and the e-learning practice (job), are congruent sides of the triangle. This implies that this is an equilateral triangle, therefore when one wants to investigate the congruence between the person and the job in the work environment, P-J fit theories should be taken in to account. Abductive reasoning involves a process of lateral thinking, and this process directed my thinking towards a systems theory approach to P-J fit theory. Principles of systems theory that may assist in providing a theoretical framework for P-J fit have been studied and applied. Similarly, theories of P-J fit have been studied in detail to understand the patterns and relationships in these theories.

An integration of the above-mentioned thinking processes provides the logic of my study (see Figure 3.3). The following paragraphs will highlight the most important aspects in this regard.

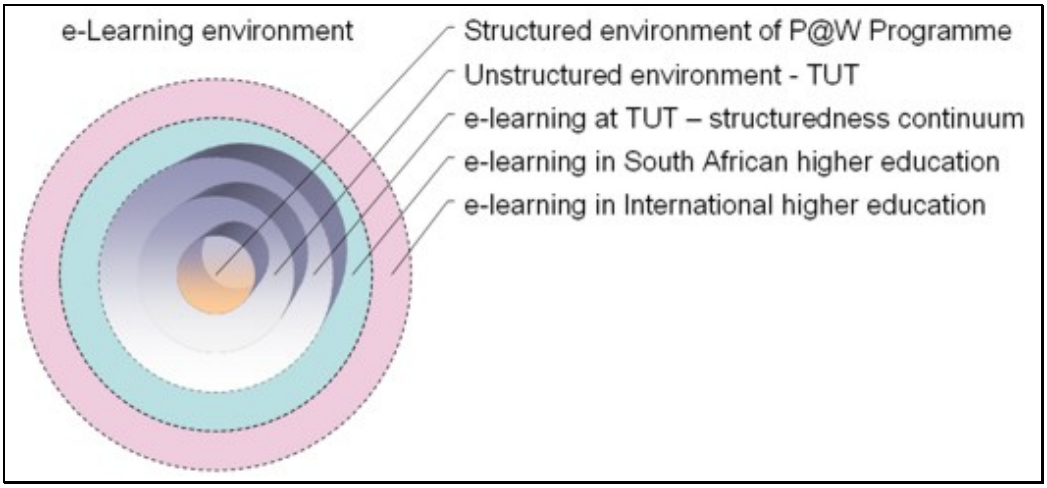
[4] Read with previous chapter – sections 2.7-2.8

Figure 3.3: Holistic view of the e-learning practitioner system



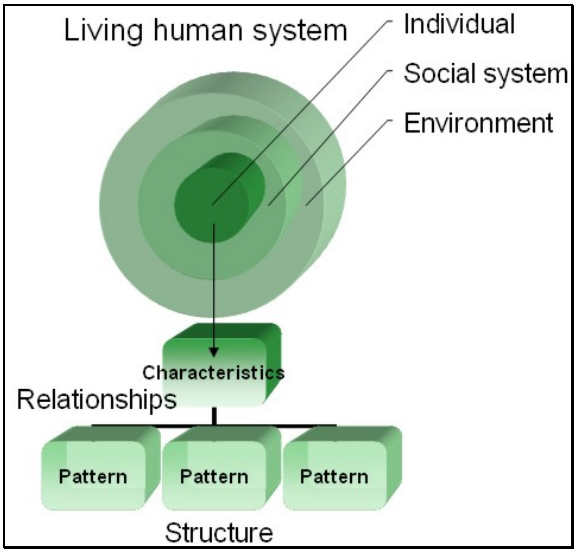
Against the systems theory framework and the view that the e-learning environment at TUT forms one of the pillars in the e-learning P-j fit triad, I argue that environmental components are organised as a **nested arrangement of structures, each contained within the next to provide the context for P-J fit interaction.** The structured and unstructured e-learning environments at TUT are positioned on a **structuredness continuum**, nested in the TUT e-learning environment, nested in the higher education e-learning environment in South Africa, nested in the international higher education e-learning environment (see Figure 3.4). These environments interact with one another and therefore issues relevant to one environment may also be relevant to the others. Various subsystems are embedded in these environments, but those relevant to this discussion are the e-learning practitioner and the e-learning practice subsystems. The following discussion will position them in the e-learning environment.

Figure 3.4: Nested e-Learning environments



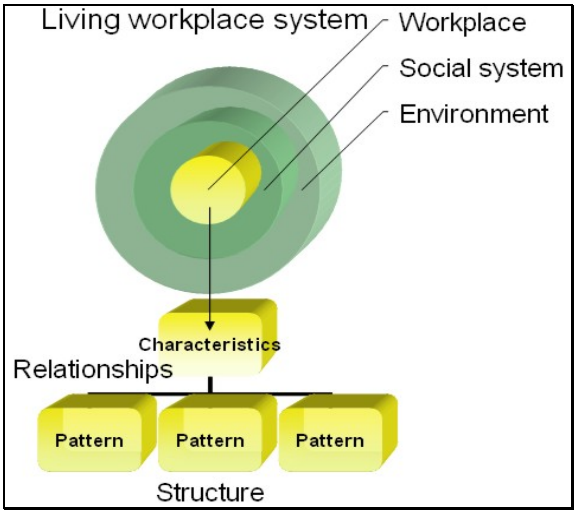
The human individual system, nested in the social system, is also nested in the environmental system (see Figure 3.5).

Figure 3.5: Human individual system



The workplace is nested in the social system and also nested in the environmental system (Patton & McMahon, 1999:160; Bergh & Theron, 2001:324) (see Figure 3.6).

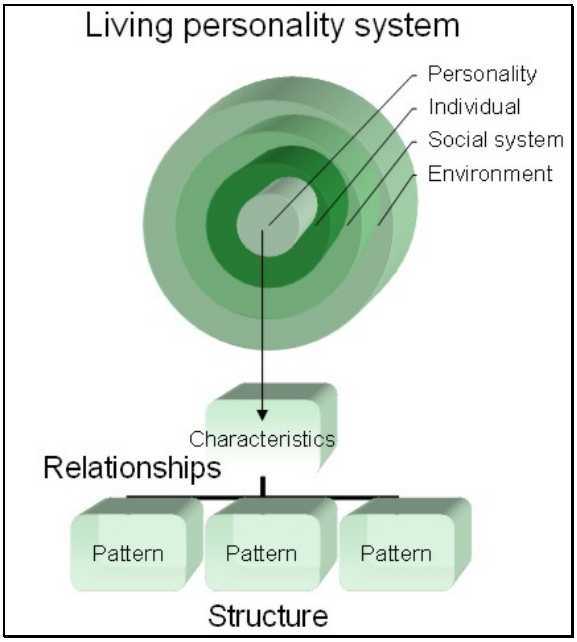
Figure 3.6: Workplace system



There would thus be tangencies between the human system and workplace. This implies that the principles of systems theory are applicable to both the human system and workplace structures. However, the human system is seen as a living system (Bergh & Theron, 2001:476) displaying certain characteristics (relationships between these characteristics expressed as patterns to provide the human system structure) aiming at a specific purpose. Therefore accepting the general definition of analogy (Kokinov, 1994:3), one may say that an analogy is a mapping of knowledge from one domain (the base) to another (the target), which implies that a system of relations that holds for the base objects also holds for the target object, and applying analogous thinking to the workplace as a structure in the social system, defines the workplace as a living system. It will follow then that this system also displays certain characteristics, relationships between these characteristics, expressed as patterns to provide the workplace structure, aiming at a specific purpose. These patterns are explored for their relationship within, as well as to, each structure. The person and the workplace are in reciprocal action in the person-workplace system, embedded in a specific, relevant environment.

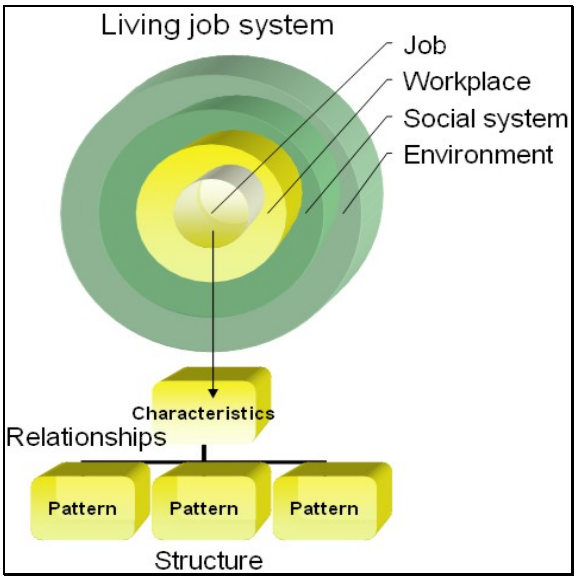
The same argument holds for personality as for a living system (Patton & McMahon, 1999:157; Bergh & Theron, 2001:323) nested in the human system (see Figure 3.7).

Figure 3.7: Personality system



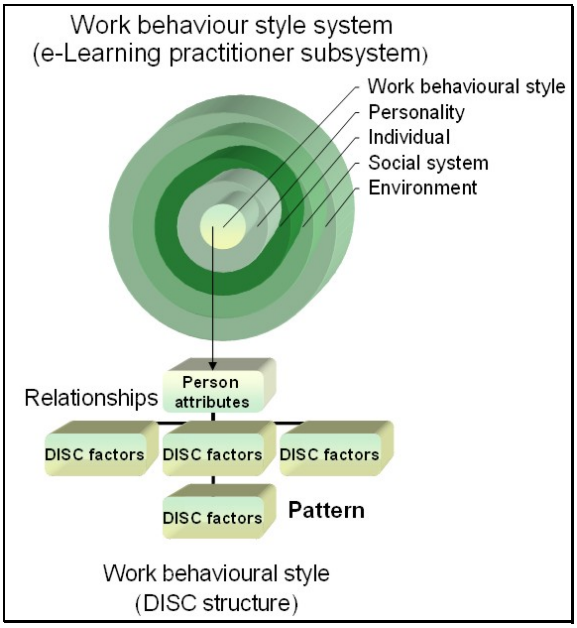
and the job as a living system is nested in the workplace system (see Figure 3.8).

Figure 3.8: Job system



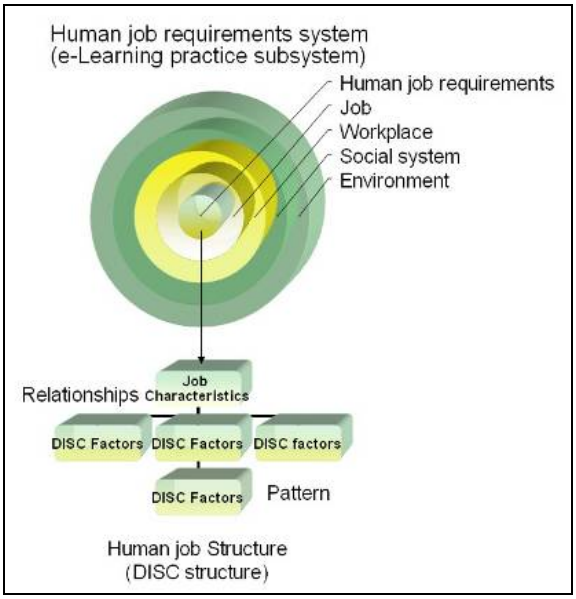
The same argument holds for the DISC work behavioural style system nested in the personality system (see Figure 3.9).

Figure 3.9: DISC work behavioural style system



and the Human Job requirements system nested in the job system (see Figure 3.10).

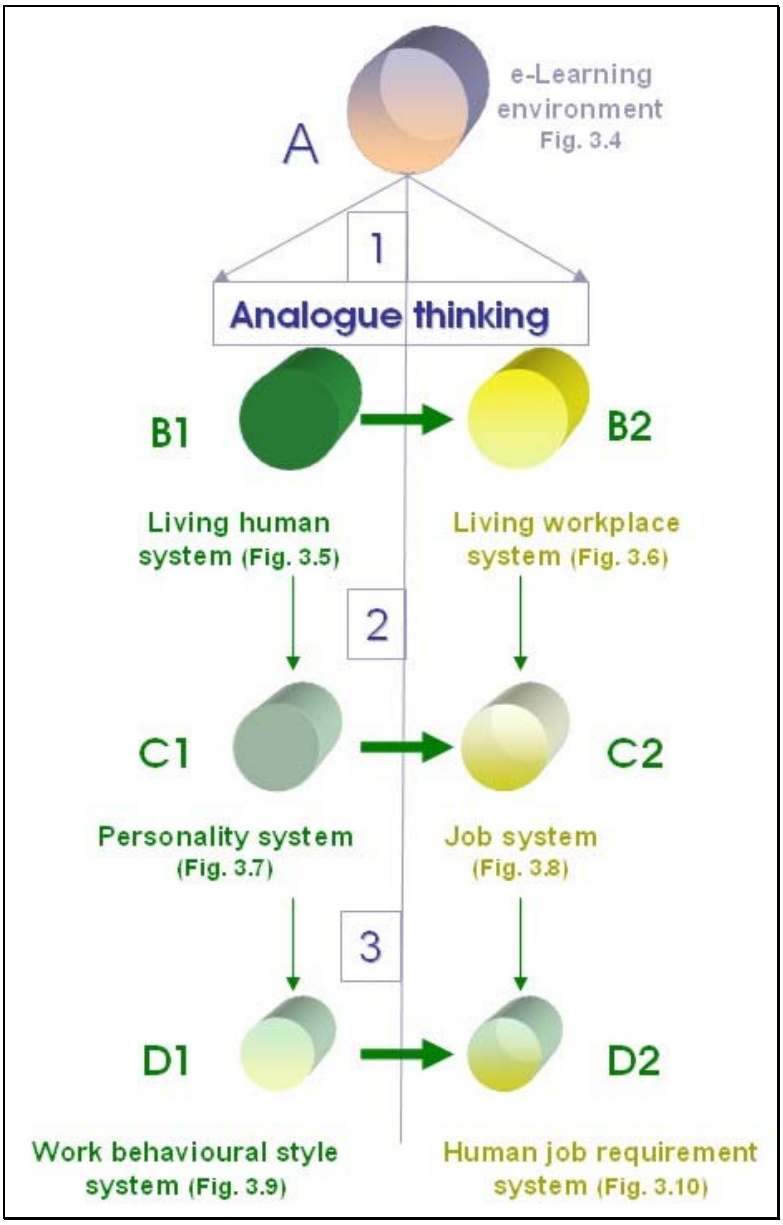
Figure 3.10: Human job requirements system



Personality and job characteristics are organised in patterns, which are the basic building blocks of the respective structures and interact with each other to fulfil a specific purpose. What is more important for this study is the specific interaction and relationships between the work personality and the job. Transferring this argument to the e-learning world of work means that the personality characteristics of the e-learning practitioner will interact with the job characteristics of the e-learning practice, and the organisation of these building blocks will reveal the underlying structure of the e-learning practitioner system. Investigating the e-learning practitioner construct therefore involves not only the identification of the characteristics and

patterns of the building blocks (e-learning practitioner and e-learning practice), but also the relationships between these building blocks in order to reveal the underlying structure. To operationalise these I implemented the DISC system as data collection and analysis instruments. However, the e-learning practitioner construct structure has no meaning if it is not embedded in a context and therefore the influence of the e-learning work environment, being structured or unstructured, should be taken into serious consideration (see Figure 3.11).

Figure 3.11: Logic of reasoning

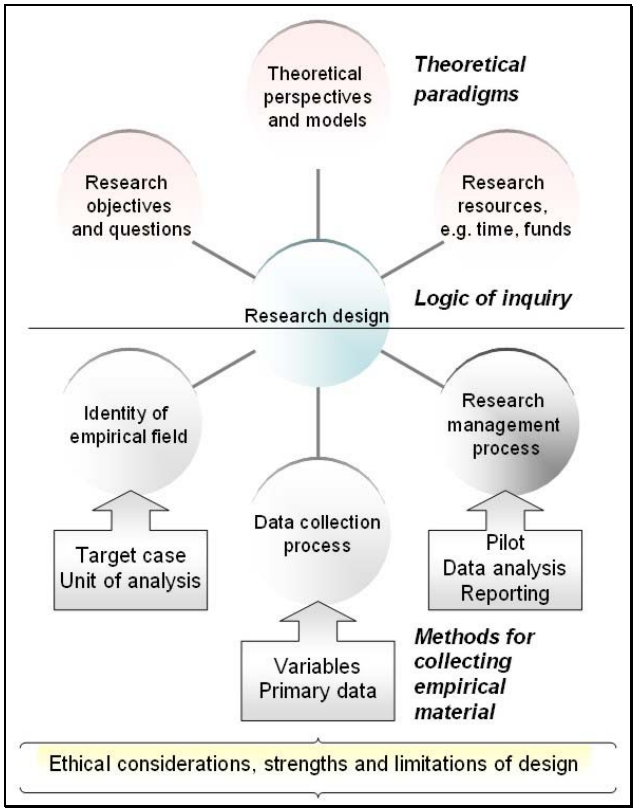


3.4 Research design

Denzin and Lincoln (1994:14) describe research design as “a flexible set of guidelines that connects theoretical paradigms to strategies of inquiry and methods for collecting empirical material”. These guidelines provide an action plan of how the researcher will proceed from the initial set of research questions to the point of answering them. The research design helps the

researcher to keep focused on the initial research questions (Yin, 1998:236; Mouton, 2002:56). The major steps are presented in Figure 3.12.

Figure 3.12: Logical sequence of research design



Source: Adapted from Yin (1998:237)

The research questions (sections 1.6 and 3.2), philosophical assumptions and theoretical propositions (Chapter 2 and section 3.3.1) guided the **definition of the case, unit of analysis** and the **number of cases** selected for this case study, as well as for the data collection process, data analysis and reporting. Other important challenges to consider when working on the research design are to define the specific case study tactics that deal with tests to establish the quality of the research and also to reflect on ethical issues (Yin, 1998:242) (section 3.11).

Research design focuses on the end product, whilst the research strategy/methodology (section 3.5) focuses on the research process and the methods, tools and techniques used to accomplish the research tasks (Mouton, 2002:56). The terms ‘methodology’, ‘method’, ‘tools’ and ‘techniques’ need to be conceptualised because of the confusing use of these terms in the literature. Gough (2002) gives a satisfactory description by stating the following:

- Methodology refers to more than particular techniques, such as doing a survey or interviewing learners; rather it provides “**reasons** for using the techniques in relation to the kind of knowledge or understanding which the researcher is seeking” (Gough, 2002:5).

- Research method is a "**way of proceeding** in gathering evidence" (conducting research enquiry) (Gough, 2002:5).
- Technique implies the "art or craft of performing a particular task", while "methodology and methods guide research techniques" (Gough, 2002:5).
- Although conceptualisation of these terms is important, the actual 'doing' of the case study involves "continued interaction among design, data collection and analysis" (Yin, 1998:230) described in Chapter 4.

In mapping this study onto Mouton's (2002:57) typology of research designs this study may be categorised as a qualitative case study characterised as an empirical study using primary data ranging from numeric to textual data in a low control field setting. This single case study of the e-learning practitioners at TUT was conducted during the period May to July 2005. The unit of analysis is the e-learning practitioners practising in the e-learning environment at TUT. The unit of analysis in a case study, according to Tellis (1997), "is typically a system of action rather than an individual or group of individuals" (Tellis, 1997). A summary of the research design for this study is presented in Table 1.3. As pointed out in previous sections this case study is linked to the interpretive traditions, using inductive and abductive modes of reasoning. Because the whole practising e-learning population at TUT was included in this study, no sampling methods were implemented. Multiple data sources were used, including questionnaires, expert consensus group discussions, personal communications, interviews, archival material, written documents, and self-reporting feedback from research participants. Quantitative and qualitative analysis were used to analyse these data sources.

This section presents the research design in terms of the guidelines that were followed to connect the qualitative case study approach to methodological issues (described in section 3.5). Research design guidelines and methodological issues presented in Table 1.3 are discussed in detail hereafter.

3.5 Research strategy/methodology: case study

> The more we go towards an environment characterised by technology and digitisation the greater the need will be to focus on the human dimension of existence (Schweitzer, 2001).

This section describes the case study as the research strategy chosen for this exploratory study. I will provide a rationale for using the case study approach, highlight some of the special features of case studies, define the case study in question and discuss its application in this study.

The case study methodology was chosen because of its focus on particular events (interaction between the e-learning practitioners and their e-learning practice) in a specific context (e-learning environment at TUT) (Christie, Rowe, Perry & Chamard, 2000:10), seeking contextual meaning within the boundaries of the system (Stake, 1994). The four-stage guidelines for research methodology proposed by Levy (1988), in Tellis (1997), were followed. They are the following:

1. Design the case study protocol.
2. Conduct the case study.
3. Analyse case study evidence.
4. Develop conclusions, recommendations and implications based on the evidence.

One of the important steps when designing a case study protocol is to determine the skills required by the researcher. After considering the specific skills needed for this study, I projected that I would need the following: (1) guidance from an industrial psychologist in setting the questions for the surveys used in the exploratory and survey phases; (2) expert help from the Department of Statistics to screen the questionnaires in terms of validity; (3) training as an accredited PPA and HJA analyst from Thomas International; and (4) expert guidance from the Thomas International consultants for the Thomas International System. Input from these experts was very valuable in enhancing the quality of the study. I also felt comfortable with the level of my PPA and HJA analysing skills. Setting the protocol for the study helped me to approach it in a disciplined manner that positively influenced the advancement and reliability of the study (Tellis, 1997). Important design decisions in terms of the study progress had to do with ‘what’, ‘how’, ‘who’ and ‘for how long’ questions (Janesick, 1994:211). These included the identification of the boundaries of the case, the unit of analysis and the research participants, and the development of a code of conduct for dealing with the ethical considerations of the study. According to Christie *et al*. (2000:20), pilot studies and a focus on the literature are the first two important stages in the case study methodology, and this was also my experience. As already discussed in Chapter 1, in the section dealing with title clarification, the ‘search’ process that was part of this study followed diverse paths that hold the promise for further exploration as well as some exciting conclusions. The second step, after the research design and protocol had been developed, was to execute the research action plan.

There are three important tasks involved in executing an action plan, namely the **preparation for data collection**, the **distribution of the questionnaires**, and **conducting the interviews** (Tellis, 1997). Scheduling the research participants, preparing and selecting the data collection instruments and the actual collecting of research data are time-consuming activities that took careful planning.

The next step is this process was to analyse the data. This included reading and rereading, probing and combing, examining, organising, categorising, tabulating and recombining the data to address the initial propositions of the study. Based on the evidence found, the study concluded with a description of the phenomenon studied in the case study, namely the latent structure of the e-learning practitioner construct.

But what were the reasons for choosing the case study methodology for this investigation? The following paragraph will provide answers to this question.

3.5.1 Rationale for using the case study approach

A case study investigates a phenomenon in its real-life context by using multiple sources of evidence (Yin, 1989). Christie *et al*.'s (2000:14) list of definitional components for case studies illustrates some of the features relevant for this study, for example "has a contemporary focus within a real life context, answer 'how' and 'what' questions, little control over events, use multiplicity of data, and has a unique configuration of being". In this study, e-learning practitioners in the e-learning context of TUT were selected as a unit of analysis. The **reasons** for this choice were, *inter alia*, the diverse and multidimensional nature of the e-learning context at TUT, the availability of multiple data sources and the unique focus on Partners in the P@W programme presenting examples of the multiple nature of reality. This case study therefore offered an opportunity to study the e-learning practitioners on a continuum of structured to unstructured environments (structuredness continuum) in order to answer questions such as "What are the characteristics …? " and "How does it fit together…?" and to understand the phenomenon under investigation. One of the strengths of case study research is that it is a holistic approach that uncovers the richness of detail, patterns and interactions (Tellis, 1997). Using a case study as methodology therefore offered me a rich context for understanding the entire system. The time slot available for conducting this study was dictated by the academic activities and duties of the e-learning practitioners at TUT and the schedule of the P@W programme. These considerations bounded the case study in terms of time available and context. However, care was taken to maximise what could have been learned in the time available. In agreement with Tellis's (1997) view, I focused on issues vital for understanding the system being examined using multiperspectival analyses. Case study methodology provides the scope to do this.

Critics of the case study method question the reliability or generality of findings on the grounds of small numbers of cases not being reliable and contamination of findings through researcher biases (Soy, 1996:1). However, as a "form of research, case study is defined by interest in individual cases, not by the method of inquiry used" and "draws attention to the question of what can be learned from this case" (Stake, 1994:236). Cases may differ in complexity, and may be

studied for different purposes; therefore it would be appropriate to highlight a few features of case study research.

Both what is common about a case and the uniqueness of the specific case are important for case study researchers, but this also brings strategic choices to the table in terms of deciding how much and how long the complexities of the case should be studied (Stake, 1994:239). Not everything about the case can be understood and the researcher will make up his/her own mind about this.

The e-learning practitioner case study offers scope for a wide range of further investigations, for example the influence of P-J fit on job satisfaction in the e-learning environment, or the application of interventions such as staff development and training relating to job performance or quality of e-learning practice. In this study, I chose to limit the scope to describing and understanding the characteristics of e-learning practitioners and their jobs, as well as the relationships between the person attributes of e-learning practitioners and their e-learning practice in the e-learning environment, with the aim of uncovering the underlying structure of these relationships. This case study will therefore focus only on aspects relevant to these relationships in the person-job-environment triad. As pointed out in the discussion on issues in e-learning in Chapter 2, I concentrated on issue-related observations and the interpretation of patterns of data (Stake, 1994:239) to organise my study. The study was also guided by Stake's (1994:239) examples of issue development, asking the following questions:

- To treat the case as exemplar, [I asked], Which issues bring out the dominant theme?
- To maximise understanding of the case, [I asked], Which issues seek out compelling uniqueness?
- For evaluation of the study, [I asked], Which issues help reveal merit and shortcoming?
- In general [I asked], Which issues facilitate the planning and activities of inquiry, including inspiring and rehabilitating [myself]?

Specific issues are therefore deliberately chosen for their perceived importance for the study and also for the value that they contribute to our knowledge and understanding of the phenomenon under study (Stake, 1994:239). Stake continues by saying that in reporting the story of the case the researcher will decide what is necessary for understanding it. Learning from the case implies that we construct meaning in terms of what we learn and understand through the revelation of others' experiences and, therefore coming back to triangulation, needs to "validate both the observation and generalisation" (Stake, 1994:241).

3.5.2 Case study features

Case study research, being qualitative in nature, displays a number of associated characteristics referring to a design that is holistic, looks at the larger picture and seeks to understand the whole. This relates to another case study design feature, namely that is looks at relationships within the system, meaning that the characteristics of the e-learning practice and the e-learning practitioner subsystems are related not only in terms of relationships within each subsystem, but also between the subsystems, to contribute to relationships and patterns in the systemic whole.

Another important design feature refers to the personal, the face-to-face and the immediate, suggesting a particular participation from the subjects themselves in a given social setting and demanding that the researcher stay in this setting for a given period of time (Janesick, 1994:212). Janesick adds further design feature demands on the researcher as

- developing a model of what happened in the social setting, for example the P-J fit model to determine the match between the e-learning practitioner and the e-learning practice in terms of goodness of fit;
- sharpening skills to interpret face-to-face communication and written feedback from the participants;
- incorporating informed consent decisions and sensitivity to ethical concerns;
- sensitivity to and acknowledgement of own bias, preferences and subjectivity to minimise researcher judgement as the main source of error (Mouton, 2002:150), and
- *ongoing analysis of data* (Janesick, 1994:212), including using multiple data sources to record the characteristics, relationships, and pattern types of the e-learning practitioner and the e-learning practice subsystems. A particular strength of case study design is high construct validity (Mouton, 2002:150).

Statistical analysis and quantitative data analysis of a large number of data sources, resulting in the generalisation of research findings, was not the aim of this study and therefore it was decided to use a single case study that included the whole population of e-learning practitioners at TUT. This decision has the advantage that the results from the PPA and HJA could be enriched with in-depth and specific overall analysis.

3.5.3 Case study applications

According to Yin (1994) the case study model may include applications to

- explain complex causal links in real-life interventions;
- describe the real-life context in which the intervention has occurred;
- describe the intervention itself, or

- explore those situations in which the intervention being evaluated has no clear set of outcomes (Yin, 1994, cited in Tellis, 1997).

This study will only report on the **second** and **last** application, that is, the e-learning P-J fit triad in the e-learning environment at TUT will be described and analysed regarding its relationship in terms of its characteristic profiles and structures (Chapter 4). Conclusions, recommendations, and implications will be based on the collected evidence (Chapter 5).

3.5.4 The case study in question

This investigation is an instrumental case study of e-learning at TUT. The e-learning environment at TUT consists of unstructured e-learning practices, semi-structured e-learning projects and a structured e-learning programme, the P@W Programme. The unit of analysis is the e-learning practitioners at TUT, including all e-learning practitioners who are involved in e-learning activities as well as the Partners in the P@W Programme. According to statistics for 2005, provided by the Department of Telematic Education at TUT, 108 lecturers at the University were actively involved in telematic projects and 76 were using WebCT as a learning management system (Table 3.1). Numbers shown in Table 3.1 may include multiple counts for students and e-learning practitioners because students may be enrolled for more than one subject and practitioners may present more than one subject simultaneously. All students registered for WebCT courses are also registered for the Life Skills course presented by the Department of Student Development, as well as for PlanetS, which is an online tutorial on WebCT. e-Moderating in these courses is kept to a minimum because the aim is to support the student with information and **not** to create online communication via discussion forums.

Table 3.1: Summary of WebCT activities for 2005

	Faculty	Number of subjects	Number of students	Number of e-learning practitioners
1	Agriculture, Horticulture & Nature Conservation	33	1331	2
2	Arts	6	145	3
3	Economic Sciences	9	526	4
4	Education	2	7	1
5	Engineering	88	4,769	28
6	Health Sciences	22	365	6
7	Information & Communication Technology	6	406	4
8	Management	17	7,902	6
9	Natural Sciences	10	3,207	3
10	Social Development Studies	29	1,299	10
11	Tourism, Journalism & Hospitality	25	587	9
12	Other: Life skills	1	21,210	3
	Other: PlanetS	1	25,176	0
	Other: general	1	213	3
	Other telematic projects			29
	Total	**248**	**41,754**	**108**

Apart from the online learning management system (WebCT), other technologies, for example electronic testing, multimedia and Wimba presentations, CD ROMs, animations, audio, video, and video conferencing, are available to practitioners, who combine the different applications and technologies creatively in their projects.

This case study involved the Partners in the P@W Programme as well as the active e-learning practitioner population at TUT, during the period **May to July 2005**. The inclusion criterion was active involvement in either the P@W Programme or e-learning practice at TUT. Exclusion criteria were e-learning practitioners who are not practising at TUT and who refused to give informed consent to participate in the research.

The two groups experienced different e-learning practice conditions. The **Partner group** was involved in a structured capacity building programme, spanning a time period of one year from June 2004 to June 2005. During this period the researcher was involved in the programme as a coordinator and co-presenter of the programme, as well as in her capacity of instructional designer at the Department of Telematic Education. The Partners in the P@W Programme are part of an online knowledge building community in a WebCT environment at TUT. Online communication is one of the activities in the programme and the Partners used the communication tools available in the programme to comment voluntarily on their experiences as e-learning practitioners. With their consent these comments were logged as part of the documentation process of the P@W Programme and were archived in printed format at the Department of Telematic Education at TUT.

For this study the Partners were requested to give permission to use quotations from their written reflections as research data to enrich the PPA and the HJA. All the Partners agreed to participate in this study and with their consent archived material was used to enrich the quantitative data obtained from the PPAs and HJAs administered. The enriched data from the PPAs and HJAs were used to create style profiles of the participants but no individual was implicated or named in these profiles. The Partners' reflections were used to highlight some aspects of the style profiles and were used anonymously to enrich the data.

The TUT **e-learning practitioners** who participated voluntarily in the study were involved in various e-learning projects ranging in length from a few months to five years. Their experience as e-learning practitioners varied from novice to expert status (Table 3.2) and personal, financial and organisational support structures for these practitioners varied from structured, semi-structured to unstructured environments.

Table 3.2: Experience as e-learning practitioner at TUT

Experience as e-learning practitioner (months)	Number of participants
1-6	5 + 12 Partners
7-12	7 + 1 Partner
12+	4
13-18	4
19-24	3
24+	1 + 1 Partner
25-36	8
More than 36	14
Total number of participants	**46 + 14 Partners**

The e-learning practitioner's involvement in this case study was voluntary and with their consent quantitative and qualitative data provided by them were used to enrich the quantitative data obtained from administered PPA's and HJA's. Detail regarding the ethical considerations for this study are presented in section 3.11.

The researcher, in her capacity as instructional designer was involved in some of the e-learning practitioners' projects and therefore has first-hand experience of the e-learning environment at TUT and is also acquainted with most of the e-learning practitioners. These projects were not relevant for this case study, although they did shape the e-learning practitioners' views and attitudes towards e-learning and contributed to a variety of experiences in the e-learning field,.

3.5.5 Application and participants

The case study in question involved the total e-learning population at TUT, summarised in Table 3.3.

Table 3.3: Total e-learning population at TUT

Composition of TUT e-learning practitioner research group			
	TUT	**TUT practitioners excluding**	**Partners**
Total population	108	94 (100%)	14 (100%)
React on call for participation	74 (69%)	60 (64%)	14 (100%)
Lost interest	7 (6%)	7 (7.6%)	0 (0%)
Promised but did not deliver	7 (6%)	7 (7.6%)	0 (0%)
Completed	60 (56%)	46 (49%)	14 (100%)
Invalid forms	2 (2%)	2 (2%)	1 (7%)

Two groups, the expert consensus group and the group of instructional designers from the Department of Telematic Education, were also involved in the study. The four instructional designers were asked to define the star performers amongst the e-learning practitioners. (see Appendix C7). The relevance of the star performer group in this study will become clear after the discussion on the PPA and the HJA in sections 4.3 and 4.4 of Chapter 4.

The expert consensus group played an instrumental role in the e-learning job analysis described in section 4.2 of Chapter 4. This group consisted of a manager from the Department of Telematic Education, two successful Partners from the P@W Programme and two star performers from different faculties at TUT. I also included myself under the supervision of the Thomas International analyst at TUT.

Lack of rigour is one of the major concerns of case studies, but can be enhanced by using triangulation. Triangulation can occur with data (1) data to remain the same in different contexts, investigators (2) several investigators examine the same phenomenon, theories (3) different viewpoints interpret the same results, and even methodologies (4) one approach is followed by another to increase confidence in the interpretation (Janesick, 1984:214-215), and is used to induce rigour in the research process and to establish the validity of the research process (Stake, 1994:241). A more detailed discussion on triangulation and crystallisation will follow in a next section. The following section describes the mixed research methods used in this case study to address the research problem, resulting in different research phases. A short summary of these phases is graphically presented in Figure 1.2.

3.6 Research methods: mixed method approach

This study includes a quantitative and a qualitative phase in a mixed method application. It is important to note here that mixed method research is more than just a collection of quantitative and qualitative data, and suggests that there will be also a process of data integration. According to Creswell, Fetters and Ivankova (2004:7) “the underlying logic of mixing is that neither quantitative or qualitative methods are sufficient in themselves to capture the trends and details of the situation”. The appropriateness of mixed methods is measured against their complementary strengths and usability in answering the set research questions. Specific techniques based on the research objective may be part of a quantitative–qualitative continuum. Examples here are the **survey and rapid ethnography** methods used in this study.

Survey studies are usually quantitative in nature and their main purpose is to provide a broad overview of a representative sample of a large population by presenting statistical analysis of data applied in the positivist paradigm in order to ascertain information, characteristics or attributes of the population. The survey method is concerned with two decisions: the construction of the interviewing schedule or questionnaire and the target group that will respond to the questions. This implies the definition of the study population, the sampling procedure and the size of the sample. However, for this study the entire population of e-learning practitioners at TUT was included in the study and therefore no sampling techniques were applied. The procedures for and construction of the interviewing schedule for the e-learning practitioners are described in section 3.8.2.

The survey method was applied in the first three research phases, namely the exploratory, pilot and survey phases. **Quantitative** approaches were used to collect and analyse data on the characteristics of the e-learning practitioner. These activities are discussed in detail in section 3.6.3.7.

Survey research has changed dramatically in the last decade, for example using automated telephone surveys that use random dialling methods, computerised kiosks in public places that allow people to ask for input, or using electronic focus groups in online communities. Kitzinger (1995) explains that “focus groups are a form of group interview that capitalises on communication among research participants in order to generate data” and use group interaction as part of the method. This is a **non-quantitative** survey technique. As Kitzinger (1995) points out, this means that instead of one-on-one questioning, a group of people is encouraged to engage in conversation about a topic. The method is “particularly useful for exploring people's knowledge and experiences and can be used to examine not only what people think but how they think and why they think that way” (Kitzinger, 1995). The expert consensus group used to create the human job requirements for the e-learning job is an application of focus group interviewing. According to Fuccella and Pizzolato (1998:1) “the easiest, most cost-effective means for collecting audience definition data is to conduct an active or passive survey”. They describe the focus group, electronic focus group and the scenario building focus group as forms of group interview that capitalise on communication among research participants in order to generate data.

Electronic focus groups are a form of group interview where both the participants and the moderator communicate through electronic “discussions” in order to generate data (Fuccella & Pizzolato, 2000:2). Scenario building is a relatively inexpensive and quick method for collecting requirements and task information (Fuccella & Pizzolato, 1998:5), and was applied in the expert consensus group to create user context for their requirements assigned to the e-learning job (Fuccella & Pizzolato, 1998:5).

Wortham (2002) describes **ethnography** as useful for providing “interpretive and descriptive analyses of the symbolic and other meanings that inform the routine practices of everyday life” (Wortham, 2002:1), and requires a “common cultural, social, and economical framework regarding the subjects and 'objects' of research” (Lang-Wotjasik, 2002). Complementary to this is the view that ethnography “is a holistic research method founded in the idea that a system's properties cannot necessarily be accurately understood independently of each other” (Wikipedia, 2006c), and therefore are a preferred method for “contextual inquiry” (Irons, 2003:7).

Combining these ideas with the virtual world means that researchers are prompted to experiment with up-and-coming inexpensive tools for exploiting digital data (Paccagnella, 1997).

Mason (2001) comments further on issues of **virtual ethnography** by saying that "virtual communities are essentially groups of people interacting through computer-mediated communication" and that the group exists because its members create communications that bind it together (Mason, 2001:62). Mason (2001) continues by saying that virtual communities are characterised by groups of people that share a common language of communication and that virtual ethnography fully immerses the ethnographer in the reality experienced by the virtual community. The virtual persona of the participants becomes the main focus of the ethnographer. An interesting idea put forward by Mason is that "generally, researchers have wanted to focus on the person at the keyboard, a virtual ethnography reverses this and works instead with the persona that has been projected into cyberspace by the typist" (Mason, 2001:63).

Another important emerging practice, capitalising on virtual ethnography, is **rapid ethnography**. According to Irons (2003), "rapid ethnography narrows the focus of field research, employs multiple observation and recording techniques, and uses collaborative data analysis strategies with other team members" (Irons, 2003:9). Rapid ethnographers readily turn to quantitative data sources, for example registration data, or qualitative data sources, for example emails, blogs and online discussions. More focused discussions in the form of scenario building activities are a "relatively inexpensive and quick method for collecting requirements and task information" (Fuccella & Pizzolato, 1998:5). Irons (2003:9) points out that although rapid ethnography escalates the research process, combining qualitative and quantitative data, the task becomes more difficult for the researcher as rapid ethnography does not permit long time scales for collecting and analysing data.

For this study, online communication data sources, such as weblogs, provided rich data to complement the quantitative data provided by the PPA. Rapid ethnography escalates the research process further by targeting observations at times and locations in which the participants in the sample chosen are engaged in the activities of interest (Irons, 2003:9). One example in this study is the use of information sources from the online e-moderating course conducted between 5 October and 18 November 2004. All the Partners, as well as the instructional designers from TUT, including the researcher, were involved in this course. The group, acting as a knowledge-building community, role-played online learners, participating in a variety of e-tivities and acting in the fast moving environment of an online course. Records of online communication and information provided by the participants were archived on CD. A textual analysis of the electronic discussions on the WebCT discussion board was done to

understand the participants' "learner" behavioural styles as revealed in the online environment. The learner role is one of the five roles that the Partners in the P@W Programme had to fulfil. However, is it also relevant in the e-learning world of work in which the e-learning practitioner acts as life long learner?

In my position as e-learning instructional designer at TUT, I have become closely involved with the TUT e-learning practitioners over the last five years and with the Partners from the P@W Programme (June 2004 till June 2005), However, for the purposes of this case study a short cross-sectional time period stretching from May to July 2005 is relevant. Being an instructional designer and programme presenter in the P@W Programme offered me the position of participatory researcher. I could therefore interpret and contextualise the feedback from the participants more profoundly than would have been the case if I had been an outsider. This may also be a limitation in terms of my subjective opinion, which is an inevitable feature of ethnographic research techniques, but can be moderated by using multiple sources of data, for example reflective diaries (bloggers), questionnaires and survey feedback, and written documents (essays).

Implications for this study

The Partners in the P@W Programme are part of an online knowledge building community in a WebCT environment at TUT. Online communication is one of the activities in the programme and they used the communication tools available in the programme to comment voluntarily on their experiences as e-learning practitioners. With their consent these comments were logged as part of the P@W Programme process and they were archived in printed format at the Department of Telematic Education at TUT. The data format included email messages, saved text entries on the discussion forums (e.g. e-moderation course) and entries in the online bloggers.

The scenario building technique was used by the expert consensus group to create requirements for the job structure of the e-learning practitioner at TUT. Rapid virtual ethnographic techniques such as email communication were used to engage the group in further discussions and verification of the constructed job structure. A virtual group consisting of instructional designers from the Department of Telematic Education, including the researcher, generated criteria for star performer selection.

The researcher, in her capacity as an instructional designer and coordinator of the P@W Programme, was an integral part of the knowledge building community at TUT. However the data sources that were used as research data for this study reflected on the participants' experiences as e-learning practitioners in the P@W Programme in general. Except for the self-

reported feedback, which was directed specifically at this study, their communication and reflections were aimed at the P@W Programme and not at this research study.

The ethnographic method was applied in the data collection and analysis research phases. **Qualitative** approaches were used to collect and analyse data on the characteristics of the e-learning practitioner and the e-learning practice, job demands, positive and negative motivators and so forth. These activities are discussed in detail in sections 3.8.2 to 3.8.8.

3.6.1 Survey method – exploratory phase

The first research goal, *to identify indices, categories, dimensions and person attributes of e-learning practitioners,* was addressed during the screening survey phase of the study. The initial focus of this goal was very broad, aiming at uncovering general characteristics of e-learning practitioners. Two data collection methods, namely a l**iterature review and** a **screening survey,** were used to collect the data. The results of the data analysis culminated in the formulation of a preliminary taxonomy of the characteristics of e-learning practitioners and a questionnaire was developed on “What is an e-learning practitioner?” The following paragraphs will report on these events.

3.6.1.1 Uncovering the characteristics of e-learning practitioners from the international domain

The literature review (Chapter 2) for this study demonstrated that the e-learning practitioner construct is elusive, complex and multifaceted. It is apparent from the literature that there are a vast number of characteristics listed as important personal attributes for the e-learning practitioner. A meta-analysis of e-learning practitioner characteristics as described in the literature uncovered some important personal attributes.

3.6.1.2 Meta-analysis of e-learning practitioner characteristics as described in the literature

A preliminary taxonomy of categories and indices (see Chapter 2, tables 2.7-2.15 for a summary) of the characteristics of e-learning practitioners listed eleven main categories. The nine categories on which the preliminary taxonomy is based are technical skills, curriculum skills, management style, teaching skills, personal/affective traits, communication style, teaching style; personality traits, and learning style. However, these categories are very broad, ill-defined and fuzzy, spanning a broad spectrum of person characteristics. In trying to understand this picture and to prevent it from becoming a few superficial brush strokes I realised that it was necessary to choose a focus area and also to refine the taxonomy in terms of definition.

3.6.2 Survey method – screening survey

Based on the categories and indices identified, a screening survey was developed aimed at refining the existing preliminary taxonomy. The resulting preliminary taxonomy was used as a framework for constructing a short screening survey of the characteristics of the e-learning practitioner, and this survey was conducted at the WebCT conference in April 2004 at Stellenbosch. The majority of the participants in this conference were lecturers at higher education institutions who were involved with e-learning practice. Statements for the survey were not directed at 'good' or 'effective' e-learning practice but were broad indices of the skills, styles and characteristics of the e-learning practitioner. Participants were simply asked to make choices from a predefined list with an invitation to add comments and more options. Indices such as professional knowledge and skills, technical, curriculum and teaching skills were frequently selected. Management and personal affective indices were not regarded as very important and brain preference was not selected. Specific skills and characteristics that were selected as important were instructional design and the development of course material; using the bulletin board; assessment competencies; teaching skills such as motivating, mentoring, active participation and creativity; personal/affective skills such as patience, flexibility and problem solving; communication skills such as continuous feedback and support for students; a facilitative teaching style; and the preferred learning style for the practitioner being one of sharing and experimentation.

The most important personality attribute selected indicated a practitioner who is motivated, creative and adaptable. Although this group did not select management skills as an important index of the characteristic e-learning practitioner, the majority of the participants selected time management, planning and organisational skills as important management skills. According to the participants *listening skills* were only moderately important, which is an interesting observation seeing that they felt that student support and continuous feedback were very important. According to Kemshal-Bell (2001), skills needed for e-learning that differ from face-to-face teaching relate to communication skills for synchronised communication, fast and real time communicative feedback and exchanges between e-learning practitioners and learners, as well as the technical skills needed in a fast changing environment.

3.6.3 Survey method – pilot survey

The results from the screening survey were used as input for the framework for developing a questionnaire on the characteristics of the e-learning practitioner. Only nine from the eleven categories were included. Professional knowledge and skills and brain preference were omitted. Professional knowledge and skills were regarded as an obvious choice, brain preference were discarded as an irrelevant category.

3.6.3.1 Development of questionnaire: "What is an e-learning practitioner?"

Various brainstorming sessions with an industrial psychologist from the Centre for Continuing Professional Development led to the development of a questionnaire focusing on the characteristics of the e-learning practitioner in terms of person attributes, mainly in terms of behaviour style, and excluding skills and competencies. The existing screening survey items were evaluated in terms of their focus and items that focused on skills or competencies were discarded. The remaining items were reorganised and listed as choices that participants needed to rank in terms of importance as characteristics of e-learning practitioners. Critical evaluation of this questionnaire by the researcher and the industrial psychologist from the Centre of Continuing Professional Development revealed that the questionnaire was inadequate. A new draft was therefore written using item chunks to structure the questionnaire.

3.6.3.2 Validation of questionnaire

Through a process of validation by a statistician at the Department of Statistical Support at TUT, the questionnaire was refined. An online version of the questionnaire was developed and colleagues from the Department of Telematic Education and the industrial psychologist from the Centre of Continuing Professional Development were asked to complete and comment on the questionnaire. Revisions were made before a pilot online survey was sent out to the Partners in the P@W Programme.

3.6.3.3 Pilot survey for Partners in the P@W Programme

An online pilot survey with the participation of the Partners in the P@W Programme was conducted in November 2004. However for various reasons, for example workload, pressure to participate in a mini research conference and end-of-the-year syndrome, the response rate was very low. I also realised that no matter what the specific conditions might be, this scenario might be typical for other e-learning practitioners as well. In spite of knowing that a low response rate to online surveys and questionnaires is more the rule than the exception in the online environment, I optimistically hoped for a significant reaction, but after only a few responses to the request for participation I accepted the situation.

This had implications for the study in terms of the proposed taxometric analysis of data. The original research goal was to collect data on the characteristics of the e-learning practitioner from relevant international e-learning communities (e.g. members of the ITForum discussion group). The analysed data would then have been used firstly to identify whether the emerging pattern types were dimensional or taxonomic, and secondly to describe the profiles of each pattern type. Then theory would have been put into practice by mapping the profiles of the Partners in the P@W Programme onto these profiles. To conduct a valid taxometric analysis a

minimum of 300 data sets is needed. I had made provision for the possibility that the response rate might fail to deliver 300 data sets, and thus planned for an alternative factor analysis to cater for a smaller number of data sets. However after the poor reaction to the pilot questionnaire, I decided that it was not worthwhile to follow this route. It also became apparent from the experience of my fellow researchers and colleagues that a low response rate to a call for participation in online questionnaires and surveys is a general limitation to research studies at higher education institutions. I then had to make a decision about the way forward.

3.6.3.4 Discussion on alternative data collection methods

Further brainstorming sessions with colleagues and various experts from the departments of Human Resource Management and psychologists from the Centre for Continuing Professional Development about possibilities for the way forward crystallised in the following:

- Streamlining the process by narrowing the focus to existing taxonomies.
- Using validated, reliable and tested measuring instruments for profiling.
- Narrowing the focus to e-learning practitioners at TUT.

The following paragraphs will elaborate on the choices made.

3.6.3.5 Streamlining the process by narrowing the focus

Through the ages, understanding human behaviour and interaction with the self, and social and environmental systems has been an intriguing and elusive endeavour. In our modern world, steamrollered by the pace and the magnitude of technological advancements, human behaviour and interpersonal communication come under immense pressure to adapt to new and changing environments. Understanding how people behave and deal with their environment, especially their work environment, has become more complex. This is illustrated by the explosion of activity in the research domains of human behaviour and industrial psychology (Wright & Boswell, 2002:255; Borman, Hedge, Ferstl, Kaufmann, Farmer & Bearden, 2003:287).

Research on personality in the workplace has resulted in a vast number of theories, models, taxonomies and typologies of personality types, traits and factors (Barrick & Mount, 1993:111; McCrae & Costa, 1997:509; Revelle, 2002). Bergh and Theron (2001:310) define personology (the study of personality) as, it “is about the consistent and repetitive patterns of behaviour, in both unique and universal aspects, which affect people’s functioning in the context of their environments”. They include all domains of human behaviour in the study of personality and continue by saying that personality theories provide conceptual and integrative systems or paradigms for explaining, describing and predicting human behaviour. Patton and McMahon (1999:10) describe the intrapersonal system of the individual as “composed of several intrapersonal content influences, including gender, age, self-concept, health, ability, disability,

physical attributes, beliefs, personality, interests, values, aptitudes, skills, world of work knowledge, sexual orientation and ethnicity" (Patton & McMahon, 1999:10). Other interrelated systems, for example social and environmental systems, interact with the complex intrapersonal system and the "processes between these systems are explained via the recursive nature of interaction within and between these systems, change over time and change" (Patton & McMahon, 1999:10).

Every system, including personality, is defined by essential characteristics which are interrelated, and the configuration of relationships is the pattern within the system organised from within by rules that govern their behaviour. Furthermore, Berens (1999) states that systems are "driven" to operate in certain ways. Understanding and working with the inherent operating principles can save energy. By forcing a system to behave in ways inconsistent with its nature, we expend energy and encounter resistance.

The e-learning practitioner as a complex system will interact with the work environment system in terms of working practice. Numerous influences will constantly impact on the dynamics of the interacting systems. One "cannot know a complex living system in any definite way, since it is constantly changing, adapting and evolving" (Berens, 1999) and it is not within the scope of this study to make a comprehensive study of human personality or human behaviour as a living system. Systems cannot be measured, but through the use of different lenses of focus they can be mapped (Berens, 1999). Looking at the person attributes/essential characteristics of the e-learning practitioner, contextualised in an e-learning work environment can, for the purposes of this study, best be mapped by measuring behavioural work styles manifesting in behavioural responses in the work environment.

The inquiry process was streamlined by focusing on measuring (1) the work behavioural styles of e-learning practitioners, (2) the job structures in their (3) e-learning practice environment using an existing measuring instrument.

3.6.3.6 Choosing validated measuring instruments for profiling

The Thomas International Personality Profile Analysis (PPA) was selected as measuring instrument. The PPA has been described as "a validated, non-critical, behavioural analysis that will emphasise a person's strengths and capabilities in the work environment" (Thomas International Resources. n.d.). Human behavioural pattern styles translated into the *DISC language* describe four basic organising principles. Combinations of these factors, expressed in a variety of different ways, provide an assessment of a person's behavioural style. A DISC profile reports a style or characteristic of behaviour in a work situation. Four factors

(dimensions) or “typical patterns of interaction” (Thomas International, n.d.) of the person in his working environment are important:

- Dominance (an active positive posture in an unfriendly environment), which represents how people react to challenges.
- Influence (an active, positive posture in a favourable environment), which represents how people influence other people to their own viewpoint.
- Steadiness (passive agreeableness in a favourable environment), which represents how people respond to the environmental pace.
- Compliance (a cautious, undecided response to an antagonistic environment designed to calm the degree of antagonism), it represents how people respond to rules and procedures set by others (Thomas International, n.d.).

Each DISC profile shows the relevant importance of the four DISC factors in a person’s behaviour. These four factors have different properties and subtraits and may lead to more than 1400 variations of analysis (Thomas International, n.d.). These combinations facilitate complex interpretations of behaviour style.

3.6.3.7 Narrowing the focus to e-learning practitioners at TUT

Although the PPA is not a clinical instrument and is not intended for diagnosing abnormal behaviour, only trained, registered persons may perform a PPA. In South Africa, Thomas International does not offer its services to individuals but only to business organisations, hence for me to have used the PPA on a wide scale would have been very difficult, if not impossible. I contacted the registered Thomas International analyst (industrial psychologist) employed by TUT, who liaises closely with a consultant analyst from Thomas International, and we decided that it was possible to use the PPA for data capturing and analysis of the characteristics of the e-learning practitioner at TUT.

For this study, the survey technique was used to collect data on the personal profiles of the population of e-learning practitioners (to answer research question 1) and to obtain data on the human job requirements for e-learning practice (to answer research question 2). Tested, standardised questionnaires were applied as data collection instruments. Reliability and validity standards were adhered to by using a formal standardised inventory form provided by the company, Thomas International, and the computerised data analysis was done by an analyst from the same company. Ethical considerations were applied to ensure that the inquiry was conducted ethically. The datasets were integrated to determine the goodness of fit between the person and the job to answer research question3 (see Table 3.4).

3.6.4 *Ethnography method – data collection methods*

Surveys and ethnography can fulfil a dual purpose in research and may be used either as research methods or as tools/techniques for data collection. Table 3.4 positions these techniques in the current study.

Table 3.4: Research techniques with respect to the research questions

Techniques / Research questions	Survey PPA	Survey HJA	Rapid virtual ethnography: online communication	Rapid virtual ethnography: recording techniques	Scenario building	Participant observation	Interviewing	Self-reported feedback
Q1	X		X	X	X		X	X
Q2		X	X	X	X	X		X
Q3	X	X	X	X				X
Q1: What is the latent structure of the e-learning practitioner construct in terms of person attributes?								
Q2: What is the latent structure of the e-learning practitioner construct in terms of work environment context?								
Q3: How do the work environment and the person attributes fit together in the structure of the e-learning practitioner construct?								

The PPA and HJA datasets were enriched by qualitative data obtained from rapid virtual ethnographic techniques using data sources such as bloggers and online discussions, as well as from scenario building focus groups (expert consensus group and instructional designers), interviews, direct observation and self-reported feedback and documents (questionnaires, essays and summaries). The following sections will elaborate on the sources of evidence and the data collection and analysis research phases.

3.7 Sources of evidence

One of the most “important elements for doing case studies is the researcher’s ability to handle a variety of evidence derived from the diverse data collection techniques” (Yin, 1998:230). In line with this statement I used seven sources of evidence: **survey** profiles on PPA and human job requirements, **interviews**, **direct observation** of the expert consensus group, **documentation** (e.g. consent form question, essays and summaries), **archival records** (e.g. reflective diaries [bloggers]), and **self-reported feedback** from the participants (e.g. focus group questionnaires). These sources of evidence were tapped during the data collection phase using a variety of methods that ranged from informal conversational interviewing to formal survey methods and are in Table 3.5.

Table 3.5: Sources of data

Source	Clarification	Strengths	Weaknesses	Code	Appendix
Total e-learning population at TUT Survey	PPA: A quantitative data collection method used to inform the study on the characteristics (behavioural styles) of the e-learning practitioner. The HJA defines the requirements for e-learning practice. For the purpose of this study, the PPA and the HJA tools were chosen as data collection and analysis instruments to report on profiles of behaviour styles in a work situation. Data analysis was done by qualified analysts. (For this study the data analysis and accompanying reports were done by a registered industrial psychologist and Thomas International Analyst from the Centre for Continuing Professional Development at TUT and by an analyst of Thomas International Pretoria. Consultation services were rendered by analysts of Thomas International – Pretoria and Cape Town.	The PPA and the HJA complement each other to provide the researcher with a **very comprehensive** description of the P-J fit. It is a **validated reliable instrument** supported by international status (see attached Appendix C14 for details). The instrument is **customised** for the South African work environment. These instruments are elegant, easy-to-use, validated tools instrumental for reaching the research aim, namely the development of a structure that will clarify the e-learning practitioner construct. The PPA and HJA focus on the main research interests namely, the working environment and the person attributes for this environment.	Costly procedures Lack of accessibility for privacy reasons.	PPAs HJAs	C1 C2

Table 3.5: Sources of data (continued)

Source	Clarification	Strengths	Weaknesses	Code	Appendix
TUT e-learning practitioners. Interviews	Informal conversational interviews with each of the e-learning practitioners at TUT took place during the first contact session. Very informal conversation, guided by one question: 'Tell me about your e-learning practice.' The aim of this conversation was to acquire information about the e-learning practitioner's feelings about/perceptions of his/her e-learning practice at TUT.	Non-threatening, open-ended question in an informal setting to put the respondent at ease. The conversation was free flowing and no field notes were taken during this conversation.	The fact that field notes were made after the conversations took place might be a weakness in terms of the limitations of the researcher's memory. However great care was taken to keep verbatim quotations.	F2F	C3
Expert consensus group Participant observation	The expert consensus group conducting the HJA protocol was observed by the researcher. Care was taken to use member-checking procedures to verify the procedure and content.	Reality – covers events in real time Contextual – covers context of event Insightful for interpersonal behaviour and motives (Yin, 1998:231).	Time consuming.	PO	C4
Expert consensus group Focus group	The expert consensus group conducted a HJA for the e-learning job protocol was observed by the researcher. Care was taken to use member checking procedures to verify the procedure and content (24-29 June 2005).	Targeted – focus on the study topic. Insightful into interpersonal behaviour and provides perceived causal inferences (Yin, 1998:23).	Time consuming.	ECG	C5

Table 3.5: Sources of data (continued)

Source	Clarification	Strengths	Weaknesses	Code	Appendix
Total e-learning population at TUT Documentation	Consent form question: One question on the consent form asked for information about the time period of the person's e-learning practice. One open-ended question on the consent form asked the participant to name the most important characteristics of e-learning practitioners.	The combination of the consent form and these very short questions was cost-effective in terms of reproduction costs, and saved time and effort on the participants' side. The forms could be retrieved repeatedly – exact and stable (Yin, 1998:231).	Some participants did not complete the question.	Char1	C6
Instructional Designers from Telematic Education at TUT Virtual focus group	A virtual group consisting of the Department of Telematic Education instructional designers, including the researcher, generated criteria for star performer selection (7-17 July 2005).	Documentation is stable and precise.	Some participants did not complete all the questions.	VG	C7
Partners Focus group	Reflective essays written by the Partners on 17 May 2005 to contribute to the corpus of research data required by the P@W Programme, and was not focused on providing information specifically for this study. These documents required the Partners to reflect on their experiences, perceptions and coping strategies regarding their use of new technologies in the P@W Programme.	Documentation is stable, precise and qualitative, providing rich data for analysis.	Reporting bias – reflects (unknown) bias of author (Yin, 1998:231).	Essay	C8

Table 3.5: Sources of data (continued)

Source	Clarification	Strengths	Weaknesses	Code	Appendix
Partners Archival records	Reflective diaries (Blogger entries) written by the Partners over the time period of one year from June 2004 to June 2005. The aim of these Blogger entries was to create opportunities for the Partners to voice their feelings, concerns, perceptions and recommendations regarding the Programme.	As mentioned above.	As mentioned above.	Blog	C9
	Reflective communication between the Partners in the e-moderating module of the Programme, written by the Partners over the time period of six weeks from 5 October to 15 November 2004. The aim of this course was to allow the Partners to experience the world of the e-moderator and to create opportunities for participation in this environment. Partners used online discussions to communicate their views.	As mentioned above.	As mentioned above.	eMod	C10
	Research summaries written by the Partners on 17 May 2005, to contribute to the corpus of research data required by the P@W Programme. Partners had to reflect on their research projects conducted during the P@W Programme.	As mentioned above.	As mentioned above.	RS	C11

Table 3.5: Sources of data (continued)

Source	Clarification	Strengths	Weaknesses	Code	Appendix
Partners Questionnaire for self-reported feedback completed during research day focus group session	As one of the research data collection activities on 17 May 2005, the Partners were requested to complete a questionnaire consisting of 8 questions. One question asked their opinion on the most important characteristics of e-learning practitioners (Char2) and the remaining open-ended questions focused on how they perceived the 5 distinct roles that they played as e-learning practitioners in the P@W Programme and to identify the job demands, distracters and releasers in their e-learning practice.	Answers to questions are easy to retrieve, qualitative, providing rich data for analysis. Open-ended questions create opportunities for creative reporting and uniqueness from the participants.	Although the open-ended questions create unique response opportunities, they may sometimes limit the responses of participants who do not feel comfortable expressing themselves in their second or third language.	Char2 FGQues	C12 C13

The combination of the range of evidence methods is an important aspect when defining the "facts" of the case (Yin, 1998:232), therefore it is appropriate to maintain a balance between the focus on the richness and depth and "the 'opening up' of new ideas and interpretations of the phenomenon under investigation", the focus on the relationship between the unit of analysis and the setting and the focus on "the contextual meaning within the bounded system" (Christie *et al*., 2000:11). According to Yin (1998:232-233) the "methodological goal is to apply the concept of triangulation to highlight the complementing ideas from different angles, using different sources of evidence".

One basic definition of case studies is their reliance on multiple sources of evidence (Yin, 1998:230) to "derive through induction a holistic understanding of a particular bounded system, rather than discovering through deduction universal generalizable truths" (ERIC, 2002:7).

3.8 Data collection instruments

The above-mentioned data sources were tapped by a mixture of data collection methods ranging from informal conversational interviewing and direct observation to systematic text and survey analyses.

3.8.1 DISC profiling

3.8.1.1 DISC behavioural style profiling

Marston (see section 2.6.5.5.1), postulates that all four of the DISC dimensions might be displayed in a general behaviour style, but that one or two work behavioural styles are more prominently displayed in the work environment (Thomas DiSC Systems, n.d.). Combinations of the factors that constitute these behavioural styles provide a basis for assessing a person's behavioural style. Development of the 'DISC Graph' or 'DiISC Profile', a graphical presentation of aspects of a person's behaviour, enhances understanding of the complex results produced by a behavioural profile (Discus Online n.d.).

3.8.1.2 The development of the DISC profiling system

Having proven its value in the late 1930s as part of the US army's recruitment process, the DISC profiling system became popular in a more general recruitment setting (Synergi, n.d.). With the development of computer software it also became more user-friendly and according to various groups became a widely used behavioural assessment tool worldwide (Thomas International Career Consultants, 2003; ManCom Team, n.d.; RP Cushing Recruitment, n.d.; Geier Learning International, n.d.; Axiom DISC, n.d.).

Dr Thomas Hendrickson refined Dr Marston's work and founded the Thomas Profiling System in the early 1960s (Thomas International, n.d.). Hendrickson adapted and developed the technology to meet the requirements of commerce and industry and his work has since gained widespread recognition as one of the "most successful methods of determining human behavioural styles in the working environment" (Thomas DiSC, n.d.). Since that time, the system has been widely implemented as a managerial aid to "recruiting, selecting, training, counselling, career planning, team bonding and team management around the world" (Thomas International Career Consultants, 2003; Thomas International Homepage, n.d.). According to statistics captured from the Thomas International website their global presence over the past 15 years included:

- 4 million assessments in 49 different languages;
- 30,000 clients;
- offices in over 50 countries;
- over 350 trained consultants, and
- there are 1428 variations of analysis for each report available (Thomas International Career Consultants, 2003).

For the purposes of this study the DISC workplace inventories were used for capturing (1) the personal profiles of the e-learning practitioners at TUT, (2) the profile of the e-learning

practitioner's job at TUT and (3) the relationship between these two in terms of their 'goodness of fit'.

3.8.1.3 The DISC behaviour styles

The following description of the basic assumptions of the DISC application, as well as the different DISC personality styles, is quoted from the resources and is not my own interpretation. The reason for this is that the DISC analysis is concerned with precise terms and to prevent confusion in interpretation I have used the descriptions as cited in the resources.

One of the basic assumptions of the DISC behaviour style analysis is that there are four basic behaviour styles, none of which is better or worse than any other. The four styles are:

- Dominance – how you handle problems.
- Influence – how you deal with people.
- Steadiness – how you pace yourself.
- Compliance – how you follow rules and procedures (WITT Communications, n.d.).

In addition to this basic assumption, WITT Communications list five more on their website (http://www.wittcom.com/what_is_disc.htm):

- Your dominant style influences the way you act, react and interact.
- Each style has its own characteristic strengths and weaknesses.
- The behavioural patterns of one style tend to conflict with those of the other three styles, making it easier to get along with people of the same style.
- The behavioural patterns of one style can complement those of the other three styles, making it more advantageous to work with people of a different style.
- To create effective working relationships, it's helpful to understand and adapt to the behavioural styles of the people you are working with (WITT Communications, n.d.).

A concise description in Table 3.6 of each DISC style will differentiate the style in terms of how persons with different styles deal with power, with other people, with change and with rules and procedures.

Table 3.6: Comparison of the different work behaviour styles

(adapted from WITT Communications (n.d.) and Thomas International Resources (n.d.))

Work behaviour styles		
"D" work behaviour styles	Competition, high performance standards, achieving goals, solving problems and challenges are high on the "D" list. They are concerned about results	
	Focus	Power
	Communication style	Tell
	Managerial style	Autocratic
	Motivators	Tangible goals
	Fears	Failure
	Question	What?
	Engages	Force of character
"I" work behaviour styles	Networking, conversation, working with others is high on the "I" list. They like people and want to be liked, are charming, optimistic and outgoing	
	Focus	People
	Communication style	Sell
	Managerial style	Democratic
	Motivators	Recognition and social inclusion
	Fears	Rejection
	Question	Who?
	Engages	Personality
"S" work behaviour styles	Hard work, creating a stable environment and the team are high on the "S" list. They are concerned about relations, are sympathetic, friendly, good listeners, "finisher completers"	
	Focus	Pace
	Communication style	Listen
	Managerial style	Procedural
	Motivators	Job contract and group inclusion
	Fears	Insecurity
	Question	Why?
	Engages	Experience
"C" work behaviour styles	Systems, processes, procedures and predictable and consistent outcomes are high on the "C" list. They have high standards, especially for themselves and can be perfectionists. They are concerned about accuracy and research every aspect of a situation and consider every possibility before making a decision.	

Table 3.6: Comparison of the different work behaviour styles (continued)
(adapted from WITT Communications (n.d.) and Thomas International Resources (n.d.))

	Focus	Policy
	Communication style	Write
	Managerial style	Unpredictable
	Motivators	Job specification and rules
	Fears	Conflict
	Question	How?
	Engages	Know-How

3.8.1.4 Description of DISC Factors

Each DISC profile shows the relevant importance of the four DISC factors in a person's behaviour. These factors have different properties and sub-traits and may lead to more than a million different combinations (Axiom DISC, n.d.) and 1428 variations of analyses (Thomas International, n.d.). These combinations facilitate complex interpretations reporting on behaviour style.

A summary of the DISC factors or "typical patterns of interaction" as described by Thomas International (n.d.) entails the following:

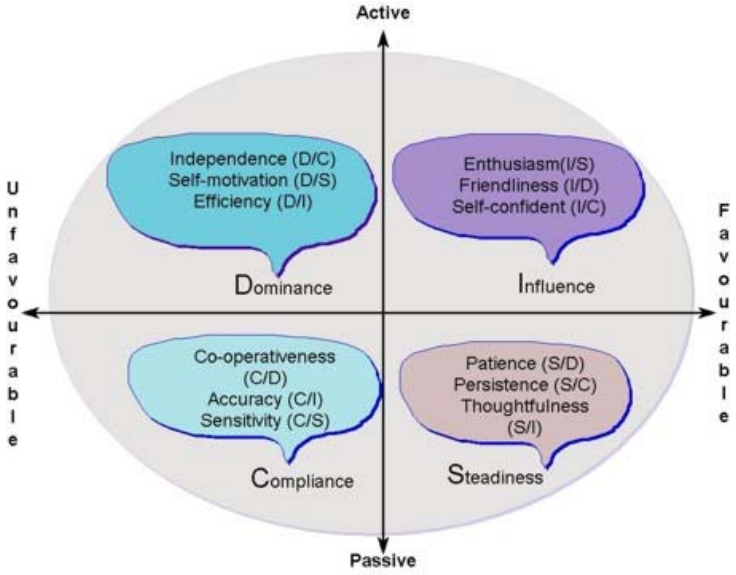
- Dominance focuses on POWER. Keywords describing this factor are *inter alia*: Driving, competitive, direct and self-starter.
- Influence focuses on PEOPLE. Keywords describing this factor are *inter alia*: Influential, verbal and communicative.
- Steadiness focuses on PACE. Keywords describing this factor are *inter alia*: Dependable, good listener, persistent and kind.
- Compliance focuses on POLICY. Keywords describing this factor are *inter alia*: Careful, perfectionist, precise and compliant (adapted from Thomas International, n.d. and ManCom Team, n.d.).

The 12 sub-traits, one for each possible pair of factors, enhance understanding of the relationship between factors in a profile (Axiom DISC, n.d.). The sub-traits as described by Axiom DISC (n.d.) are listed below in Table 3.7.

Table 3.7: DISC Sub-traits (adapted from Axiom DISC, n.d.)

List of DISC Sub-traits	
Sub-trait	**Refers to individuals**
Accuracy (C/I, sometimes called Caution)	With the main goal to "get things just right"
Cooperativeness (C/D)	Who prefer to work in team
Efficiency (D/I)	Who is primarily motivated by results
Enthusiasm (I/S)	With animated, expressive behaviour
Friendliness (I/D)	Who are open and warm to others
Independence (D/C)	Who follow their own goals
Patience (S/D)	Who are calm and unobtrusive
Persistence (S/C)	Who display dogged, tenacious behaviour
Self-confident (I/C)	Who have social confidence
Self-motivation (D/S)	Who are go-getters/self-starters
Sensitivity (C/S)	Who are observant and aware of their environment
Thoughtfulness (S/I)	Who think their actions through carefully

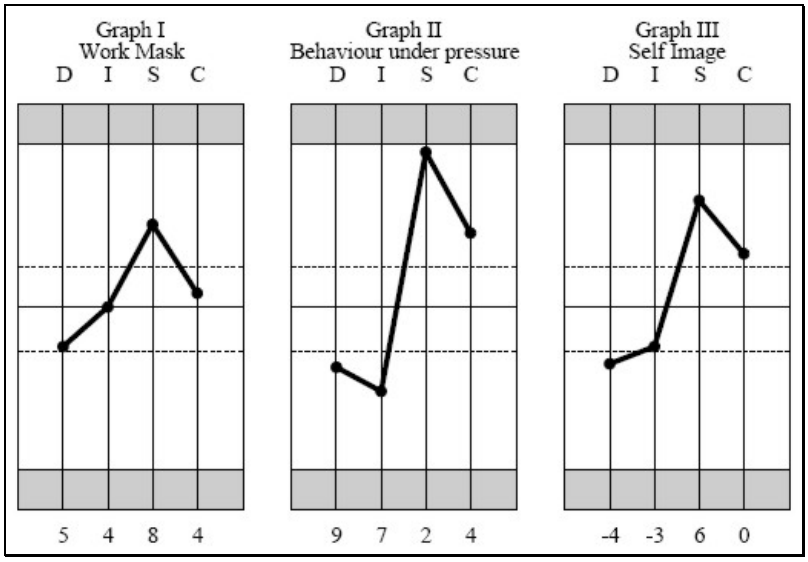
These sub-traits can graphically presented as:



For example, if a person's profile shows a high Steadiness score and a low Influence score, that can be interpreted as the person being thoughtful and this can be used as a context for interpretation (see Figure 3.13 for example of S/I graphical presentation).

Figure 3.13: Example of a DISC profile

showing a high Steadiness and low scores for Dominance and Influence factors in the self-image graph.



The factors in the DISC profile relate to particular style of behaviour, and the DISC profiles provide scope for interpretation to provide information such as the (1) individual **traits** that a person possesses or lacks, and how they are presented in the person's behaviour and (2) profile tension which reveals how much stress a person was experiencing at the time of completing the inventory, coping with stress and possible sources of stress.

3.8.1.5 What is a Thomas Personality Profile?

The Thomas International Personal Profile Analysis (PPA) has been described as “a validated, non-critical, behavioural analysis” that will report on a person’s work style behaviour with an emphasis on strengths and capabilities in the work environment (Thomas DiSC Systems, n.d.). The PPA is not a clinical test and the participant cannot ‘pass’ or ‘fail’ it (Thomas Disc Systems, n.d.). To complete the PPA, the user is asked to choose two options from a list of four words in each of 24 rows; the user will mark the word that described him/her the **most** and the **least** (Thomas International Resources, n.d.). These choices are scientifically charted and analysed by a trained analyst who will give feedback to the participant regarding his behaviour in the work situation. The results are plotted on a graph known as a 'DISC profile'. Feedback acceptability to the user is enhanced by the fact that it is a self-report instrument (Thomas DiSC Systems, n.d.). These personality profiles may help the worker to make career decisions, develop personal strengths, recognise personal qualities and motivators, develop self-awareness and create opportunities to change (Thomas International Resources, n.d.).

3.8.1.6 PPA for e-learning practitioners at TUT

Data capture and analysis of the characteristics of the e-learning practitioner were conducted on two levels, namely the organisational level, including all e-learning practitioners at TUT, and the programme level, including all the Partners in the P@W Programme. These actions are briefly recapped in the paragraphs here below.

3.8.1.6.1 Distribution and collection of PPA forms

Administration of the PPA to the e-learning practitioner at TUT involved the following:

- selection of e-learning practitioners;
- scheduling appointments with participants;
- requesting participation in study;
- requesting completion of the consent form;
- requesting completion of the open-ended question on the consent form;
- explaining the PPA and the procedure;
- requesting completion of the PPA form, and
- face-to-face conversations with the practitioners on how they perceive their e-learning practice.

3.8.1.6.2 Selection of e-learning practitioners at TUT

To identify the e-learning practitioners at TUT a name list of current practitioners was obtained from the Department of Telematic Education. The population list (108 e-learning practitioners

including the Partners from the P@W Programme were listed for 2005) was generated from information given by the WebCT administrator at Telematic Education, TUT. All the persons on the list were included in the study. Although for the purpose of this study I have chosen the term 'e-learning practitioner' to describe this group, one must keep in mind that these practitioners do not practise as e-learning practitioners per se; most of the time they have normal traditional lecturing duties as well.

An industrial psychologist from the Centre of Continuing Professional Development facilitated a data collection session with the Partners and they completed the PPA forms on 3 August 2004. The data were analysed and reports printed on 24 August 2004. Thirteen from the fourteen forms were valid and personal feedback about the PPA was given to the Partners on 26 October 2004. With the permission of the Partners these results were archived at the Centre of Continuing Professional Development and were retrieved by the researcher for quantitative and qualitative analysis during the period June –September 2005.

A total of 94 e-learning practitioners (excluding the Partners) was approached between the time period 16 May 2005 and 24 June 2005. This time period was crucial for three reasons : firstly, before that date practitioners were not easily available because they were presenting classes; secondly during this time they were busy marking examination papers, thus were mostly busy in their offices; and thirdly, the University closed on 24 June 2005 for the recess break, meaning that after 24 June 2005 none of the lecturers would have been available on campus.
From the population list 69 percent reacted positively and 56 percent completed the PPA forms, the consent forms and the short questionnaire consisting of two questions (see Appendix C6). Fifty-nine face-to-face, unstructured interviews were conducted during the data collection phase. The personal conversations were focused on an informal question relating to "Please tell me how you use e-learning in your environment?" (see Appendix C3).

3.8.1.6.3 Scheduled appointments

A number of communication methods were used to make appointments with the practitioners. Initially, starting with the first name on the list, each person was telephoned to make an appointment. However, because of a lot of to and fro phoning between me and the practitioners, I changed the strategy to the next best option, namely using personalised emails. This worked well but was also time consuming. So I opted for the next best option namely to group people from one department and contact them as a group by sending one email to the group. This worked well and time was used more efficiently. From time to time these emails were followed up by a personal telephone call. After the appointments were scheduled I personally visited each person who reacted on the calls or emails.

3.8.1.6.4 Completion of the PPA form

A total of 60 people (excluding the Partners) reacted to my call for participation. During these contact sessions the aim of the study was explained and participation requested. If the person responded positively a consent form (see Appendix C6) and the PPA form (Appendix C1) were discussed with them. If they indicated interest, an HJA form (Appendix C2) were also provided. On completion the forms were collected and the participants were told that by entering personal details on the forms provided they would indicate that they wanted to receive feedback on their finished PPA and/or HJA. These feedback reports would be communicated in individualised face-to-face feedback sessions after completion of this study. The participants could benefit from the information gained from the Thomas International Profiling instruments.

I also used the initial face-to-face meeting to conduct an informal interview session. I asked one unstructured question namely: “Please tell me how you use e-learning in your environment?” This was done in a conversational manner and no means of recording was used during these sessions. Responses were charted on a spreadsheet afterwards as part of a feedback report (see Appendix C3).

Two questions accompanied the consent form, the one gathered information on the length of their e-learning practice and the other was an open-ended question, namely “In your opinion, what are the outstanding personal attributes (characteristics) of an e-learning practitioner?” (see Appendix C6). Responses to these questions were analysed and a list of descriptive words and lengths of e-learning practice were compiled.

Some of the participants asked to complete the form in their own time and in such cases I collected the form later.

In the TUT group 60 persons (64%) reacted to the call for participation, seven people (7%) lost interest and did not react to follow-up emails, seven (7%) promised to take part but never did and 46 (50%) actively participated.

3.8.1.6.5 Descriptive details of the e-learning practitioner group at TUT

A summary of the descriptive details of the e-learning practitioners at TUT relating to population and group composition is displayed in Table 3.3.

The excellent response from the e-learning practitioners resulted in a representative division between the different faculties at TUT. Apart from the Partners who were selected per faculty, e-learning practitioners from all eleven faculties took part in the study. However, for ethical reasons, I decided not to disclose the faculty/profile distribution.

3.8.1.6.6 Analysis of PPA forms

The completed PPA forms were delivered to the analyst who scored and analysed them between 13 June and 14 July 2005. Only two forms was invalid and was discarded.

3.8.1.6.7 Report format and meaning of the graphs

A computer-generated report for each individually completed PPA form, gives feedback and a graph on self-image in terms of how the person described him- or herself; on self-motivation; job emphasis; descriptive words of the personal profile; how others see the person (work mask); behaviour under pressure; general comments and also a list of motivators that would motivate this person in the work environment. Three graphs accompany each written report. For illustrative purposes in this study only the graphs on self-image will be used. Resource information on the graph descriptions was kindly supplied by the Thomas International analyst consultant.

Discussion on profile details is given in Chapter 4.3.

3.8.1.7 Introduction to HJA

At TUT no formal “e-learning” job exists, nor is there a job description for an e-learning practitioner. Over the past six years all lecturers who participated in multimode teaching and learning activities were either engaged in various Telematic Education projects, or were involved in the design, development or implementation of WebCT courses. None of these lecturers had been appointed as e-learning practitioners and their involvement in the e-learning environment was motivated mostly by their own interest. Involvement in e-learning activities meant an increase in their existing workload.

In my search for clarification on e-learning practice, as embedded in the work context at TUT, I took a closer look at existing informal practices but also focused on a more in-depth analysis of the job of the e-learning practitioner. Thomas International Systems provides a tool that can assist in such an endeavour, namely the Human Job Analysis (HJA). As illustrated in the previous subsection, this tool can be used to describe human behavioural functions and is designed to specify behavioural requirements of a job function. “What is being described are actions and attitudes which form a particular pattern and can commonly be defined as exemplifying a behavioural characteristic” (Thomas International, n.d.). The HJA is an integral part of Thomas International Systems, and the criteria used are the four factors that are also used in the PPA, namely Dominance, Influence, Steadiness, and Compliance.

The benchmark created by the HJA is the most critical component for specifying the job function and if the benchmark is inaccurate the resulting job match will be equally mismatched.

3.8.1.8 Benchmarking the job of the e-learning practitioner at TUT

The process of benchmarking consists of a number of different steps:

- Group selection and composition.
- Collection of relevant resource material.
- Discussion on fundamental questions before completing the HJA.
- Completion of the HJA form.
- Enrichment of the theoretical job benchmark.
- Validation of HJA profile to the profiles of the star performers.
- Construction of master profile.
- Full description of HJA.

General guidelines for conducting the HJA (adapted from The Human Job Analysis by Thomas International) and creating a benchmark for the job of the e-learning practitioner are outlined below.

3.8.1.8.1 Selection of expert consensus group

According to the guidelines prescribed by Thomas International, an HJA must be completed by a group consisting of at least four people. The preferred group composition should include two people who know the job but are not holders of the job; one person who has a holistic picture of the organisation; and one person who is a trained Thomas analyst.

Thus I had to make decisions about the composition of the expert consensus group and who to include based on the guidelines from Thomas International. I eventually chose a manager from the Department of Telematic Education, two successful Partners from the P@W Programme and two star performers from different faculties at TUT. I also included myself under the supervision of the Thomas International analyst at TUT.

3.8.1.8.2 The rationale for these choices

The manager from the Department of Telematic Education had an overall vision of the organisational needs and interactions, was actively involved in the design, development, implementation and evaluation of the P@W Programme, and also had first-hand experience as an e-learning practitioner, instructional designer and higher education lecturer. The expertise and experience of this manager covered a holistic job spectrum, and this person would be able to contribute from the macro- to the micro level.

The two Partners had received a comprehensive capacity building and training programme concentrating on the five main roles that the e-learning practitioner plays in the e-learning environment. They had both completed all the given assignments and tasks and had also used

all the prescribed technologies in the courses they had developed. They had also implemented their courses successfully. However, it is important to note that they were selected to participate in the P@W Programme by their faculties and had limited or no previous experience of e-learning practice. Thus whilst they had a very comprehensive and intensive theoretical training in this field, their actual practical application in the field was limited. Nevertheless, they were selected on the grounds of the overall spectrum of their acquired and applied knowledge in the field of e-learning practice.

The two star performers were selected from a small group of e-learning practitioners at TUT who actually “do the job”. These lecturers had formal registered Telematic Education projects, but had received no formal training as e-learning practitioners. Although project specifications included support from the Department of Telematic Education, no formal training programme had been presented. These lecturers were self-starters who excelled in spite of difficult and demanding circumstances. Thus whilst they did not have the theoretical background and training that the Partners had, they had the practical experience .

3.8.1.8.3 Completion of the HJA form

The HJA form consists of 24 statements about job performance. The rater rates each question bearing the successful performance of the job in mind and places a dot in the appropriate box. The choices are Very Low; Low; Significant; High; and Very High, based on the relative importance of the job. As indicated on the form, the factors selected are filtered through the relevant colour blocks and scored accordingly. The results are charted as a graph on the provided human job description axis.

3.8.1.8.4 Preparation for the expert consensus group meeting

In preparation for the HJA session, each expert consensus group member, with the exception of the manager from Telematic Education, completed an HJA form without scoring it. At the group discussion held on 24 June 2005 in the virtual classroom at the Department of Telematic Education, the group commented informally on the item list on the HJA form whereupon the session commenced.

To enrich the discussion about the HJA, information about the job should be gathered and shared amongst the group. The most relevant sources of information would include a job specification and details of job functions and job performance criteria for future job assessment. However, for this specific expert consensus group meeting no documentation was distributed because no formal documented information was available.

Before completing the HJA a useful exercise is to discuss fundamental questions about the job. This exercise was not necessary however because discussions about e-learning practice had already taken place during individual informal face-to-face interviews with the TUT e-learning practitioners.

I conducted the expert consensus group meeting under the supervision of an industrial psychologist from the Centre for Continuing Professional Development at TUT.

3.8.1.8.5 Various methods for completing an HJA

Three methods for completing an HJA are proposed in the Thomas International guidelines and will be discussed briefly here below.

1. Method one

Each member of the group selected to participate in the HJA completes the HJA form, scores it and draws up the graph. This must be done in isolation before the group meeting. When the group meets to complete the HJA, each person will present a graphic representation of their own HJA. A range of individual perceptions of the job requirements and functions will be on the table and will stimulate discussion. Differences must be discussed and a common perception sought before finalising a team HJA.

2. Method two

Each member of the group selected to participate in the HJA completes an HJA form but does not score it. In the group meeting one person gathers all the forms and draws up a group form. Corresponding answers are accepted and charted. Wide differences in answers must be discussed to arrive at a compromise. Thomas International guidelines suggest that there should be agreement on approximately 16 of the 24 questions. Only exceptions require discussion and after consensus has been reached the form is scored and one HJA constructed.

3. Method three

The group selected to participate in the HJA completes an HJA for more than one position at a time, for example, the position in question, the position to which this position will report, as well as a position alongside but different to the one being assessed. Group members are assigned to a particular HJA and answer the questions one at a time for each position. The Thomas International analyst leads the group question by question, providing interpretation from the back of the form as required.

Positions alongside the e-learning practice are that of teacher or lecturer and instructional designer. Job descriptions for both these positions were available and furthermore the HJA results on the job requirements for the position of instructional designer were available. Instructional designer groups from both the University of Pretoria and the TUT contributed to such a job description. However, in an attempt to streamline the process and to focus the expert consensus group activity, it was decided to choose the second method of completing the HJA.

3.8.1.8.6 Choosing a method for completing the HJA

The second method was chosen as it was best suited to the needs of the specific expert consensus group. Each group member had their completed HJA form ready and, as I read each individual statement on the HJA form, they were asked to give their answer. If the answers corresponded they were charted on a new “group” form. If the answers differed widely we read the question explanation on the back of the form and discussed the meaning of the statement and then charted the compromise arrived at. After a two-hour discussion session, the group was satisfied with the results. The new “group” form was scored and I constructed one HJA (see Appendix D2 for an example).

3.8.1.8.7 Description of the HJA instrument

The HJA form consists of 24 statements, falling into four groups of six statements each. Each group represent a different DISC factor. The form asks the users to “address the human demands of the job, to rate these on a four point scale and to construct a visual profile based on the summation of these “points” for each of the four clusters of statements” (Irvine, 2003:16). Transformation of the points system into graphs provides patterns for comparison with the PPA graph, thus allowing for the person to be compared to the employer’s job prescriptions. Refer to Table 3.4 for positioning the PPA and HJA in terms of answering the research questions.

3.8.1.8.8 Validity and reliability of the Thomas International System instruments

International studies established the construct and criterion related validity, internal consistency and test-retest reliability of the PPA under various circumstances (Hall, 1999; Inscape, 2005; TI correspondence, 12 April 2005, Appendix C21). According to the documentation provided, Thomas International followed the draft suggestions of the International Test Commission to ensure that they comply with international criteria for computer-based assessment procedures, can be applied to all employees, are not biased against any employee of group and also provide a scientifically based service to an international business community of nearly 70 000 organisations in 52 countries across more than 40 language groups (TI correspondence, 12 April 2005) (see Appendix C14).

3.8.2 Interview

Informal conversational interviewing was used to obtain data on the e-learning practitioners' view on their e-learning practice. As already described in section 3.8.1.6.4 only one question was posed to the participants: 'Please tell me how your use e-learning in your environment?'. Initial contact, during which I explained the aim of my study, had already been made through telephonic and/or e-mail communication, therefore the face-to-face meetings were continuations of our conversations. I maintained a relaxed, informal approach in a "tone of friendly chat" (Denzin & Lincoln, 2003:86). I did not restrict the time allocation for each meeting, but adapted to the ever-changing situations. The interviews had three purposes, namely to ask participants for their participation in the study, and if willing to participate to complete the consent form and respond to the open-ended question on the consent form. The third purpose of the interview was to explain the PPA and HJA forms and to ask for completion of these forms. Special considerations on my side were to try and remain on the topic of inquiry, to avoid getting involved in "real" conversation and to use language that created "sharedness of meaning" (Denzin & Lincoln, 2003:86) which was understandable for the participants. I was at a considerable advantage as far as rapport and the development of trust was concerned because the participants and I worked in the same the e-learning environment at TUT. Although we hold different positions, I could understand their frames of reference in terms of their e-learning practice. Asking questions and listening to the answers were meaningful ways of generating data. Refer to Appendix D3 for an analysis of the participants' responses. Refer to Table 3.4 for positioning the interview in terms of answering the research questions.

3.8.3 Participant observation

The aim of the expert consensus group's activities was to create job requirements for the e-learning practice at TUT. Although the procedures for this organised discussion and for plotting the HJA were followed as prescribed by Thomas International (described in section 3.8.1.8.3), an unexpected opportunity for participant observation occurred during this session. Valuable additional information on not only job characteristics, but also the participants' perceptions and feelings about the value and reliability of the contributions from expert consensus group, were added. Through participative observation the researcher could record the finer nuances that emerged from the interaction and behaviour of the group. Thus participative observation in a focus group not only contributes to understanding multiple viewpoints on a given topic, but also to enrich knowledge of the topic. Refer to Table 4.35 for a detailed reflection on the group's viewpoints. Refer to Table 3.4 for positioning participant observation in terms of answering the research questions.

3.8.4 Instructional designers virtual focus group

"Star performers" can be described as the people whose job performance can be rated as exemplary. To define star performers, colleagues (instructional designers) from the department of Telematic Education were asked for their opinion. In a virtual focus group using email they were asked to describe a star performer in the field of e-learning practice at TUT and to identify star performers in their faculties (see Appendix C7).

3.8.5 Expert consensus group

The expert consensus group conducted an HJA for the e-learning job protocol, which was observed by the researcher. Care was taken to use member-checking procedures to verify the procedure and content. The advantages of using an expert consensus group for designing a job profile were a targeted focus on the topic, the incorporation of various viewpoints from management and practitioners, and the valuable contribution of rich information from well-established experts. The general disadvantages of using focus groups were minimised by the HJA protocol. Therefore a formal protocol contributed to equal participative opportunities for all participants. The facilitator (researcher) followed the prescribed HJA protocol, which focused on the task at hand. Therefore sensitive or personal information was not part of these discussions and negative influences such as mistrust between the participants were not observed.

Section 4.4.2 describes the HJA protocol that was followed by the expert consensus group and the results of the analysis in detail. Refer to Table 3.4 for positioning the HJA and the expert consensus group activities in terms of answering the research questions.

3.8.6 Documentation

Various sources of data were captured in written format. These include the consent forms given to the e-learning practitioners, answers to the question on the consent form, instructional designer virtual group's email discussions on star performers, and reflective essays written by the Partners on 17 May 2005.

Participants who signed a consent form were asked to respond to the question: 'What is/are the most important characteristic/s of the e-learning practitioner?' To simplify the administration, distribution and collection of responses to the question, the question was included on the consent form. This allowed for instant completion and collection of the participants' responses during the face-to-face interview session scheduled between 16 May to 24 June 2005.

Responses were analysed and are reported on in section 4.3.2.4.2. Refer to Appendix C20 for an example of the consent form.

A virtual group consisting of instructional designers from the Department of Telematic Education, including the researcher, generated criteria for star performer selection and nominated star performers in their faculties. An analysis of the star performer group is reported on in section 4.3.2.4.1. Refer to Appendix C7 for a list of selection criteria for star performers.

In reflective essays the Partners were required to reflect on their experiences, perceptions and coping strategies regarding their use of new technologies in the P@W Programme. Structure for the essay was provided, which guided the Partners to focus their reflective notes on how they handled and coped with the new technologies that they had to master as Partners in the P@W Programme. The writing of these essays was one of the research data collection activities scheduled for the Partners on 17 May 2005. Partners were also requested to participate in a number of activities aimed at the generation and collection of research data on and to document various aspects of the P@W Programme of activities. This session was facilitated by an independent consultant. These essays as a data source focus specifically on their interaction with technology, and therefore are most relevant for this study in terms of acquiring new technological skills. Documents as sources of evidence provide stable, precise and qualitative rich data for analysis (Yin, 1998:231).

The essays were analysed and integrated in the data analysis presented in Chapter 4.1 -4.3. Refer to Appendix C8 for an example of the essay structure. Refer to Table 3.4 for positioning documents in terms of answering the research questions.

3.8.7 Archival material

Archival material from the P@W Programme included computerised and qualitative data files of, for example reflective diaries (bloggers), surveys on various workshops and work sessions, programme records such as capacity building and implementation progress reports, course and design evaluation records, peer evaluation reports, research articles and summaries, an archived copy of the e-moderating course in WebCT that everybody took part in, and an archived copy of all their activities, including online communication in WebCT representing the Partners' online community. From the wealth of data sources I have chosen the following:

Reflective diaries (blogger entries) which were written by the Partners over a period of one year from June 2004 to June 2005, the aim of which was to create opportunities for the Partners to voice their feelings, concerns, perceptions and recommendations on their experiences as e-learning practitioners. An analysis of these reflective texts will therefore highlight this aspect of their experiences.

Reflective communication took place between the Partners participating in the e-moderating module of the Programme, written by the Partners over the time period of six weeks from 5 October to 15 November 2004. The aim of this course was to allow the Partners to experience the world of the e-moderator and to create opportunities for participation in this environment. The Partners, the facilitator of the programme and the instructional designers from TUT, including myself as participant, formed an online community using online discussions to communicate its views. Participation in this online course provided the Partners with the experience of being an online learner and also of being an online moderator on such a course. Therefore an analysis of their online communication, focusing on the roles of learner and e-moderator, will provide insight into these areas of practice. Activities from this online e-moderating community provided excellent scope for the rapid ethnographic approach used.

Research summaries written by the Partners on 17 May 2005 to contribute to the corpus of research data required by the P@W Programme formed part of the research day activities for the focus group on that day. One of the tasks on that day was to document their reflections on their research projects conducted during their participation in the P@W Programme. Choosing the research summaries as sources of evidence thus included a perspective of the role of researcher.

Refer to Table 3.4 for positioning archival material in terms of answering the research questions.

3.8.8 Self-reported feedback

One of the research data collection activities conducted on 17 May 2005 included a request to the Partners to complete a questionnaire on influences on their e-learning practice. The questionnaire consisted of eight questions. One open-ended question asked for their opinion on the most important characteristics of e-learning practitioners and the remaining open-ended questions focused on how they perceived the five distinct roles that they played as e-learning practitioners in the P@W Programme. They also had to identify the job demands, distracters and releasers in their e-learning practice. The questions were presented in typed format allowing space for long detailed answers. All the Partners except one completed the questionnaire. Answers to questions are easy to retrieve, qualitative, and prvide rich data for analysis. Open-ended questions create opportunities for creative reporting and uniqueness from the participants.

The self-reported feedback on how the Partners experienced their e-learning practice in terms of the five roles that they played was included as data source because of the very specific focus on the role structure for these e-learning practitioners and thus providing rich data and

perspectives on each of these roles. Another very specific focus of the questionnaire addressed job demands, distracters and releasers as perceived by the Partners.

Refer to Table 3.4 for positioning the self-reported feedback activity from the Partners focus group in terms of answering the research questions.

The questionnaires were analysed and integrated in the data analysis presented in Chapter 4.1 -4.3. Refer to Appendix C13 for an example of the focus group questionnaire.

3.9 Mode of data analysis

Data analysis relevant to this study included quantitative as well as qualitative analyses, spanning a timeline from July to September 2005. An exception was an analysis of the PPAs from the Partners that was done in October 2004. All data were analysed by the researcher, except for the computerised analysis of the PPA and HJA forms done by the analysts of Thomas International, the HJA by the expert consensus group, and the selection of star performers by the virtual group. Table 3.8 provides information on the data analysis timeline.

Table 3.8: Data collection and data analysis timeline

	Time period for Case study									
	June 2004	**Aug 2004**	**Oct 2004**	**May 2005**	**17 May 2005**	**Jun 2005**	**25-30 Jun 2005**	**July 2005**	**Aug 2005**	**Sept 2005**
Data collection Partners archival material	Blogs		e-Mod course		Research summaries					
Data collection Partners		PPA	PPA feed-back		Essay Consent form question Focus group questionnaire					
Data collection e-Learning practitioners				PPA / HJA Interviews - F2F Consent form question						
Expert consensus group Virtual group							HJA	"Star" selection		
Data analysis - TI analysts			PPA Partners	PPA e-learning practitioners			HJA e-learning TUT		Validate PPA : HJA fit	
Qualitative data analysis Researcher								Qualitative data analysis - Consent form question, Interviews - F2F, Essays, HJA observations, blogger messages, e-moderation course, summaries, focus group questionnaire.		
Quantitative data analysis Researcher									PPA:HJA fit	

3.9.1 Computer analysis

Different modes of analysis were applied in this study. Although the reports provided by Thomas International for PPA are presented in essay and graphic format, the mode of analysis included **computerised analysis** of the participants' choices. A measurement technique referred to as "forced-choice" is used. This means that the participants are presented with four adjectives from which they must select two, one most like them and one least like them. The advantage of using this format is that the social desirability of responding is reduced by offering positive as well as negative qualities. After the participants have completed the 28 forced-choice boxes, their 28

most and *least* responses are charted on separate graphs, and the combination of these two is charted as a third graph, which is "shown as the most reliable measurement of DISC" (Inscape, 2005:12). The DISC is designed to measure 'surface traits', being "those behaviours that are readily seen and reported" (Inscape, 1996:4). The Inscape report (1996) distinguishes between surface traits and source traits of personality as those which are validated on face value or those validated by a significant body of research (construct validity). DISC is designed to measure surface traits. "Therefore the four surface traits, Dominance, Influence, Steadiness and Compliance should not be regarded as source traits. This means the user must regard D, I, S, and C not as internal dispositions, but as semantic labels for patterns of behaviour, at a level of describing behaviour, not explaining what cause the behaviour" (Inscape, 1996:5). Behaviour will not be constant from situation to situation, and therefore respondents based their choices on a specific situation, in this case their e-learning work environment.

Correspondingly, profile interpretation needs to emphasise that in a specific situation these are the tendencies a person has reported. For example, the e-learning practitioners completed the PPA forms from an e-learning practice point of view, describing themselves in an e-learning work environment. The Inscape report on the DISC model further points out that:

> source traits may be relatively unchangeable but surface traits, including the behavioural characteristics measured on DISC, lend themselves to some degree of modification by a) selecting an environment which does not inhibit change by causing fear or defensiveness and or b) by selecting behaviours within one's repertoire which are more appropriate to the situation. Needs, values, and personality characteristics which are not measured by DICS are likely to come into play in any change effort (Inscape, 1996:9).

Computerised analysis of the job requirements as selected by the various participants resulted in an **HJA** report presented by Thomas International in both narrative and graphical format.

3.9.2 Analysis by expert consensus focus group

In addition to the PPA instrument, which is "only one half of a joint process that makes the [worker and organisation] address the problem of what job characteristics are required to be met by the successful worker in a particular job within the organisation" (Irvine, 2003:15), the organisation contributes by completing the HJA form to compile a profile of the ideal job qualities. These are matched against the PPA profile of the worker. Probability of job success and satisfaction will be increased by the congruence or near concordance of the two profiles (Irvine, 2003).

The HJA was completed by the expert consensus focus group, and the graph was compared with the results of the PPA (see section 4.5.2.3). By using a prescribed scoring formula, congruence between the PPA and HJA results is calculated and expressed as a numerical value that indicates “goodness of fit” (see section 4.5.3).

3.9.3 Analysis by virtual group

Feedback on questions posed to the instructional designer virtual group listed qualifying criteria for an e-learning practitioner star performer as the following:

- Has been in practice for at least 18 months.
- Someone who facilitates in a way that allows learners to consistently achieve outcomes. Defining the outcomes lies in the field of curriculum design, not e-learning.
- Encourages communication/discussion.
- Uses more than two different e-learning applications (see Table 4.3 for selection criteria).
- Is dedicated to performing a task according to his/her abilities and to the benefit of the learners and the institution (it may be allocated to a single aspect and not necessary a broad scope).

Using the indicators as identified by the instructional design team from the Department of Telematic Education at TUT, 13 star performers were identified. Some of the star performers identified were not included in the study because they did not complete a PPA form and thus no profiles were available for them.

The PPA forms of the star performers identified were selected and the reports on these profiles were retrieved to be analysed as representing the star performer group.

3.9.4 Qualitative analysis

Qualitative data can frequently appear in the form of words, which are based on observation (watching), interviews (asking) or documents/archival material/self-reported feedback (examining). Some processing activities should be added to these data collection activities to make these words accessible for analysis, for example raw field notes need to be edited and typed up (Miles & Huberman, 1994:9). Miles and Huberman (1994:10) add that qualitative data analysis consists of three activity flows, namely “data reduction, data display and conclusion drawing/verification”.

3.9.4.1 Data reduction: textual analysis

Documentation of the P@W Programme resulted in a large amount of archival material, hence assessing its significance for this study required the following sifting process. Archived material

was categorised in terms of the P@W Programme activities, which provided a structure for analysis. I listed all the available data files under each category, read through the data files, made notes to explain their significance to the study and selected a number of these data files for further analysis. Decisions on which data sets to code, "which patterns to use for summarising a number of the chunks, and which evolving story to tell, are all analytical choices" (Miles & Huberman, 1994:11) that I had to make and were discussed in a previous section. My conceptual framework and research questions guided my choices and helped me to prevent overload (Miles & Huberman, 1994:10). Further analysis included making summaries (FGQues, F2F, PO, VG), coding (Char1, Char2, FGQues, Essay, Blog), testing themes (Char1 Char2, FGQues, Essay, Blog), making clusters (Char1 Char2, FGQues, Essay, Blog), and making partitions (e-Mod, RS). Each of these choices will be discussed in the following paragraphs.

Data generated by the face-to-face interviews, participant observation, virtual group discussions and focus group questionnaires were recorded in separate Excel data sheets. After the text had been recorded using a hermeneutical approach, **summaries** of the textual data were added to the data sheets to identify meaningful pieces of information. From these groups of text, themes were generated that reflected knowledge of the phenomenon under study (Byrne, 2001). The aim of qualitative textual analysis is to understand the participants' themes/categories, whilst quantitative content analysis aims at quantifying in terms of the researcher's categories (Silverman, 2005:12). Both these approaches were applied in this study.

As already pointed out in section 3.3.1, the hermeneutical phenomenological philosophical approach underpins this study, however, textual analysis using hermeneutics as an **analytical data technique** was implemented as a way of understanding the textual data and its hidden meaning (Byrne, 2001), through the process of fusing the horizons of the interpreter and the text. The hermeneutic cycle provides a "means of inquiry in which one considers the whole in relation to its parts and vice versa" (Schwandt, 1994:121). This entails reading a complete data chunk to form a holistic picture and then going back and looking for meaningful pieces of information. Themes, categories and key words were then identified and written down in the margin and examined to understand their meaning. This cycle continued by referring the pieces back to the data chunk.

An example of this is the analysis of the responses for each role category listed in the questionnaire (FGQues) completed by the Partners. I used coloured highlighters **to code** remarks on similar themes or job features, listed and counted the themes and then referred back to the quotations in the original essays to illustrate my observations and to test out the themes, thus emphasising not only the sociocultural and historical influences on qualitative

interpretation, but also the participation of the researcher in the production of meaning via participation in the circle of readings or interpretations (Gadamer, in Schwandt, 1994).

Hermeneutics is about interpretation, which is about **meaning**, which is about what is **understood** (Ross, 2002). This underlines the basic assumptions of hermeneutics, namely that the aim of textual analysis is understanding, not explanation, and that language is the primary medium for communicating meanings (Quigley, 1998). In my opinion, adding the phenomenological focus on lived experience and shared meanings, and "being in the world", suggests that understanding can only be meaningful if it is contextualised. Hodder (1994) adds that documents that can be separated across space and time from their authors require more contextualised interpretation. He continues by saying that the "meaning of much material culture, including written text, comes about through use, and material culture knowledge is often highly chunked and contextualised" (Hodder, 1994:401). "The methods of interpretation of material culture center on the simultaneous hermeneutical procedures of context definition, the construction of patterned similarities and differences, and the use of relevant social and material culture theory" (Hodder, 1994:401).

Byrne (2001) underlines the practical value of the hermeneutical phenomenological approach by saying that it provides a means to "communicate and articulate the knowledge embedded on our practice". She further states that "research findings are usually stated in terms of themes and categories. Passages from the text often are included to provide readers with examples, allowing them to decide whether they agree with the researcher's identification of themes and categories" (Byrne, 2001). The aim of this is not to produce universal truths, but to inform practice.

Analysis of essays on the topic "Descriptive notes reflecting on technologies" was done by using the prescribed structure of the essay to identify the main themes and a **colour-coding scheme** to identify motivators and demotivators as reported by the Partners. This mode of content analysis used predetermined themes and categories in terms of the different technologies that were mastered, but the nature and meaning of the motivators and demotivators mentioned in the essays were analysed and interpreted using hermeneutical phenomenological approaches. This implies a holistic approach with special focus on the contextual definition.

Further analysis included textual analysis of online communication activities, such as blogs or online discussions, using hermeneutical analysis techniques.

As the analysis proceeded, I had to figure out how to construe "theory" in terms of the construction of the e-learning practitioner model with a series of connected characteristics

specifying the relationships between the components. This construction influenced and constrained data collection, reduction and display including the drawing of conclusions (Miles & Huberman, 1994:10) I tried to avoid irrelevant data, but on the other hand was sensitive to including many interpretation levels, aiming at understanding and uncovering the characteristics of the e-learning practitioner and practice in the TUT e-learning environment.

Data captured during a focus group session with the Partners on 17 May 2005 highlighted important job-related issues. Participants were asked to comment on job demands, distracters and releasers for each of their five roles during the P@W Programme. I analysed the responses for each role category using coloured highlighters to code remarks on similar themes or job features. The situational features that were mentioned were thematically tabulated. The person-situation interactionist model was used as a metaphor for **conceptualising an enriched HJA** and the tabulated themes were applied in this analysis. Relevant comments from the Partners were cited verbatim to illustrate some of the findings and to **test out the themes**.

Using reflective communications from the participants as documented in their research summaries and discussions while participating in the e-moderating course, I was looking in particular for distinct types of communication. Categorising the data according to the Partners' roles as students (e-moderating course) and researchers (research summaries), I tried to note the patterns and themes relating to the four DISC factors. These were used to enhance understanding of the e-learning practitioners in their work situations.

3.9.4.2 Quantitative content analysis

Quantitative content analysis was applied to analyse the words, phrases or sentences describing the characteristics of e-learning practitioners (Char1 and Char2). The phrases and sentences were analysed for meaning and then encapsulated in single words, these words were **listed, sorted and counted** using Excel spreadsheets. The main focus was on the content and not on the particular respondent's response. These word **clusters** were then categorised in terms of the DISC language to paint a 'DISC picture' of the characteristics of the e-learning practitioner.

Chapter 4 presents detailed descriptions of data analysis and display, and draws a number of conclusions. Before proceeding to Chapter 4, it is important to focus on the most common facets of maintaining quality and conducting ethical inquiry – in my opinion the most important pillars of credible quantitative research.

3.10 Quality criteria

In his discussion on the credibility of qualitative research Silverman (2005) asks the question "Does credibility matter? And then concludes by saying, "[u]nless you can convince your audience(s) that the procedures you used did ensure that your methods were reliable and that your conclusions were valid, there is little point in aiming to conclude a research study" Silverman (2005:254). He continues by proposing a set of evaluating criteria:

- Are the methods of research appropriate to the nature of the question being asked?
- Is the connection to an existing body of knowledge or theory clear?
- Are there clear accounts of the criteria used for selecting cases for study, and for the data collection and analysis?
- Does the sensitivity of the methods match the needs of the research question?
- Was the data collection and record-keeping systematic?
- Is reference made to accepted procedures for analysis?
- How systematic is the analysis?
- Is there adequate discussion of how themes, concepts and categories were derived from the data?
- Is there adequate discussion of the evidence for and against the researcher's arguments?
- Is a clear distinction made between the data and its interpretation? (Silverman, 2005:222).

Underlining the fact that "qualitative research can be made credible if we make every effort to falsify our initial assumptions about our data", Silverman (2005:254) touches on an important issue also raised by Miles and Huberman (1994:279). They describe a number of issues relating to standards for the quality of drawing qualitative research conclusions, for example objectivity/confirmability; reliability/dependability; internal validity/credibility/authenticity; external validity/transferability and utilisation/application. Their discussion of these issues, conveying the views of Miles and Huberman (1994:277-280) and summarised below, introduces some useful ideas for further discussion on how to promote research credibility. My comments on the relevance of these issues to the study are given on each of the issues mentioned.

Confirmability issues relate to the question: "Do the conclusions depend on the subjects and conditions of the inquiry, rather than on the inquirer?" (Miles & Huberman, 1994:278). Can this study be replicated by other researchers? In this study I tried to describe in detail the general methods and procedures that were followed, the sequence for data collection and analysis, and how I linked conclusions with the data and the exhibits. I am aware of the influence of my own personal assumptions, values and biases on the study, and acknowledge the fact that my

position as instructional designer and P@W Programmes presenter irrevocably connects me to the study population and the study context. Therefore, although triangulation was used to induce rigor into the study, my personal involvement in the study made it difficult to identify and minimise my personal influences on the study.

Reliability[5] issues refer to the stability of observations over time, whilst **auditability** refers to the degree of consistency of qualitative findings and is comparable with reliability in quantitative research. Useful questions in this domain may be: "Do findings show meaningful parallelism across data sources (informants, contexts, times)?" and "Can another researcher follow the decision trail of the researcher?" (Miles & Huberman, 1994:278). The audit trail consists of six types of documentation: raw data, data reduction and analysis products, data reconstruction and synthesis products, process notes, materials relating to intentions and dispositions, and instrument development information (Morse, 1994:230). This study aims to document and report on these types of documentation in as much detail as possible. Silverman (2005:226) is of opinion that reliability in qualitative studies can be addressed by using standardised methods to write field notes and by comparing textual analysis of the same data by several researchers. The use of tested, reliable measuring instruments, supported by international status, to measure PPA and HJA contributed to a measuring procedure that could be replicated. The computer-aided analysis of the data meant that the patterns reported actually existed throughout the data rather than in examples deliberately selected.

Internal validity/credibility/authenticity issues refer to questions such as "Do the findings of the study makes sense?" and "Are they credible to the people we study and to our readers?" (Miles & Huberman, 1994:278). Credibility means the determination of the soundness of the study. Silverman (2005) opposes two forms of validation that have been suggested as appropriate in the logic of qualitative research. He argues that the comparison of different kinds of data and methods to see whether they corroborate one another, also called triangulation, and taking one's findings back to the subjects being studied for them to verify, also called respondent validation, are usually **inappropriate** for validating field research (Silverman, 2005:248).

He concludes his argument by referring to other authors, for example Garfinkel (1967) and Bloor (1978), saying that "the major problem with triangulation as a test of validity is that, by counter posing different contexts, it ignores the context-bound and skilful character of social interaction and assumes that members are 'cultural dopes' who need a social scientist to dispel their

[5] **Reliability issues** refer to "circumstances in which a single method of observation continually yields an unvarying measurement" (Silverman, 2005:225)

illusions" (Silverman, 2005:235). Bloor (1983) and the Fieldings (1986) argue that attempts at respondent validation have value in terms of the generation of further research data, but not in terms of validating the research report. There is no reason to assume that members have privileged status as commentators on their actions and that such feedback cannot be taken as direct validation of the observer's inferences. Silverman (2005:248) is not convinced that either triangulation or members' validation could claim to validate qualitative research, and proposes *inter alia* analytic induction, the constant comparative method and tabulations as appropriate methods for validation.

The problem of "anecdotalism", a term used by Silverman (2005:222) for describing research reports that tell interesting stories but fail to convince the reader of their credibility, implies that the anecdotal approach uses data in relation to conclusions or explanations and to provide evidence of a particular contention (Bryman, in Silverman, 2005:223).

In this study anecdotal data was used as enrichment material to illustrate the phenomenon and not to fit an ideal conception of the phenomenon or to select field data that are conspicuous because they are exotic at the expense of the less dramatic data (Fielding & Fielding, 1986 in Silverman, 2005:223).

Different forms of validation were applied in this study, namely **triangulation, crystallisation, respondent validation, analytic induction and tabulations**. Triangulation implies the use of several kinds of methods or data (Janesick, 1994:214), and Denzin's (1984) typology which is widely accepted states that there are four basic types of triangulation: data triangulation (using a variety of data sources); investigator triangulation (using different researchers); theory triangulation (using multiple perspectives to interpret a single set of data) and methodological triangulation (using multiple methods to study a single problem) (Janesick, 1994:215). In the process of triangulation the researcher uses one or more types of triangulation to "validate" findings (Richardson, 1994:522). She continues by likening the triangle to a crystal, saying that the "traditional model of triangulation implies a fixed point of reference that can be triangulated, but in postmodernist mixed-genre texts do not triangulate" (Richardson, 1994:482). The central image is that of a crystal which "combines symmetry and substance with infinite variety of shapes, substances …and angles of approach, thus creating ever-changing images of reality. Crystallisation deconstructs the traditional idea of validity, for now there can be no single, or triangulated truth" (Richardson, 1994:482). **This study therefore recognises that there are more than three sides from which to approach the world** (Richardson, 1994), and that multiple **perceptions are used to clarify meanings**. A variety of data sources, for example. interviews, focus groups, questionnaires, documentation and surveys, were used to confirm the

soundness of the study and through a process of triangulation multiple strategies were used to enrich the process.

Quantitative and qualitative research approaches were combined to provide the different facets of the prism which reflect different realities in different colours, patterns and directions (Richardson, 1994:522). Analytical induction and tabulations were valuable for validating impressions obtained from qualitative data analysis (Silverman, 2005:237).

External validity/transferability issues refer to whether the conclusions of a study have any larger importance and if they are transferable to other context. How far can they be generalised? (Miles & Huberman, 1994:279). **In this study I did not aim to generalise results**, **I did not replicate findings in other studies to access their robustness, and no other similar studies or findings could be found to compare the consistency with other research findings**. The aim of this study was to investigate the underlying structure of the e-learning practitioner construct and to use the findings of the study conducted at TUT to comment on possible future scenarios in terms of ***what is…?; what should be…?*** and ***what does it mean…?***

Therefore transferability to other contexts may be a possibility in future experimentation with different scenarios.

Application issues refer to usefulness, asking questions about what this study does for its participants and for the consumers. The epistemological cost of this study is that I can make a contribution to the corpus of knowledge in the field of educational/learning technology by offering insight into the multifaceted characteristics of the e-learning practitioner. The aim was the development of a classification scheme for e-learning practitioners, which may contribute to the development of theoretical frameworks for application in planning interventions to enhance e-learning practice, and in planning and developing training programmes for e-learning practitioners. This study may contribute to build capacity in formulating a job description for the e-learning practitioner.

The findings from this research could be useful:

- as a job benchmark for e-learning practitioners at TUT;
- for planners of staff development programmes, and
- for planners of e-learning training programmes.

This study introduces commentary on the '**e-learning teaching self'** on the level of higher education, and the findings of the study may stimulate further action in terms of the

implementation of practical interventions as application of research findings. The question remains however whether teacher education and staff development and training, focusing on the e-learning teaching self can contribute to:

- the development of the professional identity of the e-learning practitioner;
- enhancing the fit between the e-learning practitioner and the e-learning job;
- the development of effective, customised staff development and training programmes;
- sustainable e-learning practices;
- facilitating change in the e-learning adoption cycle, and
- attempts to find answers to questions that may lead to further research.

There are also questions about ethics in terms of 'Who benefits from or may be harmed by this research study?' and these are discussed in the next section.

3.11 Ethical considerations

Basic codes of behaviour that were included in this research study were respect for the autonomy, human rights and dignity of the participant. Therefore participants were not exposed to motives not directly attached to the research study (MRC, n.d.:5), and I acted in a responsible manner, upholding "professional standards in accordance with academic training" (MRC, n.d.:5). Ethical clearance was given by the Research Ethics Committees of the University of Pretoria, as well as by the Tshwane University of Technology (see Appendices C15 and 16). Relevant documentation was accepted by these bodies and this included an application for approval of research involving human respondents (Appendix C17) and accreditation certificate from Thomas International (Appendix C18), copies of the consent forms used (Appendices C19: C20); and copies of the survey questionnaires (Appendices C12; C13).

3.11.1 Description of practices used in this study

Application of the above-mentioned principles used as a checklist for ethical conduct of practice in this study is discussed in the following paragraphs.

3.11.1.1 Professional ethics

> "Epistemic imperative refers to the moral commitment that scientists are required to make to the search for truth and knowledge" (Mouton, 2002:239).

To honour the moral commitment made in this research study, conventions adhered to in this study pertained to integrity in the research, non-fabrication of data, recording of own data, fair use of other people's materials, appropriate authorship to the publication of the research report

and rejection of plagiarism (Ko & Rossen, 2001; Mouton, 2002:241). Furthermore the written research report admits the limitations and shortcomings of the research study.

3.11.1.2 Enrichment of data

To enrich the data generated by the PPA and HJA, participants from the P@W Programme were provided with a questionnaire in which to give their opinion on job releasers, job demands and job distracters in their work environments, and they contributed records of their experiences on this programme in the form of reflective diaries, blogs, summaries and essays. These documents were archived at the Department of Telematic Education and participants gave informed consent for their use. The aim of the study is not to focus on individuals but to focus on patterns and the relationships between these patterns. The integrated data will contribute to a more holistic illumination of the construct under investigation.

3.11.1.3 Participation of human participants

The participants in the study are the e-learning practitioner population at TUT which includes the Partners from the P@W Programme.

Inclusion criteria: All practising e-learning practitioners at TUT including all the Partners from the P@W Programme.

Exclusion criteria: e-Learning practitioners who were not practising at TUT and who refused to give informed consent to participate in the research.

All participants who agreed to participate were given the PPA form and the HJA form if they wanted it as well. This was the only inventory to complete and no further participation will be requested. After completing the form the researcher delivered it for analysis and data reports were collected by the researcher. If so requested, participant was given feedback on the report on completion of the study.

Partners from the P@W Programme were also requested to complete a short questionnaire consisting of eight questions which took about 20 minutes to complete. They were asked to list the releasers, demands and distracters that they experienced in their e-learning practice, and also give their opinion on the most important characteristics of the e-learning practitioner. This was the only questionnaire that they had to complete and no feedback was given on their responses.

The Partners in the P@W Programme are part of an online knowledge building community in a WebCT environment at TUT. Online communication is one of the activities in the programme

and they used the communication tools available in the programme to comment voluntarily on their experiences as e-learning practitioners. With their consent these comments were logged as part of the documentation process of the P@W Programme and archived in printed format at the Department of Telematic Education at TUT.

For this study the Partners were requested to give permission to use quotations from their written reflections, as research data to enrich the Personal Profile Analysis and Human Job Analysis. The data from the PPA and HJA were used to create style profiles and no individual was implicated or named in these profiles. Partners' reflections were used anonymously to highlight some aspects of the style profiles and no individuals were named.

3.11.1.4 Subject approval and informed consent

I have received permission to conduct this research from the relevant authority:

The initial contact between the researcher and the e-learning practitioner population at TUT was via an email request to discuss the research project. Appointments were scheduled with all the respondents who were interested in participating. During a face-to-face explanatory session participation in the project was requested. If the person was willing to participate a consent form was offered to obtain informed consent. The consent form stated that the person would be participating voluntarily in the research and that all information obtained would be kept confidential Participation could be ended at any time.

No minors (under 18), mentally infirm, or otherwise not legally competent to consent to their participation were included in this study.

No additional measures were needed to ensure full consent and participation in cases where the research was not conducted in the mother tongue of the subjects or in a language in which the subjects felt competent, because all participants were able to follow in either Afrikaans or English, depending on their language choice.

3.11.1.5 Risks and disadvantages to participants

Precautions were taken to protect participants from any harmful effects, and they were informed beforehand about the nature of the investigation. No form of deception was used in order to induce participants to participate (De Vos, 1998:25-27).

3.11.1.6 Benefits and advantages to participants

Participants received no benefits in the form of direct compensation. Indirectly, knowledge about their own work behavioural styles may contribute to their personal and career development. The

fact that the participants could reflect on their experiences as e-learning practitioners provided opportunities for both debriefing and insight as well as distance for ‘far sight’.

3.11.1.7 Confidentiality, anonymity and trust

Respondents were offered confidentiality and anonymity for their involvement in the research. Data from the PPA and HJA forms as well as the questionnaires and Partners’ reflections were handled confidentially and anonymity was ensured by not using any participant’s name or identification of any kind.

Feedback reports from the PPA/HJA were given to participants if so requested on the consent form, otherwise no feedback on the research process or its conclusions were given.

Research data will be destroyed:

- PPA/HJA data will be destroyed at the end of the study.
- The original reflections of the Partners were archived on a CD as part of the documentation process of the P@W Programme and are stored at the Department of Telematic Education at TUT.
- The questionnaires completed by the Partners in the P@W Programme were destroyed on completion of the study.
- The printed document containing the reflection excerpts and quotations from the Partners in the P@W Programme was destroyed after completion of the study.

3.12 Summary

This chapter focused on the research process followed in this study, which guided the choices made for the implementation of the design. The different phases in the research process, underpinned by the hermeneutical phenomenology, were described. The chapter highlighted the qualitative case study approach that focused the research design and linked the theoretical paradigms to the research questions. In addition, a mixed method research approach was used, combining a number of qualitative and quantitative data collection and analysis tools and techniques, for example survey, interview, questionnaires, documents and focus groups. A description of the quality criteria in terms of confirmability, auditability, credibility, transferability and application issues concluded the chapter.

The next chapter addresses the implementation of the data collection and analysis tools and techniques as well as the consequent research results.