Chapter 3: Methodology

What we think or what we know or what we believe is, in the end, of little consequence. The only consequence is what we do.
John Ruskin

3.1 Introduction

In the previous chapter, the constructs emotional intelligence, positive emotions, resilience, stress, appraisal and coping were explored, analysed and synthesised, and the conceptual framework developed was presented. The purpose of this chapter is to present the research strategy followed in seeking answers to the research questions. Figure 3.1 presents a visual model of the research strategy.

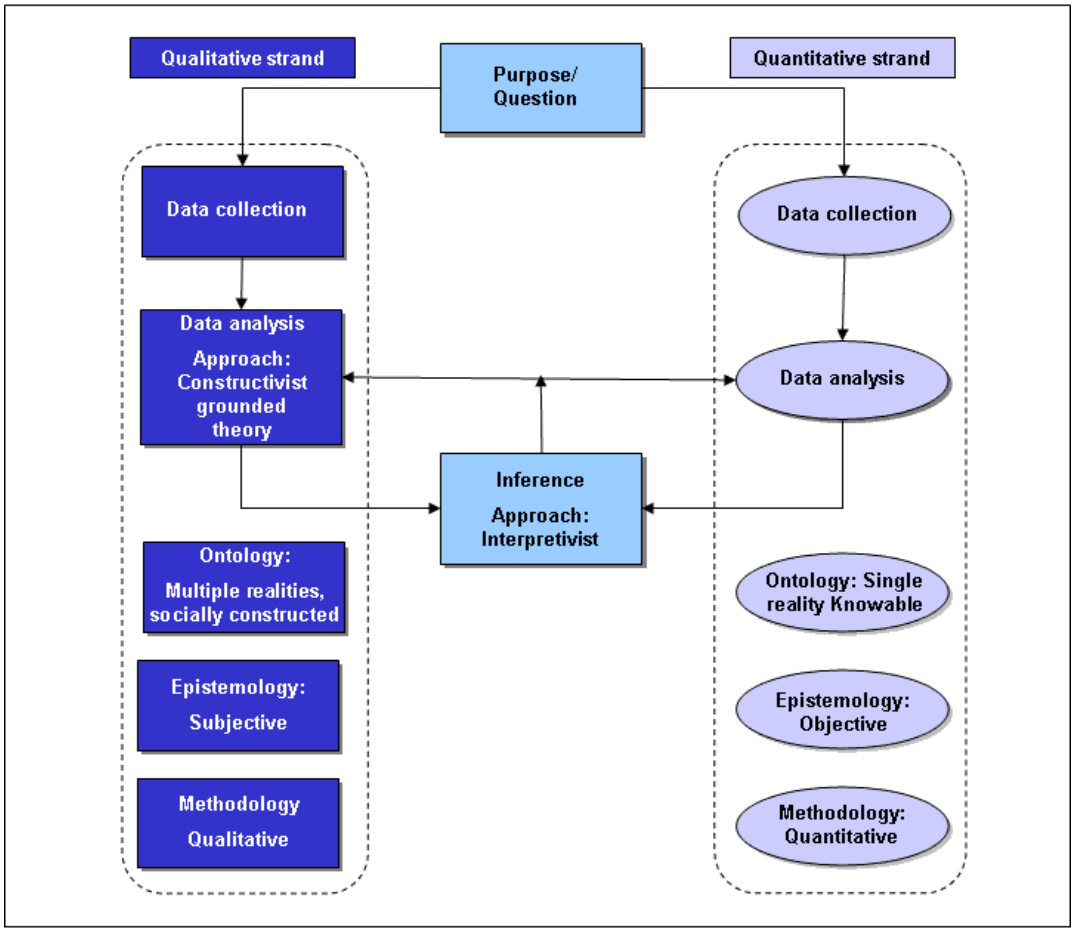

Figure 3.1 Visual model of the research strategy

Source: Adapted from Tashakkori and Teddlie (2003a, p. 688)

I chose to apply a multistrand concurrent mixed methods design adapted from Tashakkori and Teddlie (2003a, p. 688) in thus study. A mixed methods approach provided an opportunity to “confirm, cross-validate or corroborate” the theoretical emotionally intelligent abilities of participants (quantitative) with the demonstrated emotionally intelligent abilities (qualitative) in answering the research question.

In figure 3.1, the use of colour distinguishes between the priority of the two strands used in the research strategy, namely a qualitative strand and a qualitative strand. The researcher adopted a mixed methods approach in order to address the research problem. The darker colour of the qualitative strand, depicts the priority of the use of qualitative data in the study, against the lighter colour of the quantitative strand, depicting the use of quantitative data to a lesser extend.

As qualitative and quantitative viewpoints differ in terms of ontology, epistemology, and methodology, the viewpoint of the researcher true to a mixed methods approach, was to made use of various paradigms. Pragmatism served as the foundation of the study, but an interpretivist stance was adopted in studying the participants’ experiences, emotions and coping strategies, and a constructivist grounded theory approach during analysis and interpretation of the data. These choices will be discussed to a greater extend in the following sections of this chapter.

To address the research problem in this study, a mixed methods approach provided an opportunity to “confirm, cross-validate or corroborate” the theoretical emotionally intelligent abilities of participants (quantitative) with the demonstrated emotionally intelligent abilities (qualitative). Firstly, the main research question and sub-questions are presented, followed by a statement of the purpose of this mixed methods study. This section is then followed by a discussion of the research methodology. Next, the data collection is discussed, followed by the data analysis and the data interpretation. Subsequently, my role as researcher is clarified, the strategies followed to ensure trustworthiness are explained. The chapter concludes with the ethical considerations pertaining to this study.

3.2 Research question and sub-questions

As stated in chapter 1, the main research question and subsequent sub-questions address the possibility of whether emotional intelligence has a role to play in coping with the mastering of new educational technologies. The main research question is:

- What are the linkages between emotional intelligence and coping strategies when mastering new educational technologies?

In order to explicate the main research question, I have formulated three sub-questions:

- What strategies do participants with diverse emotional intelligence profiles implement to master new educational technologies?
- What were the cognitive thought processes and emotions experienced by the participants while using diverse coping strategies?
- What are the trends regarding linkages between emotional intelligence and the coping strategies used by participants?

The study aims to address the main research question by seeking answers to the sub-questions.

3.3 Purpose

Against the background of the drive towards e-learning in higher institutions with expectations of an increase in input rates and retention, the successful mastering of new educational technologies by lecturers is becoming crucial. The purpose of the study is to explore and describe linkages between emotional intelligence and the ability to cope with mastering new educational technologies. By clarifying the role of emotional intelligence in coping with the mastering of new educational technologies, the study may contribute towards the emerging body of knowledge, thereby providing guidelines for facilitators in optimising training in blended learning environments.

3.4 Research methodology

This study comprises a mixed methods approach within a case study design. In this section, the case study research design is discussed, followed by the nature of mixed methods research. The criteria that had to be considered when deciding on a mixed methods research strategy are then discussed and this section concludes with a discussion of the philosophical underpinning of the study.

3.4.1 Case study design

Creswell (2007, p. 73) defines case study research as an approach "in which the investigator explores a bounded system (a *case*) … over time, through detailed, in-depth data collection involving multiple sources of information". There are several procedures advocated for case study research (Merriam, 1998; Stake, 2000). In this study, procedures suggested by Creswell (2007, p. 74) for conducting a mixed methods case study were followed.

To begin with, as researcher I had to decide whether a case study approach was appropriate for the research problem of the study. According to Creswell (2007, p. 74), a case study "is a good approach when the enquirer has clearly identifiable cases with boundaries and seeks to provide an in-depth understanding of the cases". As I wanted to explore the linkages between coping strategies and emotional intelligence in a blended learning environment, the 2004 participants in the Partners@Work programme at the Department of Telematic Education at the Tshwane University of Technology were a natural choice as a case. Participants in this programme had to cope with mastering new educational technologies, as the intention of the programme was to introduce new educational technologies and facilitate the use of technology to enhance university courses.

Having identified the case, I then had to consider which type of case study would be the most useful for my study (Creswell, 2007). I decided on an instrumental case study, as this would allow me to collect primary data that would enable me to explore the participants' emotional experiences, cognitive thought processes and coping strategies when mastering new educational technologies. Stake (2000, p. 437) describes the instrumental case study as one where the particular case is of secondary interest, supporting the researcher in providing insight into an issue. The purpose of an instrumental case report, according to Stake (2000, p. 448), "is not to represent the world, but to represent the case"; therefore my focus was on understanding the particulars of this specific case in its complexity.

The advantage of case research for researchers lies "in its extension of experience" (Stake, 2000, p. 449) and is particularly useful for this study where a deep understanding of the phenomenon is needed – in this case the coping strategies employed to master new educational technologies. Merriam (1998) maintains that a case study is particularly helpful to the researcher in understanding and discovering

context characteristics that will shed light on an issue: in this study the cognitive thought processes and emotions experienced by the participants while using diverse coping strategies.

A criticism often noted against case study methodology is the influence of the researcher's subjective feelings on both the collection and interpretation of data (Denzin & Lincoln, 2000). To guard against potential researcher bias, I reflected on the possible influence of my own viewpoints and asked peers to review the written record of the study in order to verify that my bias is limited and that the essence of the participants' lived experience is captured.

3.4.2 Nature of mixed methods research

In a brief historical analysis of the development of mixed methods research, Teddlie and Tashakkori (2003, p. 4) maintain that researchers in the social and behavioural sciences are currently divided into three groups:

- "quantitatively oriented researchers (QUANs) working within the postpositivist tradition and primarily interested in numerical analyses,
- qualitatively oriented researchers (QUALs) working within the constructivist tradition and primarily interested in the analysis of narrative data, and
- mixed methodologists working within other paradigms (e.g., pragmatism …) and interested in both types of data"(Teddlie & Tashakkori, 2003, p. 4).

Researchers have debated the relative value of quantitative and qualitative research paradigms over the years (Johnson & Onwuegbuzie, 2004). This has resulted in the purists emerging on both sides viewing their paradigms as being ideal for research (Johnson & Onwuegbuzie, 2004; Lincoln & Guba, 1985; Tashakkori & Teddlie, 2003b). Teddlie and Tashakkori (2003) note that during the first half of the 20th century, the foremost methodological orientation was the positivist paradigm using quantitative methods. As a response to difficulties associated with positivism, postpositivists transformed this orientation during the 1950–1970 period although methods stayed quantitative (Teddlie & Tashakkori, 2003).

Teddlie and Tashakkori (2003, p. 5) name qualitatively oriented researchers, such as Eisner, Geertz, Lincoln and Guba, Stake and Wolcott, who were critical of the positivist orientation and who proposed an extensive variety of qualitative methods in books

written during the period 1970–1985. According to Teddlie and Tashakkori (2003), during this period the qualitative orientation was popularly referred to as constructivism, but in recent theoretical works (e.g., Lincoln & Guba, 2000 and Schwandt, 2000) it has been concluded that "multiple paradigms … are applicable to qualitative research (2003, p. 5).

During the 20th century and continuing into the 21st century, researchers made use of mixed methods in their research. Teddlie and Tashakkori (2003, p. 5) posit that, before the paradigm wars, mixed methodologists did not see the need to call attention to mixed methods as a distinct orientation. These authors state that researchers using mixed methods to answer research questions were not aware of doing anything out of the ordinary. Only after the incompatibility thesis, which put forward the notion that qualitative and quantitative paradigms cannot and should not be mixed, were researchers made aware of doing something exceptional (Teddlie & Tashakkori, 2003, p. 5).

Johnson and Onwuegbuzie (2004, p. 17) define mixed methods research as "the class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts or language into a single study".

Johnson and Onwuegbuzie (2004, pp. 14-15) argue that "that the goal of mixed methods research is not to replace either of these approaches but rather to draw from strengths and minimize the weaknesses of both in single research studies and across studies". With mixed methods research, strategies of inquiry are used that involve the collection of data either sequentially or simultaneously, that is, the best way in which to comprehend the research problem.

According to Johnson and Onwuegbuzie (2004, p. 21) the following strengths of mixed methods research apply to this study:

- Mixed methods research can provide quantitative and qualitative research strengths.
- Qualitative and quantitative research used together produce a more complete knowledge base for answering the research questions.

To address the research problem in this study, a mixed methods approach provided an opportunity to "confirm, cross-validate or corroborate" the theoretical emotionally

intelligent abilities of participants (quantitative) with the demonstrated emotionally intelligent abilities (qualitative).

Tables 3.1 and 3.2 present the application of both quantitative and qualitative research strengths in this study.

Table 3.1 Strengths of qualitative research applied

Strengths	Application in this study
The data are based on the participants' own categories of meaning.	Data used in this study comprises reflections posted in an online reflective diary, and a prompted essay and a summary written by participants.
Qualitative research is useful for describing complex phenomena.	Exploring and describing the coping strategies used by participants in mastering new educational technologies
Provides individual case information.	Information from document analysis
Provides understanding and description of people's personal experiences of phenomena (i.e. the "emic" or insider's viewpoint).	Participants' experiences, feelings and thoughts – supplying their own viewpoint on how and why they coped or did not cope.
Can describe in rich detail phenomena as they are situated and embedded in local contexts.	Unit of analysis provided data that enabled researcher to describe in rich detail participants; feelings, thought processes and coping strategies.
The researcher identifies contextual and setting factors as they relate to the phenomenon of interest.	Factors influencing the participants' coping strategies
The researcher can study dynamic processes (i.e. documenting sequential patterns and change).	Feelings, thought process related to coping strategies employed
The researcher can use the primarily qualitative method of "grounded theory" to generate inductively a tentative but explanatory theory about a phenomenon.	Constructivist grounded theory used in analysis and interpretation of data.
Can determine how participants interpret "constructs" (e.g. self-esteem, IQ).	From the data it was possible to determine how participants interpret their ability to cope with mastering different technologies.
Qualitative data in the words and categories of participants lend themselves to exploring how and why phenomena occur.	Stories told by participants made possible exploration of how and why different coping strategies were used.
An important case may be used to demonstrate a phenomenon vividly to the readers of a report.	The unit of analysis provided rich data to demonstrate the use of different coping strategies used by participants with varying emotional intelligence scores.

Table 3.2 Strengths of quantitative research applied

Strengths	Application in this study
Useful for obtaining data that allow quantitative predictions to be made.	The emotional intelligence scores allowed predictions to be made in terms of participants' predicted emotional intelligence skills.
Provides precise, quantitative, numerical data.	The emotional intelligence scores provided precise numerical data in terms of total, area and branch scores.
The research results are relatively independent of the researcher (e.g. effect size, statistical significance)	The MSCEIT™ test was administered by a registered psychometrist and the researcher was not involved in the process.

Source: Adapted from Johnson and Onwuegbuzie (2004, p. 21)

Based on these strengths, a mixed methods research approach was deemed to be the best option for obtaining constructive answers to the research questions.

3.4.3 Research process

In considering the type of mixed methods strategy of inquiry for this study, I reflected on four criteria as suggested by Creswell (2003, p. 211):

- the **implementation** sequence of quantitative and qualitative data collection in the study
- the **priority** given to quantitative and qualitative data collection
- the stage in the research project where I wanted to **integrate** the qualitative and quantitative data
- whether to use an overall **theoretical perspective** for the study

The decisions made pertaining to the selection of a mixed methods strategy of inquiry for this study are illustrated and marked in yellow in the matrix in table 3.3, sourced from Creswell (2003, p. 211).

Table 3.3 Matrix illustrating decision choices for determining a mixed methods strategy of inquiry

Implementation	Priority	Integration	Theoretical perspective
No sequence Concurrent	Equal	At data collection	Explicit
Sequential – qualitative first	Qualitative	At data analysis	
Sequential— quantitative first	Quantitative	At data interpretation	Implicit
		With some combination	

Source: Adapted from Creswell (2003, p. 211)

3.4.3.1 Implementation

Implementation pertains to whether the researcher collects the quantitative and qualitative data at the same time (concurrent) or in different phases (sequential) (Creswell, 2003; Johnson & Onwuegbuzie, 2004). In the case of this study, the two types of data were collected independently and concurrently during the 2004 Partners@Work programme.

3.4.3.2 Priority

The priority or weight given to quantitative or qualitative data depends on various factors, for example the interests of the researcher or what the researcher wants to emphasise in the study (Creswell, 2003). In the case of this study, it was decided to emphasise the qualitative data, as the aim was to explore participants' feelings, cognitive thought processes and coping strategies while mastering new educational technologies. Quantitative data, that is, the participants' EI scores, were used to confirm, corroborate and cross-validate research findings from the qualitative data analysis (Creswell, 2003; Johnson & Onwuegbuzie, 2004).

3.4.3.3 Integration

Quantitative and qualitative data can be integrated at various stages of the research process. In this study, the qualitative findings pertaining to the document analysis of data and consisting of reflective diary entries, prompted essays and written summaries answered the first and second sub-questions. The quantitative findings consisted of a

presentation of the participants' EI scores. In order to answer the third sub-question and, consequently, the main research question, the qualitative and quantitative data were integrated during the interpretation phase of the study.

3.4.3.4 Theoretical perspective

The last criterion to consider was the theoretical perspective that guided the research design. The conceptual framework, as discussed and illustrated in chapter 2 of this report, guided the study explicitly. According to Creswell, this framework "operate[s] regardless of the implementation, priority, and integrative features of the strategy of inquiry" (Creswell, 2003, p. 213).

3.4.3.5 Visual model of research strategy

Johnson and Onwuegbuzie (2004, p. 22) illustrate nine different mixed methods research strategies for integrating data using a design matrix.

Note: "qual' signifies qualitative, "quan" signifies quantitative, "+" signifies concurrent, "→" signifies sequential, capital letters indicate high priority or weight, and lower case letters indicate lower priority or weight (Johnson & Onwuegbuzie, 2004, p. 22). Figure 3.2 presents the matrix, mapping this study on the matrix in yellow.

		Time Order Decision	
		Concurrent	**Sequential**
Paradigm Emphasis Decision	**Equal status**	QUAL + QUAN	QUAL → QUAN QUAN → QUAL
	Dominant status	QUAL + quan QUAN + qual	QUAL → quan qual → QUAN QUAN → qual Quan → QUAL

Figure 3.2 Mixed methods research design matrix

Source: Adapted from Johnson and Onwuegbuzie (2004, p. 22)

In this study a concurrent strategy was followed, as I attempted to "confirm, cross-validate and corroborate" the qualitative findings (demonstrated EI skills of participants) with the quantitative findings (theoretical EI skills of participants) (Creswell, 2003, p. 216). This formed a small part of the study, as for the greater part of the study a concurrent crystallisation approach was used because the mixed methods research strategy comprises a QUAL + quan design, focusing on the interpretation of the participants' multiple constructed realities.[9]

Multiple constructed realities can be studied holistically within the interpretive domain (Lincoln & Guba, 1985, p. 35). To utilise these multiple realities, data were gathered from multiple sources using both quantitative and qualitative methods. Richardson (2000, p. 934) puts forward the idea that "crystallization is a better lens through which to view" the components of qualitative research, therefore different data collection methods for crystallisation will enhance the trustworthiness of the study. According to Richardson (2000, p. 934), the crystal "combines symmetry and substance with an infinitive variety of shapes, substances, transmutations, multidimensionalities, and angles of approach. Crystals grow, change, and alter, but are not amorphous". Janesick (2000, p. 392) expands this analogy, explaining that the substance of what you see when viewing a crystal depends on the way you view it by holding it up to the light or not. Richardson (2000, p. 934) continues by explaining, that "crystallization provides us with a deepened, complex, thoroughly partial, understanding of the topic".

This study comprises what Tashakkori and Teddlie (2003a, p. 686) describe as a "multistrand concurrent mixed methods design". According to these authors, in this type of study "one kind of question is simultaneously addressed by collecting and analyzing both QUAL and QUAN data, and then one type of inference is made on the basis of both data sources (2003a, p. 686). The QUAL+quan mixed methods research design of this study consists of two strands of data collection and analysis procedures. Figure 3.3 presents a visual model of the research strategy, depicting the qualitative strand as darker to show the priority of qualitative methods in the mixed methods research design.

[9] The inferences phase focuses on the multiple constructed realities of participants in terms of coping strategies used.

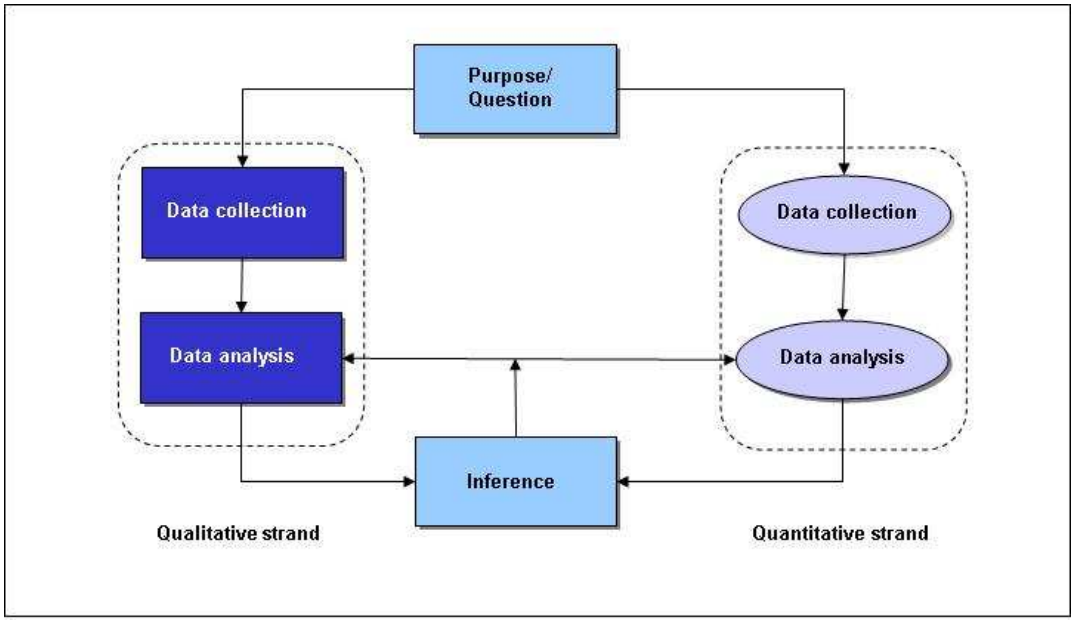

Figure 3.3 Multistrand concurrent mixed methods design

Source: Adapted from Tashakkori and Teddlie (2003a, p. 688)

The different data types enabled inferences to be drawn of the link between emotional intelligence and the ability to cope with mastering new educational technologies.

3.4.4 Philosophical underpinning

A persistent concern in mixed methods research pertains to "the manner in which paradigms are used in the development of the field" (Teddlie & Tashakkori, 2007, p. 17). Teddlie and Tashakkori list and discuss six different positions on this issue:

- *The a-paradigmatic stance*
  Some researchers view the epistemology–methods link as "distracting or unnecessary and simply ignore it" (2007, p. 18), and continue to use any method appropriate for answering the research questions.

- *The incompatibility thesis*
  Some researchers are in agreement with the incompatibility thesis, believing that mixed methods research is destined to fail (Teddlie & Tashakkori, 2007, p. 19).

- *The complementary strengths thesis*

  A number of researchers believe that mixed methods are viable, but that the methods "must be kept as separate as possible so that the strengths of each paradigmatic position can be realised" (Teddlie & Tashakkori, 2007, p. 19). These authors state that reading *The handbook of mixed methods in social and behavioural research* (Tashakkori & Teddlie, 2007) reveals that most of the authors in the book are comfortable with mixing methods, and are generally "not very concerned with the purity of the underlying paradigms being maintained" (Teddlie & Tashakkori, 2007, p. 20).

- *The single paradigm thesis*

  Some researchers hold the opinion that a single paradigm should provide the foundation for mixed methods research. Teddlie and Tashakkori (2007, pp. 20-22) name two distinct philosophical positions in this regard:
  - pragmatism as the foundation for mixed methods research
  - the transformative-emancipatory paradigm as the foundation of mixed methods research
- *The dialectic thesis*

  Believers in a "dialectic" stance, who do not advocate one specific paradigm above another, take the view that "all paradigms have something to offer and that the use of multiple paradigms contributes to greater understanding of the phenomenon under study" (Teddlie & Tashakkori, 2007, p. 22). It is important to note here "the ability to think dialectically", examining the tensions arising from diverse perspectives (Teddlie & Tashakkori, 2007, p. 22).

- *The multiple paradigm thesis*

  Some researchers deem the multiple paradigm thesis applicable to mixed methods research, where multiple paradigms may provide the foundation for research. The difference between the dialectic stance and the multiple stance is that multiple stance researchers are of the view that only one paradigm is best for a particular study, whereas researchers advocating the dialectic stance reject selecting one paradigm over another (Teddlie & Tashakkori, 2007, p. 23).

In this study, I made use of various paradigms. Pragmatism served as the foundation of the study, but I adopted an interpretivist approach in studying the participants'

experiences, emotions and coping strategies, and a constructivist grounded theory approach during analysis and interpretation of the data.

As "pragmatism presents a very practical and applied research philosophy" (Teddlie & Tashakkori, 2003, p. 21) I have followed their suggestion: "Study what interests and is of value to you, study it in the different ways that you deem appropriate, and utilize the results in ways that can bring about positive consequences within your value system."

Several authors have suggested pragmatism as the philosophical partner for mixed methods research (Creswell, 2007; Johnson & Onwuegbuzie, 2004; Teddlie & Tashakkori, 2007). Creswell (2007, p. 18) maintains that within the mixed methods approach, the researcher "base[s] knowledge claims on pragmatic grounds (e.g., consequence-oriented, problem-centered, and pluralistic". According to Creswell (2003, p. 12) "pragmatism provides a basis for the following knowledge claims". I have adapted Creswell's description of mixed methods research knowledge claims based on pragmatism to this study.

- *Pragmatism is not committed to any one system of philosophy and reality.*
  As a mixed methods researcher, I was able to draw from both quantitative and qualitative assumptions in my study (Creswell, 2003).

- *Individual researchers have a freedom of choice.*
  Within mixed methods research I chose "methods, techniques and procedures of research" that best suited the needs and purpose of this study (Creswell, 2003, p. 12).

- *Pragmatists do not see the world as an absolute unity.*
  As a mixed methods researcher I applied different approaches to collecting and analysing data (Creswell, 2003).

- *Truth is what works at the time; it is not based in a strict dualism between a mind and a reality completely independent of the mind.*
  I made use of both qualitative and quantitative data in an effort to provide the best understanding of the research problem (Creswell, 2003).

- *Pragmatist researchers look to the "what" and the "how" of research based on its intended consequences – where they want to go with it.*

I had to ascertain the purpose of using both qualitative and quantitative data using the rationale that multiple data types would assist me in exploring and describing linkages between emotional intelligence and the ability to cope with mastering new educational technologies

Research approaches are characterised by a specific ontology, epistemology and methodology (Terre Blanche & Durrheim, 2002) (see figure 3.1). By working within an interpretivist paradigm, I assumed that the participants' subjective experiences while coping with mastering new educational technologies are real (ontology), and that I could gain an understanding of their experiences by listening to their stories (epistemology) (Terre Blanche & Durrheim, 2002).

Schwandt (2000, p. 191) asserts that from an interpretivist approach meaning is socially constructed by human actors and that researchers need to "understand the meanings that constitute that action". The core assumption underlying an interpretivist approach is that, in order to understand an action, part or phenomenon, the researcher needs to examine the whole phenomenon in context in order not to miss important aspects (Schwandt, 2000). Relying on the first-hand accounts of participants, I endeavoured to describe their experiences in rich detail following the model of *verstehen* and taking into account the context of the Partners@Work programme. In my role as instructional designer facilitating participants in the programme, I had an understanding of what was expected of them, as well as the pressures and challenges they experienced (Terre Blanche & Durrheim, 2002).

I adopted Charmaz's (2000) constructivist grounded theory during analysis and interpretation. This type of approach was well suited to the analysis and interpretation of data in this study, because, as an instructional designer in the Partners@Work programme, I had a close relationship with the participants, which was essential for eliciting "their stories in their terms" (Charmaz, 2000, p. 525) from the participants. In keeping with a constructivist grounded theory approach, "at conceptual level of coding, writing memo's and developing categories", I aimed "to understand the assumptions underlying the data by piecing them together" (Charmaz, 2000, p. 525). Charmaz (2000, p. 529) maintains that "through sharing the worlds of our subjects, we come to conjure an image of their constructions and our own".

3.5 Data collection

3.5.1 Selection of participants

A purposeful sampling involved ten participants in the Partners@ Work programme initiated by the Department of Telematic Education at the Tshwane University of Technology in June 2004. The criterion for the selection of these participants was the completion of all three of the documents produced during the first six months of the programme. As stated in chapter 1 §1.8, a limitation of the study is that the analysis of the data started after the conclusion of the 2004 Partners@Work programme and I was advised not to use interviews with participants, as too much time had elapsed. I therefore focused on the documents created during the programme, forming a rich set of data. The documents used in the qualitative analysis, will be discussed in detail in §3.5.2.2. As I promised anonymity to the participants, reference to gender, age, etc. may identify them and I therefore did not incorporate any detail pertaining to the participants in this section.

3.5.2 Data collection methods

Various authors have commented on the importance of keeping in mind *the fundamental principle of mixed methods research* when conducting mixed methods research (Johnson & Turner, 2003; Johnson & Onwuegbuzie, 2004; Tashakkori & Teddlie, 2003b). Johnson and Turner (2003, p. 299) state that, in terms of data collection methods, the combination of methods should have different strengths, and be combined in such a way that the researcher is enabled to “provide convergent and divergent evidence about the phenomenon being studied” (Johnson & Turner, 2003, p. 299). Using both qualitative and quantitative methods enhanced the rigor of this study by providing “stronger evidence for a conclusion through convergence and corroboration of findings” (Johnson & Onwuegbuzie, 2004, p. 21).

Table 3.4 provides a matrix of data collection methods giving an overview of how data collection was used in an effort to answer the research questions.

Table 3.4 Matrix of data collection methods

Sub-questions \ Data sources	Prompted essays	Reflective diaries	Summaries	MISCEIT
What strategies do participants with diverse emotional intelligence profiles implement to master new educational technologies?	✓	✓	✓	
What are the cognitive thought processes and emotions experienced by the participants while using diverse coping strategies?	✓	✓	✓	
What are the trends regarding linkages between emotional intelligence and coping strategies used by participants?				✓

Qualitative

Quantitative

Themes and categories were derived from analysis of data. These themes and categories were analysed to elicit main trends and compared with EI scores as measured by the MSCEIT to search for links between EI and coping strategies.

As stated in chapter 1, the inclusion of interviews and observational data, would have enhanced the rigor of the study.

In the next two sections, the data collection methods, how the data were documented, and how the data were used to answer the research questions are explained.

3.5.2.1 Quantitative methods

The quantitative method used in this study, the EI ability test, the Mayer–Salovey–Caruso–Emotional–Intelligence–Test™ (MSCEIT™), "provided precise, quantitative, numerical data" (Johnson & Onwuegbuzie, 2004, p. 19).

As part of the Partners@Work programme the emotional intelligence of the participants was measured by the new ability test of EI, the Mayer–Salovey–Caruso Emotional Intelligence Test™ (MSCEIT™). MSCEIT™ measures the four branches, or skill groups, of EI: (a) perceiving emotion accurately, (b) using emotion to facilitate thought, (c) understanding emotion, and (d) managing emotion (Mayer, Salovey, Caruso, &

Sitarenios, 2003). The reason for choosing the MSCEIT™ is that, according to Mayer *et al.* (2000c, p. 416), current research proposes that the ability model of EI "can be described as a standard intelligence and empirically meet the criteria for a standard intelligence".

Initial EI ability scales (Mayer, DiPaolo, & Salovey, 1990) were criticised in terms of possessing lower-than-desirable reliability (Roberts, Zeidner, & Matthews, 2001; Zeidner, Matthews, & Roberts, 2001). Evidence is accumulating that EI is a distinct ability that can be reliably measured (Brackett, Mayer, & Warner, 2004; Mayer, Caruso, & Salovey, 2000). In a recent study, Mayer *et al.* (2003) reported that the MSCEIT™ achieved sound reliability and that those using the MSCEIT™ as a measure of EI can be confident about the quality of the MSCEIT™ as a measuring tool for EI.
The MSCEIT™ yields a total emotional intelligence score as well as two area scores (Experiential and Strategic Emotional Intelligence). The four branch scores are for Perceiving Emotion, Facilitating Thought, Understanding Emotion and Managing Emotion. Finally scores for eight individual tasks are reported (Mayer *et al.*, 2003). Figure 3.4 provides an overall view of the MSCEIT V2.0 scores.

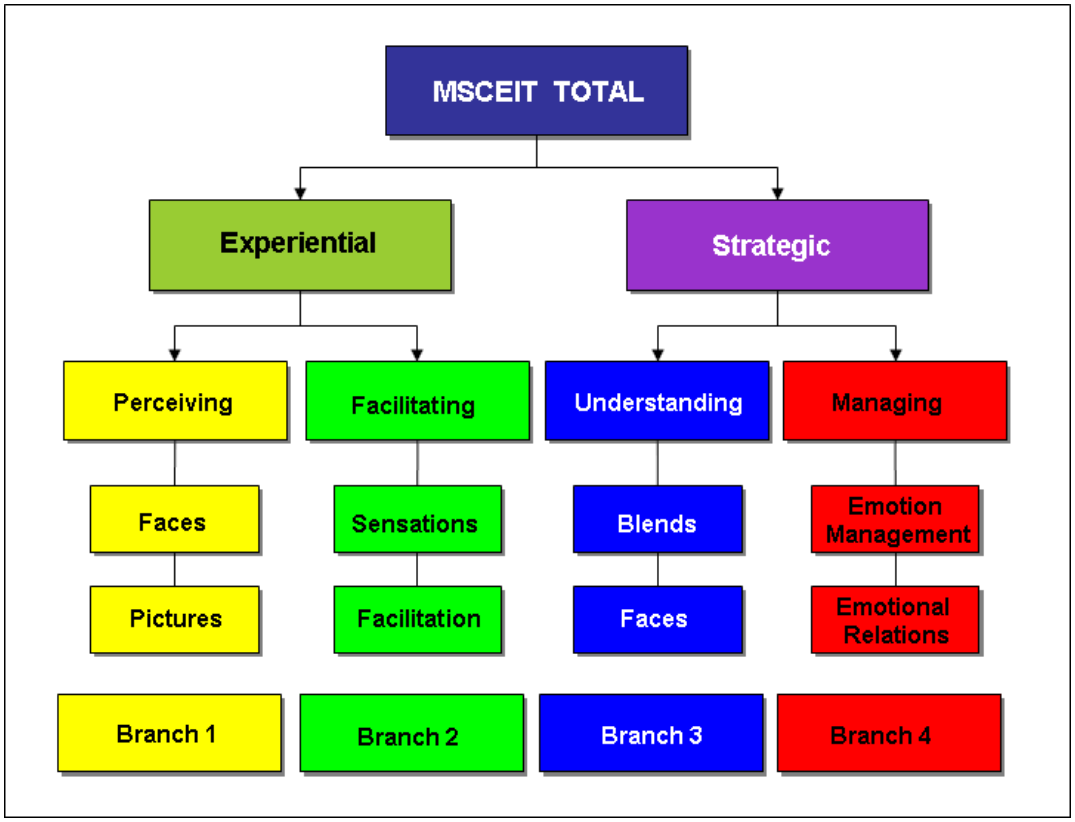

Figure 3.4 MSCEIT V2.0

The different branches in figures 3.4 and 3.5 refer to the branches in the model of emotional intelligence of Mayer and Salovey (1997) as discussed in chapter 2, § 2.3.

Table 3.5 gives a description of how the different tasks are measured as described by Mayer, Salovey and Caruso (2004b).

Table 3.5 Descriptions of tasks measured by MSCEIT V2.0

Branch	Description
1	*Perceiving Emotions, is measured by (a) Faces, for which participants are asked to identify the emotions in faces and (b) Pictures, for which participants are asked to identify the emotions conveyed by landscapes and designs.*
2	*Using Emotions to Facilitate Thought, is measured by (c) Sensations, for which participants compare emotions to other tactile and sensory stimuli and (d) Facilitation, for which participants identify the emotions that would best facilitate a type of thinking (e.g. planning a birthday party).*
3	*Understanding Emotions, is measured through (e) Changes, which tests a person's ability to know under what circumstances emotional intensity lessens and increases and how one emotional state changes into another (e.g., frustration into aggression and (f) Blends, which asks participants to identify the emotions that are involved in more complex affective states.*
4	*Managing Emotions, is measured through (g) Emotion Management, which involves presenting participants with hypothetical scenarios and asking how they would maintain or change their feelings and (h) Emotion Relationships, which involves asking participants how to manage others' feelings so that a desired outcome is achieved.*

Source: Adapted from Mayer, Salovey & Caruso (2004b, p. 200)

As quantitative data (EI scores of participants) was needed to corroborate the findings obtained using qualitative methods, permission was obtained from the participants to use their EI scores. A registered psychometrist administered the test and the test was scored electronically. The scores were obtained from the psychometrist with the participants' permission and the scores documented in table 4.65. See §4.4.4.

3.5.2.2 Qualitative methods

As it was necessary to explore "multiple and conflicting voices, differing and interacting interpretations " (Hodder, 2000, p. 705) for crystallisation purposes, the study of material in the form of documents was of vital importance. The documents used for analysis are the materials or documents generated by the participants during the first six months of the programme Partners@Work:

- reflective diaries (using Blogger – an online electronic diary);
- essays with prompts;
- summaries written by participants at the end of the programme.

The programme consisted of an online component and weekly face-to-face meetings. The participants made use of Blogger as an online electronic diary to reflect on the face-to-face activities. As this was the first group of lecturers attending the

Partners@Work programme, the instructional designers used these reflections to evaluate the different sessions with the intention of improving the programme where necessary. The participants were asked to reflect on each session in terms of the following questions:

- What did you enjoy/find useful in the session?
- What did you not enjoy/find useful in the session?
- What would you like to change about the session and how would you change it?

The instructional designers obtained the reflections from Blogger via RSSfeed. Figure 3.5 gives a typical example of such an RSSfeed.[10] This example is taken from the 2005 Partners@Work group, as an undertaking was made with the participants in this study to maintain their anonymity.

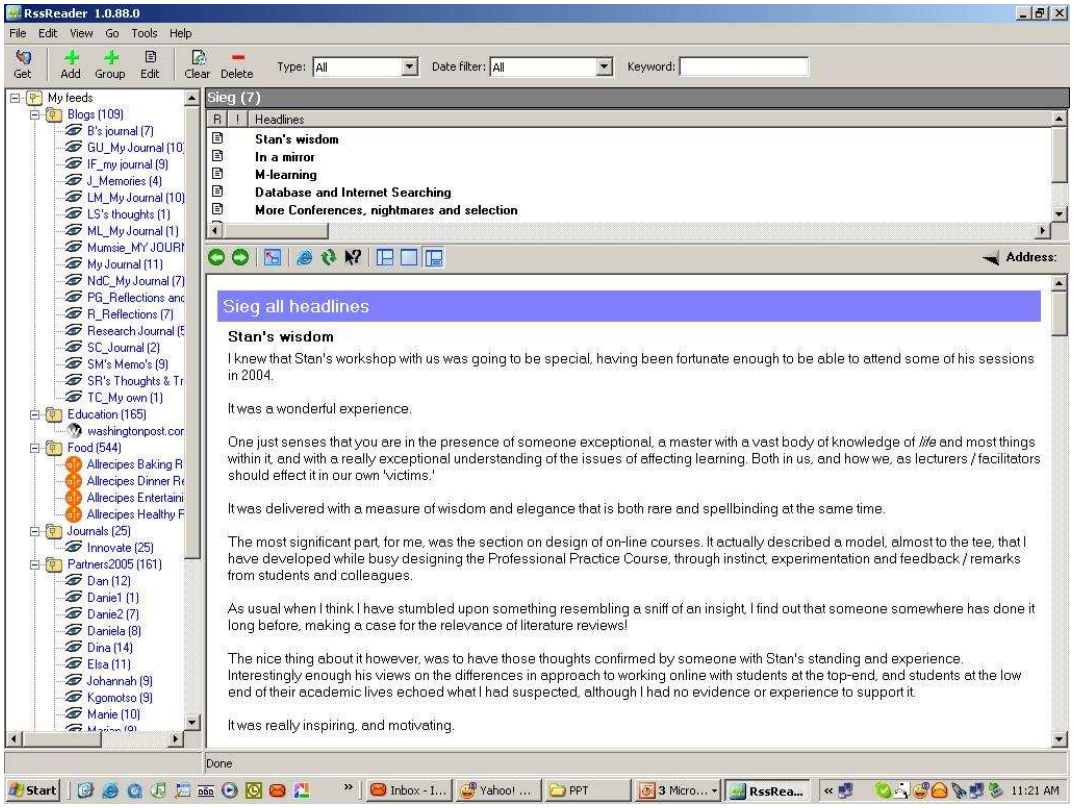

Figure 3.5 Example of RSSfeed with reflections from Blogger

[10] With permission of the author

The reflections of the participants were collated in a document separately for analysis by participant, as different instructional designers were using the data for their studies.

During the course of the programme, participants were asked to write a prompted essay using the following prompts:

Write descriptive notes reflecting on all the technologies by answering the questions listed below.

Technologies:

- WebCT
- Perception
- Respondus
- Camtasia
- Video
- Video Conferencing
- Corel Draw
- Front Page
- Blogger
- Yahoo Messenger

Questions:

- How did you experience the mastering of the listed technologies in the Partners@Work programme? (Emotions and feelings)
- What strategies did you implement/employ to master the technologies listed?
- How do you perceive your ability to cope with the technologies listed?
- If you did not master or use some of the listed technologies, state the reasons why not.

At the end of the six-month period, the participants wrote summaries, reflecting on and describing the course materials they had developed.

The criterion for selection of the participants was the completion of all three of the above-mentioned documents. Only 10 of the participants completed all three of the different documents, making up the purposeful sample.

On entering the programme, participants gave permission for the instructional designers to use these materials in their studies and in articles written for publications.

3.6 Data analysis

The mixed methods research process model of Johnson and Onwuegbuzie (2004, p. 23) that was adapted for use in this study incorporates Onwuegbuzie and Teddlie's seven-stage model of the mixed methods data analysis process (2007, p. 375). In this model, data analysis consists of seven stages: (1) data reduction, (2) data display, (3) data transformation, (4) data correlation, (5) data consolidation, (6) data comparison, and (7) data integration. Because of the nature of this study, the data were not correlated or consolidated. Figure 3.6 presents a visual representation of the mixed methods data analysis process adapted from Onwuegbuzie and Teddlie's seven-stage model of the mixed methods data analysis process for this study (2007, p. 374).

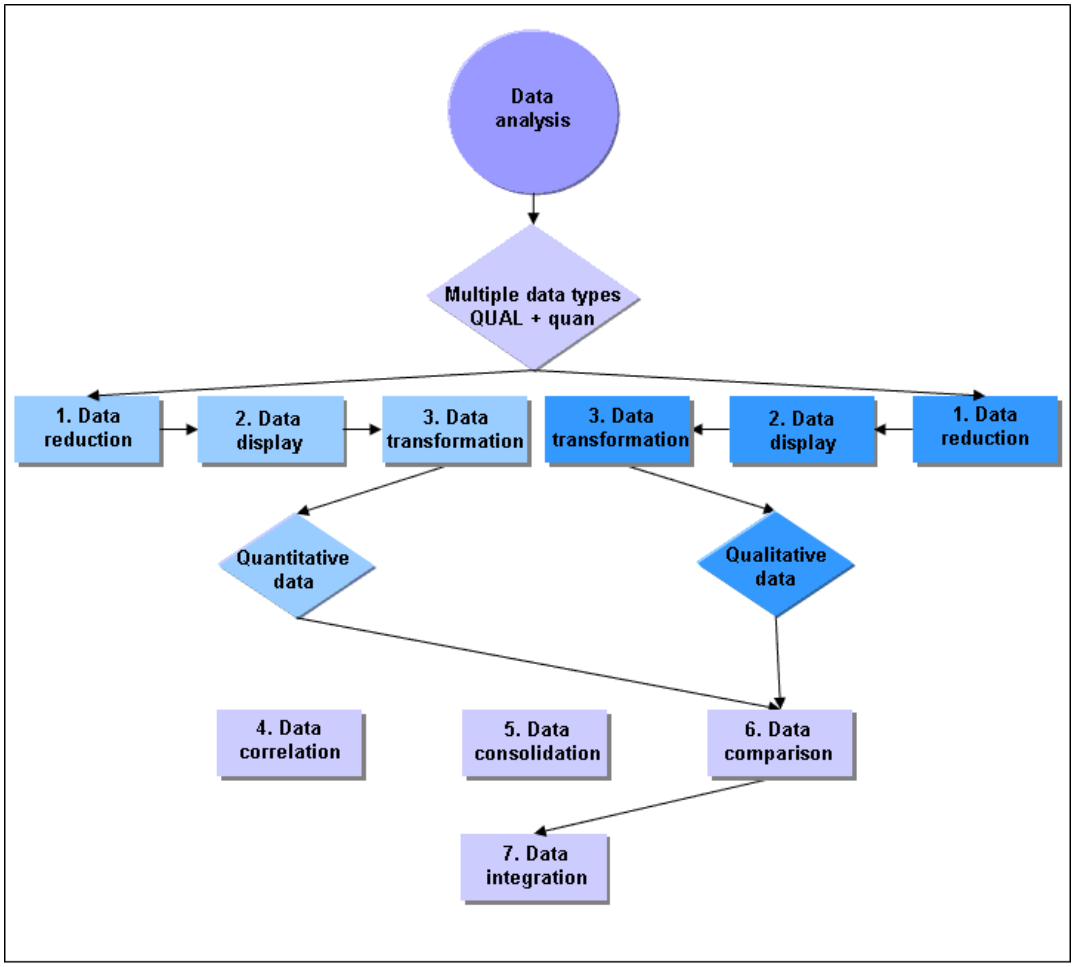

Figure 3.6 Mixed methods analysis process

Source: Adapted from Onwuegbuzie and Teddlie (2007, p. 374)

Onwuegbuzie and Teddlie note that although the stages may seem sequential, they are not linear (2007, p. 373).

3.6.1 Data reduction

The first stage in the analysis process involves the reduction of the collected data. Data reduction "refers to the process of selecting, focusing, simplifying, abstracting, and transforming the data" the researcher gathers (Miles & Huberman, 1994, p. 10).

3.6.1.1 Quantitative data reduction

The quantitative data consists of the EI scores of the participants, collected from the psychometrist in a reduced format, consisting of the total score, area scores and

branch scores for each participant. The data were received in a reduced format. See table 4.65 §4.4.4.

3.6.1.2 Qualitative data reduction

With data analysis and interpretation, as a researcher I have positioned myself as the participants' partner in accordance with constructivist grounded theory as described by Charmaz (2000, pp. 509-535). Mills *et al.* (2006, p. 9) point out the following requirements in a constructivist approach:

> The creation of a sense of reciprocity between participants and the researcher in the coconstruction of meaning and, ultimately a theory that is grounded in the participants' and researcher's experiences.
>
> The establishment of relationships with participants that explicate power imbalances and attempts to modify these imbalances.
>
> Clarification of the position the author takes in the text, the relevance of biography and how one renders participants' stories into writing.

In reducing and preparing the qualitative data, I made use of Atlas.ti™,[11] a computer software application. Atlas.ti™ enabled me to scrutinise the documents with "great depth, thoroughness and precision" (Pomerantz, 2004, p. 182). The qualitative data consisted of the entries of each participant in the electronic reflective diary, as well as an essay with prompts and a summary written by each participants. For each participant, I collated these three documents into a single document, forming a "heuristic unit" for coding in Atlas.ti ™. Therefore, there were ten heuristic units in Atlas.ti™ for coding.

In coding and analysing the data, the techniques used combined both inductive and deductive methods (Almarza, 1996; Boyatzis, 1998; Fereday & Muir-Cochrane, 2006). The data were coded in terms of the different participants, their coping strategies (using deductive and inductive technique), their reasoning, and their perceived ability to master a technology. The process followed during data coding and analysis is summarised in table 3.6.

[11] I trained with Woolf Consulting, Carpinteria, California in the use of Atlas.ti™.

Table 3.6 Summary of process followed for data coding and analysis

Step	Action	Outcome
1	Survey of coping strategy inventories	Use of the CCSC & HICUPS scale as a priori codes
2	Inductive coding approach, coding from the data	Data analysis in Atlas.ti™
3	Validation of codes	Validated codes
4	Summarising coping strategies using the Cooccurence explorer in Atlas.ti™	Tables with summaries of coping strategies of each participant
5	Use of Atlas.ti to create super codes	Codes of major themes in the reasoning codes
6	Use of the Query tool in Atlas.ti™ to generate reports for the co-occurrence of each coping strategy with the different reasoning super codes for each participant	Tables with quotations for each participant on the reasoning of the participant explaining the use of different coping strategies **Answer sub-question1**
7	Analysis of tables with quotations for each participant on the reasoning of the participant explaining the use of different coping strategies	Three distinct groupings among the participants revealed: **Theme 1**: Participants using positive and no negative coping strategies **Theme 2**: Participants using both positive and negative coping strategies **Theme 3**: Participants using negative and no positive coping strategies **Answer sub-question2**
8	Generated frequency tables of coping strategies in Atlas.ti™	Table 5.1 with frequency of coping strategies used by participants.
9	Analysis of the three themes and the summarised frequency table	Five main trends emerged: • Perceiving ability as adequate • Use of cognitive decision-making as a coping strategy • Perceiving the situation as stressful • Emotional disclosure • Social networking
10	Combining the trends, making comparisons with factors pertaining to resiliency and emotional intelligence, comparing trends with EI scores	Finding linkages between EI and coping strategies **Answer sub-question 3 and the main research question of this study**

Step 1: A priori codes

A survey of coping strategy inventories was carried out in an attempt to find the most suitable coping strategy inventory for this study. A table summarising the survey of inventories with accompanying scales is available in appendix K.

After studying the various inventories and coping scales, it was decided to use the Children's coping strategies checklist & How I coped under pressure scale (CCSC & HICUPS) scale, because this particular inventory illustrates and describes an extensive range of coping strategies enabling the researcher to interpret the narratives of the participants accordingly. Although the CCSC & HICUPS scale is normally used as a questionnaire for children, the well-defined structure suited this study (and the researcher as a novice in the field), explaining the coping strategies and enabling the ongoing comparison of the narratives with the explanation of coping strategies. While working with the data I realised that the use of humour was lacking in this particular classification of coping strategies and the scale was adjusted accordingly as shown in table 3.7 and highlighted in yellow*.

Table 3.7 Coping strategies according to the adapted CCSC & HICUPS scale

Active coping strategies	**Problem focused coping**	Cognitive decision making (CDM)	Planning or thinking about ways to solve the problem (e.g. think about which things are best to do to handle the problem)
		Direct problem solving (DPS)	Efforts to improve the problem situation (e.g. do something to make things better)
		Seeking understanding (SU)	Efforts to find meaning in a problem situation or try to understand it better (e.g. try to understand it better by thinking more about it)
	Positive cognitive restructuring	Positivity (POS)	Thinking about the good. Things that happened (e.g. try to notice or think about only the good things in your life)
		Control (CON)	Thinking that you can handle or deal with whatever happens (e.g. tell yourself that you can handle this problem)
		Optimism (OPT)	Thinking about things in the future in an optimistic manner (e.g. tell yourself that things will get better)
		Use humour*	Use humour*
Distraction strategies	Distracting actions (DA)		Efforts to avoid thinking about the problem situation by using distracting stimuli, entertainment or some distracting activity (e.g. you did something like video games or a hobby)
	Physical release of emotions (PRE)		Efforts to physically work off feelings with a physical exercise, play or efforts to physically relax (e.g. you played a sport)
Avoidance strategies	Avoidant actions (AVA)		Efforts to avoid the problem by staying away from it or leaving it (e.g. stay away from things that make you feel upset)
	Repression (REP)		Repressing thoughts of the problem (e.g. try to put it out of your mind)
	Wishful thinking (WISH)		Using wishful thinking or imaging the problem were better (e.g. wish that things were better)
Support seeking strategies	Support for actions (SUPA)		The use of other people as resources to assist in seeking solutions to the problem situation. This includes seeking advice or information or direct task assistance (e.g. you talked to someone who could help you figure out what to do)
	Support for feeling (SUPF)		The involvement of other people listening to feelings or providing understanding to help the person be less upset (e.g. you talked about your feelings to someone who really understood)

Source: Adapted from Ayers et al., 1996

This framework provided the a priori codes for the deductive part of the coding. From the a priori codes I proceeded to code inductively from the data. The description of each coping strategy provided in this scale assisted me to code the data. I constantly reviewed and compared the data with descriptions of a particular coping strategy.

Step 2: Coding from the data

I followed an inductive coding approach, coding from the data the way in which the participants made use of the different coping strategies. With the use of "action codes" I attempted to keep the coding close to the experiences of the participants to enable me to create an analysis evocative of the participants' lived experience (Charmaz, 2000, p. 515; Mills *et al.*, 2006, p. 12). Using action codes, I analysed the data using a comparative technique in line with constructivist grounded theory as advocated by Charmaz (2000, p. 515). Accordingly, I made the following comparisons while coding and writing memos:

- of the views, situations, actions, accounts and experiences of the participants;
- of data from the same participant at different points in time;
- between different incidents;
- of data and category;
- between different categories (Charmaz, 2000, p. 515).

Figure 3.7, a network created in Atlas.ti™, illustrates the use of a priori coping strategies of *Problem focused* coping strategies and the resulting inductive coping strategies that emerged from the data.

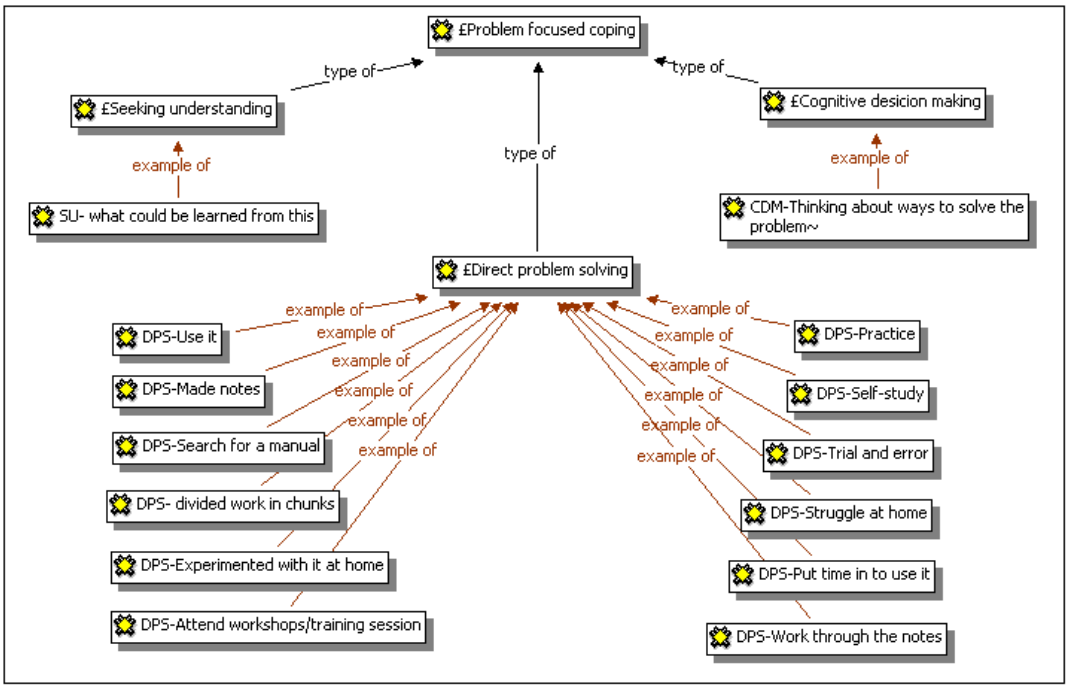

Figure 3.7 Example of a priori and inductive coding

The analysis of the data proceeded in a cyclical manner, as I returned to the data constantly in order to extract the essence of the participants' experience.

Step 3: Validation

A limitation of my study is the fact that I was the sole coder. In order to validate the coding, I printed the coding in Atlas.ti™ and validated the codes with both my supervisors, Professors Knoetze and Ebersöhn. Memo writing of intricate instances added to the rigor of my study.

Step 4: Summarising coping strategies using the Cooccurence explorer in Atlas.ti™

In order to answer the first sub-question, I generated a summary of the coping strategies used by each participant using the Cooccurence Explorer in Atlas.ti™. In order to present these coping strategies in an illustrative manner, I created tables for each participant. Table 3.8 exemplifies the coping strategies used by a participant with the participant's coping strategies highlighted in yellow.

Table 3.8 Example of coping strategies used by a participant

Possible strategies			Strategies used
Active coping strategies	**Problem-focused coping**	Cognitive decision making (CDM)	CDM – Thinking about ways to solve the problem
		Direct problem solving (DPS)	DPS – Use it
		Seeking understanding (SU)	SU –What could be learned from this?
	Positive cognitive restructuring	Positivity (POS)	POS –Will use it in future POS – Mention the positive
		Control (CON)	
		Optimism (OPT)	OPT – Things will work out OPT – Will be able to do it/use it
		Use humour	Use humour
Distraction strategies	Distracting actions (DA)		
	Physical release of emotions (PRE)		
Avoidance strategies	Avoidant actions (AVA)		
	Repression (REP)		
	Wishful thinking (WISH)		
Support seeking strategies	Support for actions (SUPA)		SUPA – Ask for people's opinions SUPA – Discuss it with others SUPA – Learn from others
	Support for feeling (SUPF)		

This table allowed me to distinguish between the coping strategies used and not used at a glance. In order to answer the first sub-question, the coping strategies of the participants were summarised and presented in a table to give a holistic overview (as presented in chapter 4, § 4.2, table 4.1.

Step 5: Creating super codes

The next step in the analysis process was the creation of super codes of major themes in the reasoning codes of the participants, for example Enjoyable, Made suggestion, Positive perception, Negative perception, User friendly, Blaming, Not used, Unsure.

Step 6: Generating reports using the Query tool in Atlas.ti™

Using the Query tool in Atlas.ti™, reports were generated for each participant for the co-occurrence of each coping strategy with the different reasoning super codes. Tables

were created containing quotations for each participant that demonstrated their reasoning and explained the use of the different coping strategies. Table 3.9 presents an example of coping strategies, reasoning and quotations for a specific participant.

Table 3.9 Example of coping strategy, reasoning and quotations

Coping strategy	Reasoning	Quotation	Number
DPS- Use it	Blaming	***Blogger:*** *I like the idea of blogging and did not have problems mastering it. The Blogger website, however, I did not like. I do not think to implement it somewhere in future – will use the survey-tool in WebCT for this purpose rather.*	#1
	Made suggestion	*During the past few weeks I have mostly completed all subject material, as well as the WebCT course for DBR for next year. I also had to do many feedbacks and discussions at our faculty regarding Partners and everything we did. I am mostly satisfied with the subject material, but have a huge problem in the sense that I have not really received any true criticism, feedback or whatever you would like to call it.*	#2
	Perception positive	***Camtasia:*** *What an excellent little application for use in ICT! I found it easy to master and have used it for a few movie clips - will definitely use it for many more typical student problems.*	#3
		What and enjoyable day!! *To the telematic team: I do enjoy this process immensely!!* *The way in which we did the ADDIE model introduction made a lot of sense, because we this is something that you can do via internet searches and it also gave us lots of practise in many other things (teamwork/ppt/present etc.)* *The blueprint seems to be lots of work, as I expected from the discussions on the design phase. It helps to talk to various people about what you want to do, and I am sure that the next workshops will also help us in this process.*	#4
		WebCT: *Nice hands-on session! At last we are creating our courses!*	#5
		Respondus: *Respondus was easy to master and to use. I have used it for all my web tests with success*	#6
		WebCT: *The mastering process was handled very good by … (&kie) and I enjoyed working (and still enjoy working) in WebCT. Personally I liked the pace, but I can understand that less computer literate people may have problems coping.* *I am trying to implement as many of WebCT's elements as possible in my course - almost all aspects are working fairly well at this stage - maybe it is a bit early in the semester to truly comment on this.*	#7

Step 7: Analysis of coping strategies

The quotations in the tables generated in step 6 were numbered, for example #1, #2 and so on.

When answering sub-question 2, three distinct themes emerged from the analysis of tables of participants' quotations showing the participant's reasoning and explaining the use of different coping strategies:

Theme 1: Participants using positive and no negative coping strategies
Theme 2: Participants using both positive and negative coping strategies
Theme 3: Participants using negative and no positive coping strategies

These themes are discussed in chapter 4.

Step 8: Generating frequency tables of coping strategies

Subsequently frequency tables of coping strategies were generated in Atlas.ti™ and the different frequency tables were summarised as presented in chapter 5, table 5.1.

Step 9: Analysis of three themes and the summarised frequency of coping strategies

From the analysis of the three themes and the summarised frequency table, five main trends emerged:

- Perceiving ability as adequate
- Use of cognitive decision making as a coping strategy
- Perceiving the situation as stressful
- Emotional disclosure
- Social networking

I discuss these trends in chapter 5.

Step 10: Comparing trends with EI scores

In combining these trends, comparisons were made with factors pertaining to resiliency and emotional intelligence in an effort to find linkages between EI and coping strategies – answering sub-question 3 and the research question of this study in chapter 5.

The process of reducing the data "sharpens, sorts, focuses, discards and organizes the data in such a way that 'final' conclusions can be drawn and verified" (Miles & Huberman, 1994, p. 11).

3.6.2 Data display

Onwuegbuzie and Johnson (2007) cite Miles and Huberman (1994, p. 11) stating that the data display stage reduces the data to "gestalts or easily understood configurations". The data were displayed in the form of tables and diagrams in order to present the data in a "compact form so that the analyst can see what is happening and either draw justified conclusions or move on to the next step of analysis the display suggests may be useful" (Miles & Huberman, 1994, p. 11).

3.6.3 Data transformation

In mixed methods research data, transformation consists of two sub processes, namely qualitised data and quantitised data (Teddlie & Tashakkori, 2007, p. 9). Qualitised data are described as "[c]ollected quantitative data types [that] are converted into narratives that can be analyzed qualitatively" (Teddlie & Tashakkori, 2007, p. 9); while quantitised data are defined as "[c]ollected qualitative data types [that] are converted into numerical codes that can be statistically analyzed" (Teddlie & Tashakkori, 2007, p. 9).

In this study the EI scores of the participants were qualitised into different qualitative values according to the user guide. This helped in interpreting and seeking patterns in participants' EI scores (see chapter 4, §4.4).

Using Atlas.ti™, frequency tables were generated of the different coping strategies employed by the participants. In this instance, qualitative data (coping strategies) was quantitised into numbers, assisting in the interpretation of results (see chapter 5, §5.2).

In the earlier stages of the analysis process, these frequency tables generated in Atlas.ti™ were used to search for patterns.

3.6.4 Data comparison

The theoretical EI abilities of the participants were compared with their demonstrated EI abilities, as reflected in the data analysis.

3.6.5 Data integration

The quantitative and qualitative data collected were presented separately, but in analysing and interpreting the data, the data were integrated to answer the main research question.

3.7 Inference

Inference, meaning the interpretation of results, “making sense of the findings” and drawing conclusions, may be viewed as the most important part of a study (Tashakkori & Teddlie, 2003a, p. 691). Tashakkori and Teddlie (2003a, p. 691) point out that inferences are not only answers to the research questions in the study, but may provide the basis for the development of new comprehensions of a phenomenon. In this study, interference pertains to my engagement with the data, exploring the participants’ thought processes and feelings, while coping with the mastering of new educational technologies in order to answer the research questions. Various strategies were employed to ensure high-quality inferences and different data sources provided different angles from which to view the data (Richardson, 2000). Peer debriefing in discussion with my supervisors and co-instructional designers was used to reach consensus on an interpretation of the findings. During the analysis, I kept looking for negative cases and I left an audit trail consisting of analysis notes, data reduction and analysis products, data reconstruction and synthesis products (Tashakkori & Teddlie, 2003a). In reporting the research findings, I endeavoured to describe the trends in a rich, descriptive way.

3.8 Role as researcher

Patton describes “going into the field” as having direct and personal contact with the participants in the study in the environment being studied (2002, p. 48). As an instructional designer, I was closely involved with the participants as a facilitator in the Partners@Work programme. Patton describes empathy as “being able to take and understand the stance, position, feelings, experiences and worldviews of others” (2002, p. 52). Being an ”insider” in the programme enabled me to reach some level of understanding *(verstehen)* of the way participants interacted with the educational technologies and to have empathy in the sense of understanding their feelings and experiences while mastering the new educational technologies (Patton, 2002). I was

thus able to interpret the data in the particular context. In order to ensure credibility, I employed multiple strategies, as discussed in §3.10.

I was "the primary instrument for both collecting and analysing the data" (Terre Blanche & Kelly, 2002, p. 126). As this demanded a "total involvement and commitment in a way that requires total immersion of the senses in the experience" (Janesick, 1998, p. 61), I expressed my beliefs and assumptions beforehand.

3.9 Trustworthiness strategies

> The basic issue in relation to trustworthiness is simple: How can an inquirer persuade his or her audiences (including self) that the findings of an inquiry are worth paying attention to, worth taking account of? What arguments can be mounted, what criteria invoked, what questions asked, that would be persuasive on this issue? (Lincoln & Guba, 1985, p. 290).

As I adopted an interpretivist approach to interpreting the data, the criteria for establishing trustworthiness consist of credibility, transferability, dependability and confirmability.

3.9.1 Credibility

Seale (2000, pp. 44-45) maintains that "credibility is built up" through "prolonged engagement in the field", "exposure of the research report to criticism by a disinterested peer reviewer and a search for negative instances that challenge emerging hypotheses". In order to increase the probability of credible findings, I invested some time in building up trust and rapport with the participants. I also took the time to learn how to test for misinterpretation in my own responses as well as those of the participants (Lincoln & Guba, 1985, p. 301).

I also made use of different data sources for verification. Using peer debriefing, I exposed myself to searching questions of colleagues in the Department of Telematic Education in order to clarify bases for interpretations. While analysing the data, I made use of the Atlas.ti™ memo facility, recording the more challenging instances.

3.9.2 Transferability

I endeavoured to describe the participants' experiences, cognitive thought processes, emotions and coping strategies in a rich, descriptive and detailed manner in order that other researchers might use them as a source of comparison. I made this effort particularly so that, in the words of Seale, "readers are given sufficient information to be able to judge the applicability of findings to other settings which they know" (2000, p. 45).

3.9.3 Dependability

In order to establish dependability, I left an audit trail of the data documentation and the methods used to analyse the data. I reflected with peers (colleagues in the Department of Telematic Education) on the procedures followed in order to "provide a critique of the processes used and a check on their clarity and consistency" (Seale, 2000, p. 141). In consulting my supervisors, I followed a process that Seale (2000, p. 142) calls "methodological consultancy", negotiating and agreeing on the adequacy of the processes followed in coding, analysing and interpreting the data.

3.9.4 Confirmability

To establish confirmability I based the conclusions drawn in the study on the data gathered and provided an audit trail consisting of raw data, analysis notes, data reduction and analysis products, data reconstruction and synthesis products (Seale, 2000, p. 45). During the study, I reflected self-critically on discussions with my supervisors and co-instructional designers, comparing findings from the different data sources (Seale, 2000, p. 45). I reflected on the limitations of the study as discussed and presented in chapter 6 (Lincoln & Guba, 1985, p. 319).

3.10 Ethical considerations

In this study, I abided by the ethical guidelines as proposed by Durrheim and Wassenaar (2002, pp. 66-70) to "protect the welfare and the rights of research participants". These authors suggest three principles on which ethical guidelines are based, namely autonomy, nonmaleficence and beneficence (Durrheim & Wassenaar, 2002, p. 66).

3.10.1 Autonomy

This principle necessitates the researcher to respect the autonomy of the research participants (Durrheim & Wassenaar, 2002). In this respect, I provided participants with a full, non-technical, clear explanation of what was expected of them so that they could make an informed decision to participate voluntarily in the research. The participants were free to withdraw from the research at any time. I also informed them of the confidentiality of the information supplied by them and only made use of the information and data that were central to the study. The research proposal was presented to the Ethics Committees of both the Tshwane University of Technology and the University of Pretoria. The raw data containing participants' personal details will be securely stored and destroyed once the data have been analysed. The results of the study will be published with attention to the rights of participants. I took care to protect the identity of individuals, as I guaranteed anonymity in the consent document. The consent document is available in appendix L.

3.10.2 Nonmaleficence

In considering this principle of no harm to participants, I informed the participants beforehand of the nature of the research and took great care to ensure anonymity. All references to people, departments and courses were removed from the data. During the administration of the emotional intelligence test, MSCEIT™, the test administrator assured the participants that their EI scores would be treated with confidentiality.

3.10.3 Beneficence

The principle of beneficence "requires the researcher to design research such that it will be of benefit" (Durrheim & Wassenaar, 2002, p. 66). The participants did not benefit directly from this research in that they received no form of compensation. The benefits of this research might be the provision of guidelines for facilitators for optimising training in blended learning courses.

3.11 Summary

This chapter presented the research strategy followed in answering the research questions. I discussed the research methodology, which consists of a mixed methods approach within a case study design. A description of the data collection, followed by the data analysis and the data interpretation, was given. I clarified my role as researcher, explained the strategies followed to ensure trustworthiness and concluded with the ethical considerations pertaining to this study.

In the next chapter, I present the interpretation of the results of the study.