

Weblogs as an instrument for reflection in an e-learning environment - A case study in higher education

by

Jacoline van Niekerk

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Supervisor: Prof. Dr. J.G. Knoetze

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Summary

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This study focuses on reflection in an e-learning environment. The reflection was done online in the form of a weblog. Participants used tools such as Blogger to post their reflection on the web. There are various contributing factors that determine the success of reflection in an e-learning environment. This study will look into these factors, for example tools used for reflection, reflection topics, online facilitation and learning style preferences.

This dissertation focuses on the role that reflective questions, reflection tools and online facilitators play in the reflection process. It determined which of these elements were more important to learners and how satisfied they were with the tools and techniques used in this study. The importance to learners, and their satisfaction was determined by using the Customer Satisfaction Index. The findings of this study indicate that the participants feel that the online facilitator plays an imperative role in online reflection.

Key words: Weblogs; reflection; e-learning; Customer Satisfaction Index; online facilitators; activity theory; learning styles; reflective questions; reflection tools; responsibility.

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Addendum B - Electronic copy of participant's blogs

Addendum C - Data analysis

Addendum D - Reflection questions

Chapter 1: Background to the study

1.1 Introduction

Reflection has played an important role in learning from as long ago as 560 BC. Confucius, a Chinese ethical teacher and philosopher advised that if you “acquire new knowledge whilst thinking over the old ... you may become a teacher of others” (*Nonstopenglish.com*, n.d.). Many centuries after Confucius, Kolb included reflection in his learning style model (*Businessballs*, n.d.).

The principles of reflection have remained unchanged over the centuries, but the methods have changed considerably. Whilst in the time of Confucius, learners perhaps reflected by thinking about what they have learned, in modern times learners tend to write about what they have learned. Diaries may have started out as girls’ way of reporting on their inner most secrets and thoughts, but has evolved to a very effective tool for reflecting on learning. With the introduction of the Internet, web tools and e-learning, also came the online reflection tool.

Weblogs are used worldwide as tools to diarise what happened in a person’s day, what happened during a holiday or even how a business is progressing. Anyone can view these diaries, if the writer so wishes. Families might keep track with the lives of each other even if they are continents apart.

If learners are enrolled for e-learning classes, they will essentially submit tasks and obtain information electronically. Weblogs are online tools that may also be used as a reflection tool. It is important to determine if learners are susceptible to use these tools for reflection and what the implications are of using weblogs for reflection in an e-learning environment.

1.2 Context, research problem and question

Much has been reported on reflection and e-learning, but not much on the use of weblogs as an instrument for reflection in an e-learning environment.

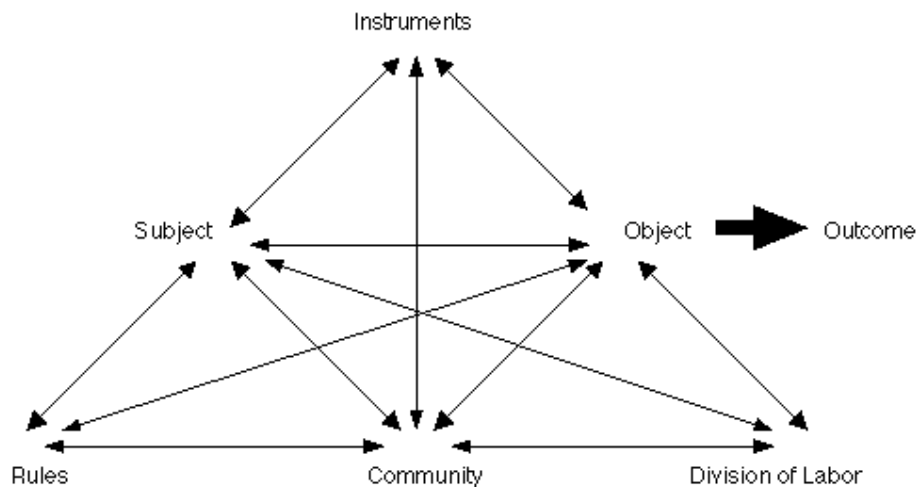
Weblogs have been used to keep account of events, but it is not obvious if they can be used effectively as reflection tools. Furthermore there are various types of weblogs available on the web; will the specific weblog used make a difference to the learners’ satisfaction with the learning event?

It is not certain if learners will reflect online with candour if they know that their remarks can be viewed by someone else. Different types of learners react differently to learning events. Can you accommodate all types of learners in the reflection activity?

Where the role of an online facilitator is clear, the role that the facilitator plays in online reflection is not distinct. As Hootstein (2002) states, “the effectiveness and success of e-learning programs are dependant on facilitators’ roles in delivering and managing instruction”. Does the success of online reflection depend on the effectiveness of the online facilitator?

To better understand where all these questions arise from, the context of the study will now be discussed. There are various ways to describe the context of a study. In this study the context will be explained using the activity theory. According to Li and Bratt (2004) “activity theory conceptualizes all purposeful human activity as the interaction of the elements: subject, tools, objects, community, rules, and division of labor among subjects”. Engeström, as cited by Li and Bratt (2004) illustrates the relation of the “interaction of elements” as indicated in figure 1.1.

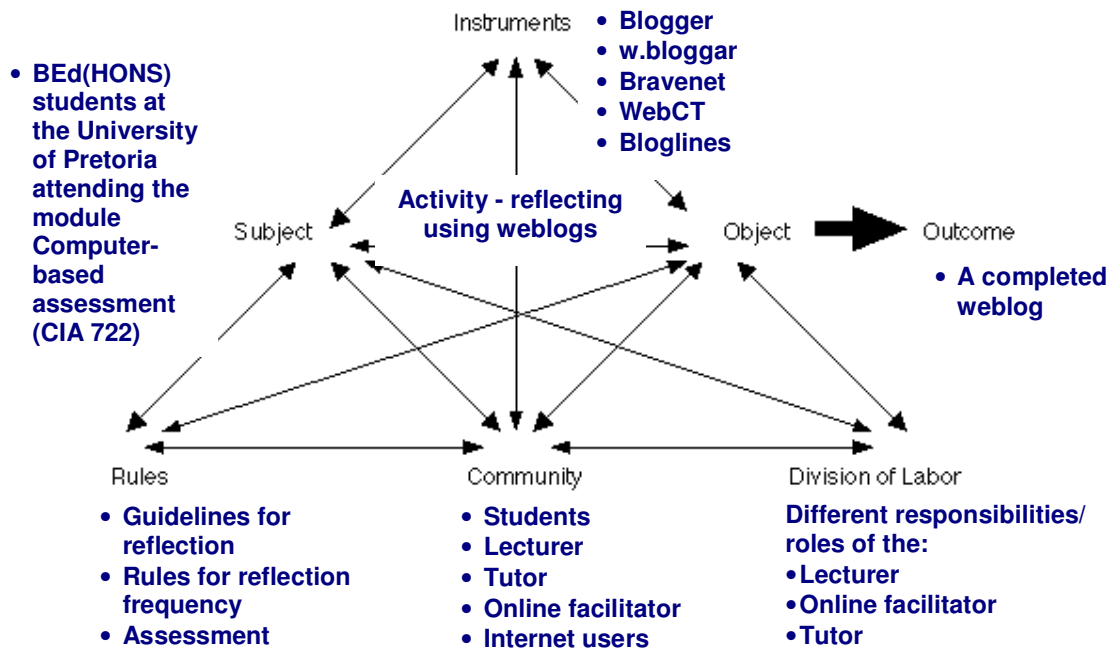
Figure 1.1: The structure of human activity



Adopted from Li and Bratt (2004).

The structure of this study relates to the elements of activity theory. The activity covered in this study is reflection using weblogs. The outcome would be a completed weblog after the learning event. The elements of this study coincide with the elements of the activity theory. The relation between the theory and this study is indicated in figure 1.2.

Figure 1.2: Elements of this study in relation to activity theory



Adapted from Li and Bratt (2004).

The three “corner elements” of this structure are:

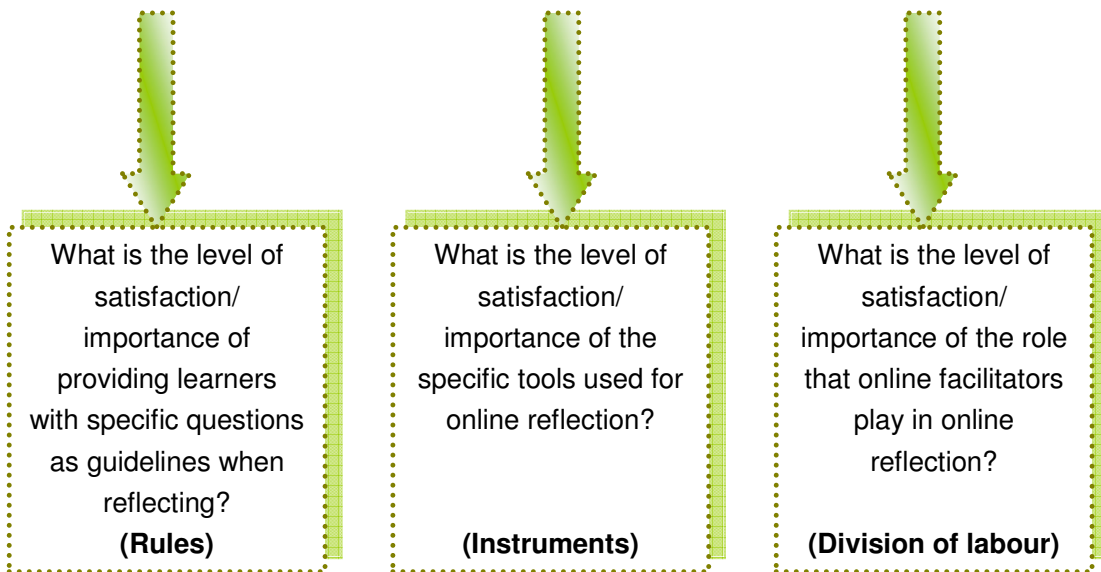
- Instruments;
- Rules; and
- Division of labour.

The triangle indicates that the three elements relate to each other and have a direct influence on each other. These three key elements form the foundation of the research questions in this study. The researcher believes that by focussing on the elements instruments, rules and division of labour, the research question will be answered resulting in the objective of the study being met.

The research problem can be paraphrased in a question format. The research question is:

What are the aspects relating to instrument, rules, and division of labour that ensure satisfactory online reflection using weblogs?

From this question, three sub questions are formulated. The elements they relate to are also indicated. The sub questions are:



1.3 Research aim

The purpose of this study is to determine the level of user satisfaction pertaining to weblogs as an instrument for reflection in an e-learning environment.

This will be done by answering the research questions:

- What is the level of satisfaction/importance of providing learners with specific questions as guidelines when reflecting?
- What is the level of satisfaction/importance of the specific tools used for online reflection?
- What is the level of satisfaction/importance of the role that online facilitators play in online reflection?

1.4 Methodology of the study

The research methods are the “procedures used to collect and analyse data” (McMillan and Schumacher, 2001). In this study the researcher used the Customer Satisfaction

Index questionnaire to collect data pertaining to the key factors in effective online reflection using weblogs. This study took the form of a case study.

According to Cohen, Manion and Morrison (2000) a case study “provides a unique example of real people in real situations, enabling readers to understand ideas more clearly than simply by presenting them with abstract theories or principles”. In this study, seven participants took part in the case study.

A comprehensive account of the research methodology is provided in Chapter 3 of this report.

1.5 Organisation of the report

The findings of this study will be reported in five chapters. The organisation of the chapters is indicated in figure 1.3.

Figure 1.3: Chapters in this paper

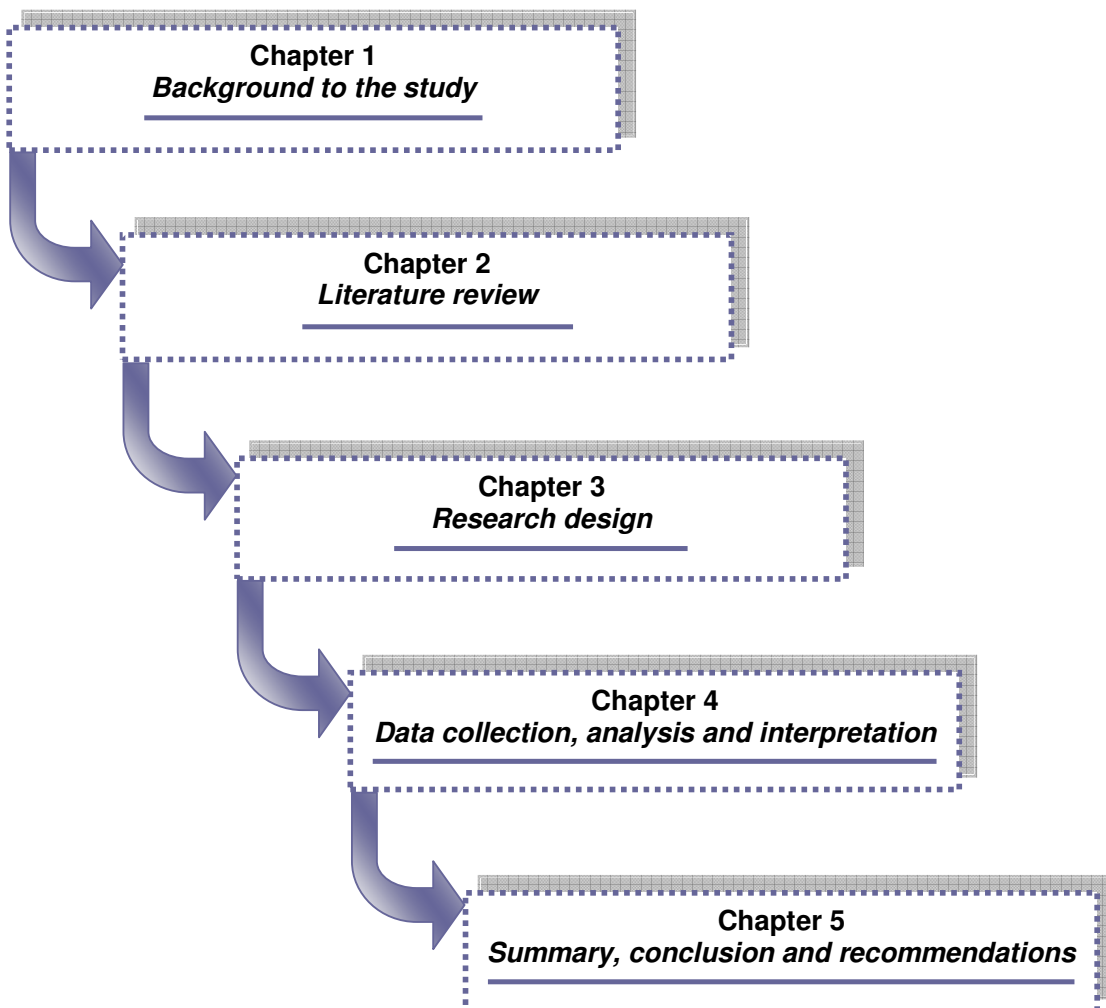


Table 1.1 provides a more detailed description of the content of each chapter.

Table 1.1: Content of the chapters in this paper

Chapters	Content
Chapter 1: Background to the study	This chapter will provide an overview of the study, the motivation behind it and what the researcher aims to prove under the headings: <ul style="list-style-type: none"> • Introduction • Context, research problem and question • Research aim • Methodology of the report • Organisation of the report • Value of the research
Chapter 2: Literature Review	The literature review will explicate the current literature available on the subject, and how it is relevant to the current study such as: <ul style="list-style-type: none"> • Online facilitation • Learning styles • Learning logs • Reflection
Chapter 3: Research Design	This chapter will explain the methodology, data gathering tools and the data analysis process that will be used in the study.
Chapter 4: Data collection, analysis and interpretation	The researcher will report the findings of the research after the data has been collected, in this chapter.
Chapter 5: Summary, conclusion and recommendations	This chapter will summarise all the chapters and provide the conclusion to the researcher's findings.

1.6 Value of the research

This study may implicate three areas. The three areas are categorised in accordance with activity theory namely instruments, rules, and division of learning. The implications will now be discussed in more detail.

1.6.1 Instruments

Facilitators will know the importance of deciding meticulously which reflection tools to use in e-learning. They will know that Blogger, w.bloggar and Bravenet are sufficient tools to use for reflection in an e-learning environment. This knowledge will assist online facilitators to design e-learning courses that include the use of relevant, sufficient reflection tools.

1.6.2 Rules

This study will prove that e-learners prefer to have set out rules when they are reflecting to guide them in the process. It will also provide the online facilitator with the type of questions to provide e-learners with as guideline for reflection. This will assist e-learners to reflect using specific information with sufficient detail so that they can use their reflective information as revision when studying for an exam or have to submit an assessment. Overall the e-learners will work more structured and consistently.

1.6.3 Division of labour

Labour should be clearly defined since role players then focus on their role in the activity and take responsibility for their actions, and the consequences of their actions. Online facilitators will have some guidelines as to their responsibility in reflection practice.

Chapter 2: Literature review

2.1 Introduction

In this study, the researcher finds it important to collect more information on online facilitation, learning styles, learning logs, reflection and using learning logs to reflect. Obtaining more information on these topics helps the researcher to determine the research strategies and methods to use. It will help the researcher to understand the different learning styles, to accommodate the participants in the research. One or all of these learning styles may be used. Having options helps the lecturer/researcher to accommodate the participants during the learning event.

2.2 Defining online facilitation

“Online facilitation, in broad terms can be described as the act of managing the learners and the learning through an online medium... In online learning this managing is usually done by a teacher or tutor” (Backroad Connections Pty Ltd, 2002). Thus it is safe to derive that online facilitation is the facilitation of learning on the World Wide Web, with a facilitator who manages the learning programme. A facilitator facilitates the learning process and manages learning events. In online learning it often happens that the facilitator remains a stranger to the students.

White (2000) states that every group of online students have different learning needs, just as in “offline facilitation”. The online facilitator should keep this in mind when facilitating, and apply the suitable facilitation strategy to the particular group. She continues to point out the differences between “online” and “offline” facilitation as indicated in table 2.1.

Table 2.1: Comparison between “online” and “offline” facilitation

Online Facilitation	Offline Facilitation
Facilitator acts as a guide to learners who are unfamiliar with online learning.	Learners explore, facilitator merely facilitates the learning event.
No physical cues. Detailed writing will ensure sufficient communication.	Facilitator may nod as a response. They use learners’ expressions as feedback. Learners’ tone of voice can be used to detect sarcasm/understanding/confusion.

Table 2.1: Comparison between “online” and “offline” facilitation (continued)

Online Facilitation	Offline Facilitation
Asynchronous learning/participation. Learners are seldom online at the same time, feedback/comments may not take place immediately forcing learners to wait for replies etc.	Synchronous learning. Students are mostly presented with the same content at the same time and discussions provide immediate feedback.
Anonymous participation. Often participants are not known to each other in online learning. They may feel like strangers since they never see each other face to face. Status and rank play a lesser role since you don't know each other's status. Participants may act outside their standard social customs because they do not feel part of a group.	Learners know almost everything about each other, groups are formed and status is usually allocated to everyone, which affects the interaction dynamics of the group. E.g. managers in the same learning event as other staff may cause normal staff not to participate in discussions, leaving the talking to the manager.
Online interactions are mostly text based. (It will change as software and hardware improves.) This may put strain on learners with writing difficulty or visual learners. It also provides permanent record of comments and writing to refer back to, but also to keep as evidence.	Learning material can be visual, audio visual, or written. The facilitator usually caters for all the learners' needs since there is a variety of methods and media to choose from.

Adapted from White (2000).

Benfield (2000) warns that teaching online may be lonely for the facilitator too and that the online facilitator should keep in mind that online learning strategies are very different from teaching offline. He continues to state that what works in an offline situation, may not work in the exact online situation, or as he put it: “Teaching techniques that you wield effortlessly face to face, like a master painter wields a brush, may not be valid online”.

According to Varvel (2001) not all students; either in an online or offline situation; are perfect. This writer continues to state that the “online course facilitator is charged with the task of developing skills of these non-ideal students while creating a learning environment suitable to various needs, preferences, and abilities”. According to Varvel (2001), the characteristics common to successful online students are:

- “Time management skills;
- Discipline and motivation;
- A sense of community;
- Communication skills;

- Computer/online familiarity and comfort; and
- Access”.

Varvel (2001) continues to state that very few online students have all these traits and that online instructors along with an institution’s online support system should minimise the necessity to have these traits, or provide sufficient mentoring in these traits.

Varvel (2001) continues to give techniques to use to address the trait difficulties learners confront. These techniques are summarised in table 2.2.

Table 2.2: Techniques an online facilitator may use to assist non-ideal online students

Trait category	Techniques to use
Time management skills	<ul style="list-style-type: none"> • Construct information into chunks that can be covered in 15-30 minutes by learners who have time constraints. Small pieces of information could be handled at a time. • The information should be printable so that learners may work on it offline too. • The learning content should appear as an effective syllabus including information such as time per assignment etc. • Provide learners with suggested logon times, possible schedules to complete assignments prior to the learning event. • Be clear about the posting requirements e.g. minimum/maximum postings allowed.
Discipline and motivation skills	<ul style="list-style-type: none"> • Motivate learners to realise material is more important than just having to pass the grade. • Make your presence as an online facilitator felt by providing prompt and effective feedback. Provide the learners with information on yourself, so that they know who they are dealing with. • Direct questions to specific learners who are falling behind.

Table 2.2: Techniques an online facilitator may use to assist non-ideal online students (continued)

Trait category	Techniques to use
Synergy and the online learning community	<ul style="list-style-type: none"> • Provide a course philosophy that lets students know that you would like to create a community. • Include discussions into the course since communication is imperative to create and sustain a community. • Structure discussions so that they are comprehensible and organised. • Be engaging, it might let the group feel relaxed and able to continue efficiently with learning. • Start the course with an ice-breaker so that learners can get to know each other. • Fix problems that arise rapidly and efficiently. • Encourage efficient communication between learners.
Communication skills	<ul style="list-style-type: none"> • Be a model to the learners. Communicate with them, as you expect them to do in return. • Provide clear instructions for communication so that the learners are aware of what is expected of them. • Include communication into the philosophy so that learners realise the importance thereof. • An ice-breaker will also encourage communication. • Encourage learners to participate and congratulate outstanding performance to motivate learners to communicate. • Assist learners with apparent communication difficulties. • Understand online talk, e.g. special abbreviations and icons used. Explain them to learners who are not aware of them. • Read between the lines of postings and deal with the issues effectively.
Technophobia	<ul style="list-style-type: none"> • Provide learners with relevant information prior to the learning event. • Provide support services to struggling learners. • Be patient with students that are having technological difficulties.

Table 2.2: *Techniques an online facilitator may use to assist non-ideal online students (continued)*

Trait category	Techniques to use
Access	<ul style="list-style-type: none"> • Consider that learning material need to be accessible to learners with disabilities. • Consider that learners do not all have the same network connections and the slowest connection should be considered when inserting videos, etc. into learning material.

Adapted from Varvel (2001).

Salmon gives five stages that participants go through during their experience of an online course (Holmlund, n.d.). These five stages are:

1. Access and motivation: Participants set up their learning; this includes hardware, software, Internet connections, access to courseware and learning material.
2. Online socialisation: Participants get to know the others in the group and start with basic communications and discussions.
3. Information exchange: Participants start going through the course content and share information with the group.
4. Knowledge construction: Participants start applying the new knowledge acquired instead of merely sharing it with others. They internalise the learning material, and share personal opinion.
5. Construction: Participants take responsibility for their own learning, explore the topic and reflect on their learning experience.

Adapted from Holmlund (n.d.).

According to Backroad Connections Pty Ltd (2002), online facilitators should have the following skills:

- The ability to incorporate the learner in the learning process.
- To listen and provide feedback after asking suitable questions.
- The ability to offer direction and support to learners.
- To manage discussions that take place online.
- Organise learners into teams who work online.
- Help form relationships between all participants.
- The ability to motivate learners to show a positive attitude towards learning.

Choden (2001) gives the following competencies that are required from an online facilitator:

- Instructional: They should query, sustain, guide, pace, explicate, and give individual advice and comment.

- **Managerial:** They should administrate the learning, e.g. keep track of students, set the rules for the learning event, and set the timetable.
- **Social:** They should create a sociable atmosphere that inspires learning.
- **Technical:** They should assist the learners with system and software queries.

Hootstein (2002) similarly says that an e-learning facilitator wears four pairs of shoes when facilitating, when they are acting as an instructor, social director, program manager, and technical assistant respectively.

Berge (1995) puts the responsibility of the online facilitator in four categories: pedagogical, social, managerial, and technical. In table 2.3 it is indicated how the skills required by an online facilitator as indicated by Backroad Connections Pty Ltd (2002), and the competencies required by an online facilitator as indicated by Choden (2001), falls into the four categories of the responsibilities of the online facilitator given by Berge (1995).

Table 2.3: *Facilitator responsibilities*

Pedagogical Responsibility	Social Responsibility	Managerial Responsibility	Technical Responsibility
<ul style="list-style-type: none"> • The ability to incorporate the learner in the learning process. • To listen and provide feedback after asking suitable questions. • To query, sustain, guide, pace, explicate, and give individual advice and comment. 	<ul style="list-style-type: none"> • The ability to offer direction and support to learners. • Help form relationships between all participants. • The ability to motivate learners. • To show a positive attitude towards learning. • To create a sociable atmosphere that inspires learning. 	<ul style="list-style-type: none"> • To manage discussions that take place online. • Organise learners into teams who work online. <p>To administrate the learning, e.g. keep track of students, set the rules for the learning event, and set the timetable.</p>	<ul style="list-style-type: none"> • To assist the learners with system and software queries.

Adapted from Berge (1995), Choden (2001), and Backroad Connections Pty Ltd (2002).

2.3 Learning styles

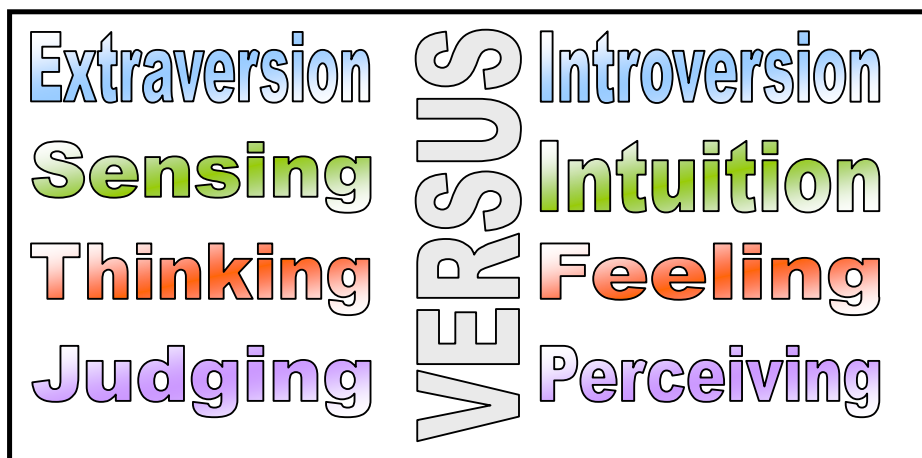
According to Felder (1996) learners have very unique learning styles. Learners focus on different types of information such as data or theories and prefer different presentations of the information like diagrams, oral presentations or written information. Furthermore there are differences in preference to working in groups or individually. Felder (1996) continues to mention that it is favourable to teach in various learning styles. There are various types of learners in a class and the educator needs to address the needs of all the learners, while still challenging their intellectual agility. “An objective of education should thus be to help students build their skills in both their preferred and less preferred modes of learning” (Felder, 1996).

It is safe to say that most learners are different and prefer different modes of learning. “Attempts to classify these differences have led to an understanding of learning styles” (e-Learning: Research and resources, n.d.). Learning styles that will be discussed in this paper are the Myers-Briggs type indicator, the Kolb’s learning style inventory, and the Hermann Brain Dominance Instrument.

2.3.1 The Myers-Briggs type indicator

According to Master Teacher Programs (n.d.), the Myers-Briggs type indicator provides four underlying dimensions as indicated in figure 2.1 below.

Figure 2.1: Four dimensions of the Myers-Briggs type indicator



Adapted from Master Teacher Programs (n.d.).

Master Teacher Programs (n.d.) explain that learners will therefore either fall under the category of extrovert, OR introvert, not both. The same with either sensing OR intuition, thinking OR feeling, and judging OR perceiving. Learners can fall into one of sixteen

combinations of the four dimensions, representing their learning style type, as indicated in figure 2.2.

Figure 2.2: Combinations of the Myers-Briggs type indicator dimensions

	Sensing		INtuition		
Introvert	1. ISTJ	2. ISFJ	3. INFJ	4. INTJ	Judging
	5. ISTEP	6. ISFP	7. INFP	8. INTP	Perceiving
Extrovert	9. ESTP	10. ESFP	11. ENFP	12. ENTP	Perceiving
	13. ESTJ	14. ESFF	15. ENFJ	16. ENTJ	Judging
	Thinking	Feeling	Feeling	Thinking	

Adapted from Master Teacher Programs (n.d.).

If the learner falls into the category ISTJ, it would include the dimensions introvert, sensing, thinking and judging.

The four dimensions are described by Master Teacher Programs (n.d.) as follows:

- Extraversion versus Introversion

This preference tells us how people are motivated or energised. Introverts are social, but prefer being alone when they need to collect their thoughts and get motivated. Introverts have a need to understand the things around them; they concentrate well and think through reflection. If they don't reflect, learning might be lost. Extraverts find energy through being social with others. They learn through expressing themselves.

- Sensing versus Intuition

Sensing people rely heavily on their senses to obtain information, even using their "sixth" sense. Obtaining the correct information and all the detail is imperative to sensing people, since they trust the facts to make decisions. Intuitive people seek information surrounding the facts they have collected. They trust their instinct and obtain a global view of the situation.

- Thinking versus Feeling

Being fair is of great importance to thinking students. They focus on objectivity in making a decision. Feeling students prefer agreeing on issues. They take the needs of people in account before they come to a conclusion or form an opinion. They tend to smooth out problems or conflict in a group.

- Judging (J) versus Perceptive (P)

Judging people are disciplined and make decisions easily. They act fast, discarding unnecessary information. They adhere to deadlines and focus on completing the task.

Perceptive people are enquiring, flexible, and spontaneous. They take on many projects, without necessarily completing them, while finding deadlines adjustable.

The Myers-Briggs test can be taken online. The test consists of 53 questions, and is available online at <http://similarminds.com/jung.html>.

Batovsky (2002) gives examples of activities that could be done for some of the Meyers-Briggs preferences, as indicated in table 2.4.

Table 2.4: Learning activities for Myers-Briggs preferences

Myers-Briggs preference	Learner's qualities	Online learning activity
Introvert and Sensing	Thoughtful, realistic seekers of the truth. Prefer factual information. Meticulous students.	Could be asynchronous learning. Might be a project that is properly planned and researched, has to be realistic and applicable to every day situations.
Extrovert and Sensing	Realistic learners who seek knowledge for practical purposes. Prefer factual information where the practical connotation is obvious.	Could be synchronous learning e.g. video conferencing. A realistic case study is a good activity.
Introvert and Intuitive	Thoughtful, innovating, introspective learners who learn because learning is important.	Could be asynchronous learning. Learners might analyse a new idea by doing a lot of research and keeping a reflective journal.
Extrovert and Intuitive	Action-orientated, innovative learners who use knowledge to create change.	Could be synchronous learning e.g. video conferencing. Learners might work together to brainstorm to find a solution to a problem.

Adapted from Batovsky (2002).

2.3.2 Kolb's learning style model

According to Businessballs (n.d.), Kolb's model works on two levels. Firstly a four stage cycle and secondly a four type definition of learning styles. The four learning styles are:

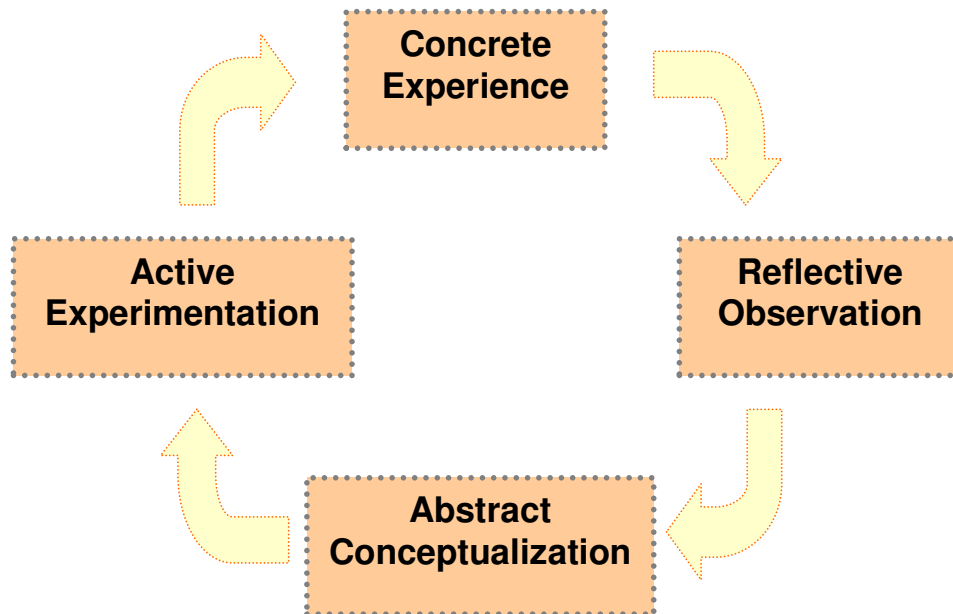
- Diverging;
- Assimilating;
- Converging; and
- Accommodating.

The four stages of the learning cycle are:

- Concrete experience;
- Reflective observation;
- Abstract conceptualization; and
- Active experimentation.

The learning cycle can be demonstrated as in figure 2.3 below.

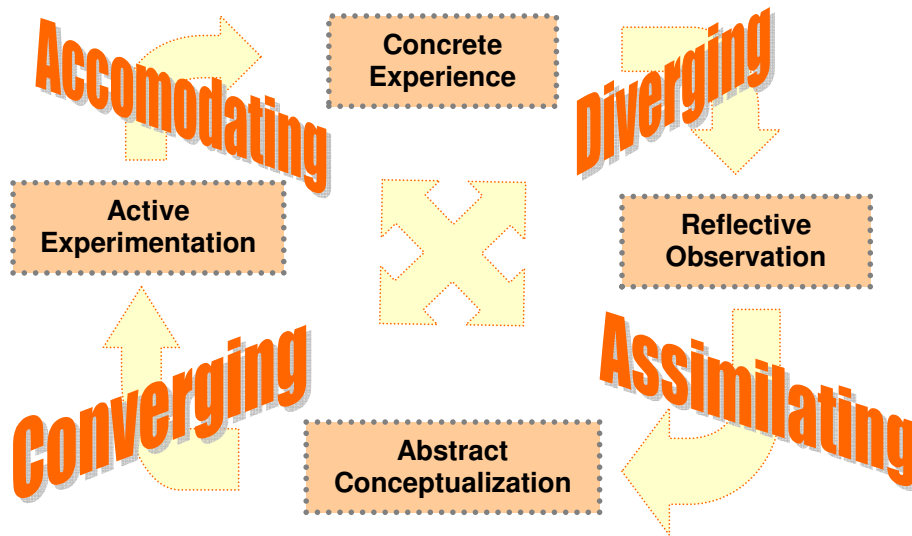
Figure 2.3: Kolb's learning cycle



Adapted from Businessballs (n.d.).

The four learning styles mentioned by Businessballs (n.d.) fit into the learning cycle as indicated in figure 2.4.

Figure 2.4: Kolb's learning styles integrated with the learning cycle



Adapted from Businessballs (n.d.).

Each of the learning styles adopt the adhering stages of the learning cycle, thus resulting in four types of learners. The four types are indicated in table 2.5 as adapted from Felder (1996).

Table 2.5: Types of learners in Kolb's learning styles

Type learner	Position in learning cycle	Characteristic questions asked by these learners	Instructor's function
1. Diverging	Concrete - Reflective	"Why" learners react to explanation of how learning relates to them.	Motivator
2. Assimilating	Abstract - Reflective	"What" learners react to ordered information and use reflection.	Expert
3. Converging	Abstract – Active	"How" learners learn by doing something. They want to discover the correct way of doing things.	Coach

Table 2.5: Types of learners in Kolb's learning styles (continued)

Type learner	Position in learning cycle	Characteristic questions asked by these learners	Instructor's function
4. Accommodating	Concrete - Active	"What if" learners experiment by applying info in new situations to solve a problem.	Facilitator (Allow the learners to discover the solution for themselves.)

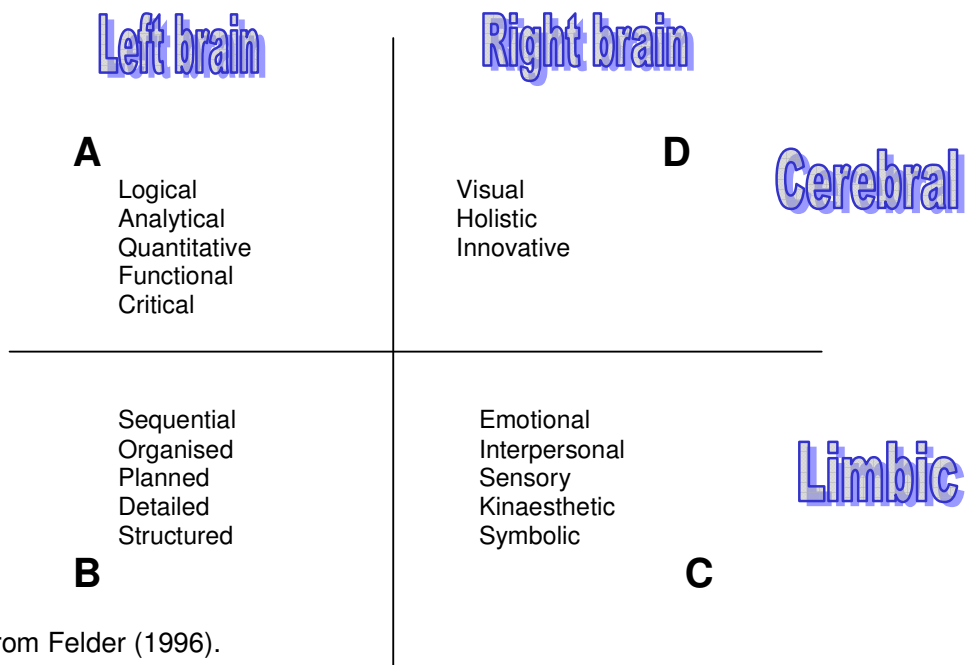
Adapted from Felder (1996).

A facilitator can adapt to each of the above roles to accommodate the learners in the learning environment.

2.3.3 Hermann brain dominance instrument

"This method classifies students in terms of their relative preferences for thinking in four different modes based on the task-specialised functioning of the physical brain" (Felder, 1996). The four quadrants in this classification scheme are indicated in figure 2.5 as adapted from Felder (1996).

Figure 2.5: Hermann brain dominance quadrants



Adapted from Felder (1996).

Quadrant A learners will be left brain cerebral, quadrant B learners will be left brain limbic, quadrant C learners will be right brain limbic and quadrant D learners will be right brain cerebral.

2.4 Learning logs

2.4.1 Defining learning logs

Various definitions are given for learning logs such as:

- “The learning journal is a systematic way of documenting learning and collecting information for self-analysis and reflection” (Kerka, 1996).
- “A Learning Journal is a way of systematically recording your thoughts, impressions, concerns, questions, and reflections. It provides an informal yet focused opportunity to express whatever comes to mind as you read course materials, participate in class discussions, attend to faculty presentations, and engage in conversations with colleagues” (Charleton University, n.d.).
- “A learning journal - sometimes called a reflective journal - is a steadily growing document that you write, to record the progress of your learning. You can keep a learning journal for any course that you undertake, or even for your daily work” (Audience Dialogue, 2004).
- “A weblog (or blog) is a web-based space for writing where all the writing and editing of information is managed through a web browser and is immediately and publicly available on the Internet. A blog site is managed by an individual who compiles lists of links to personally interesting material, interspersed with information and editorial. The user can instantly place their words and thoughts onto their own blog site through one of the many pieces of blogging software available” (Armstrong & Berry, n.d.).

Looking at all the definitions, the researcher’s understanding is that a learning log is an online diary used to record a series of events, be it personal or academic. These recordings are available for others to view. The aim is to record learning progress experienced.

According to Armstrong and Berry (n.d.) the main features of a blog as a publishing tool are:

- It must be easy to use.
- It should not be necessary to download any software.
- Users should be able to control the look and feel of the blog.
- Updates should show instantly.
- It should be possible to link the blog to other sites.

2.4.2 Uses of learning logs

Looking at the definitions provided in 2.4.1, a list of uses for learning logs can be identified:

- Document learning;
- Collect information;
- Reflection;
- Analyse current learning and problems;
- Keep record;
- Share the learning experience with others; and
- Highlight problems experienced.

2.5 Reflection

2.5.1 Defining reflection

“Learning is both an active and reflective process” (Action + Reflection = Learning, 2000).

This means that people learn by physically doing what they have learned about, and also by thinking about what they have learned. Learners often learn without knowing it, and have to first put the learning event into perspective to realise what they have learned.

“Reflection then is the vehicle for critical analysis, problem-solving, synthesis of opposing ideas, evaluation, identifying patterns and creating meaning” (Action + Reflection = Learning, 2000).

In conclusion, reflection is reviewing and reporting on what you have learned, what you understand about the information, and identifying what you still don't understand and need to do to adequately master the learning experience.

2.5.2 Reflection and learning

Looker (n.d.) states that “effective learning is supported when students are actively engaged in the learning process”. This means that by reflecting, (learners being actively involved) participants will learn effectively. Looker (n.d.) continues to state that reflection gives learners the opportunity to “explore their experiences, challenge current beliefs and develop new practices and understandings”. He also suggests that learners are more prone to expand higher-order thinking skills as given by Bloom's taxonomy when they are accountable for their learning.

“In its simplest definition, reflection can be seen as 'consciously thinking about and analysing what one has done (or is doing)’ (John Moores University, 2004).

Action + Reflection = Learning (2000) states that learners should be given the opportunity to reflect at any stage during a learning experience. This allows them to identify the beginning of learning, recognise growth throughout the learning and significantly assess what they have learned once the learning experience is over.

2.5.3 Reflection topics

The reflection topics used in the study are essential to the conclusions that will be drawn from the research results. Reflection can cover numerous aspects which in return can result in non-specific reflection. If the reflection topics are specified, the participants have a guideline to work with. It is necessary to have the appropriate reflection topics, which cover all the issues observed in the research. The Leeward Community College (n.d.) uses three levels of reflection which include reflection on the student self (“The Mirror”), the importance of the learning event (“The Microscope”), and how you can apply this learning (“The Binoculars”). Possible topics were identified such as stress, coping strategies, learning content, record of effort, record of progress and personal opinion.

2.5.3.1 Stress

2.5.3.1 (a) Defining stress

The Health Authority (n.d.) explains that stress is a reaction made by the human body when any challenge is put to it. They go on to say that the body aims to keep a good balance at all times, but demanding experiences often change these balances. The body attempts to rectify these imbalances by releasing hormones from the brain and so helping us to handle the incident that made us stress.

The Health Authority (n.d.) and Cahill, Landsbergis and Schnall (1995) state that there are short term and long term physical symptoms of stress. These symptoms are listed in table 2.6.

Table 2.6: Short term and long term physical symptoms of stress as given by The Health Authority (n.d.) and Cahill, Landsbergis and Schnall (1995)

Short Term	Long Term
<ul style="list-style-type: none"> • Faster heart beat • Increased sweating • Cool skin • Cold hands and feet • Feelings of nausea • Rapid breathing 	<ul style="list-style-type: none"> • Frequent colds • Asthma • Digestive problems • Headaches • Skin eruptions • Sexual disorders

Table 2.6: Short term and long term physical symptoms of stress as given by The Health Authority (n.d.) and Cahill, Landsbergis and Schnall (1995) (continued)

Short Term	Long Term
<ul style="list-style-type: none"> • Tense muscles • Dry mouth • Diarrhoea/constipation • Irritability • Anxiety • Headaches • Stomach problems • Over and under eating • Sleep disturbances • Chronic mild fatigue • Skin rashes • Teeth grinding • Forgetfulness • More use of alcohol, cigarettes, drugs or sleeping pills • Depression 	<ul style="list-style-type: none"> • Aches and pains • Tiredness • Heart disease • Seizures • Hypertension • Strokes • Ulcers • Infectious diseases • Serious depression • Accidents • Domestic violence • Suicidal behaviour • Alcoholism • Serious substance abuse

Adapted from The Health Authority (n.d.) and Cahill, Landsbergis and Schnall (1995).

The Health Authority (n.d.) goes on to say that stress may put pressure on the body in a variety of ways and in the long run contribute to chronic medical conditions. The long term effects can however be stopped if you control the things that make you stress, and your ability to handle stress.

“The fact is that we NEVER eliminate stress from our lives. The good news is that we can learn to manage and reverse the damage stress can cause” (*Stress*, n.d.). *Stress* (n.d.) continues to report that many employees experience stress in the workplace and often do not know how to handle it, or how to get rid of the stress. They explain that job stress is the destructive response when your job expects you to do more than what you are capable of doing and that it can lead to illness or even harm you. They give various causes of job stress as indicated in table 2.7.

Table 2.7: Causes of job stress

Cause	Example
<ul style="list-style-type: none"> Job insecurity 	Many companies go through restructuring that may cause employees to be insecure of their jobs.
<ul style="list-style-type: none"> High demand for performance 	Once again during restructuring the demand on existing employees may be very high since production has to be the same but fewer people are there to work.
<ul style="list-style-type: none"> Technology 	Employees are faced with technological equipment that constantly change and require them to adapt and learn how to use it.
<ul style="list-style-type: none"> Workplace culture 	In companies there may be various cultures leading to misunderstanding by colleagues causing stress in the workplace.
<ul style="list-style-type: none"> Personal or family problems 	Most people bring their personal life to work and that means also the problems that occur.

Adapted from *Stress* (n.d.).

2.5.3.1 (b) Stressors

“Stressors are the events or situations that cause stress. Being unprepared to give a presentation at work is an example of a stressor. The situation of being unprepared could make a person develop stress” (The Health Authority, n.d.).

Stress (n.d.) states that people have external or internal stressors. External stressors are factors outside the body that can cause stress such as pain (physical stressor) or conditions at work (psychological environment). The Health Authority (n.d.) mentions that “physical environment, social interaction with people or life events which you have no control over” are external stressors.

Internal stressors are factors inside the body such as infections (physical conditions) or worry about something that might, or might not happen (psychological stressor). The Health Authority (n.d.) mentions that “personal lifestyle choice, personal traits, individual thought process” are internal stressors.

Stress (n.d.) explains that stressors can be classified as short-term (acute) or long-term (chronic) occurrences.

“Acute stress is the reaction to an immediate threat, commonly known as the *fight or flight* response. The threat can be any situation that is experienced, even subconsciously or falsely, as a danger” (*Stress*, n.d.).

Stress (n.d.) say that factors such as loud sounds, a lot of people around you, being alone, being hungry, or even imagining that something is dangerous are common acute stressors. Once the acute danger is over, the feeling of stress is also over.

Stress (n.d.) explains that chronic stress is a continuous stressful situation where you cannot act on the situation and the stress becomes chronic. This will include situations where you are continuously under strain at work, constant trouble with a relationship, you always feel lonely or you are permanently concerned about the financial situation you are in.

Cahill, Landsbergis and Schnall (1995) state that stressors at work can be physical or social. These stressors are indicated in table 2.8.

Table 2.8: *Stressors at work*

Physical stressors	Social stressors
<ul style="list-style-type: none"> • Chemical agents • Physical agents (noise, heat, radiation, cold) • Hazards which cause fear • Uncomfortable work area 	<ul style="list-style-type: none"> • High job demands • Low job control • Low social support • Lack of input into decisions • Conflicting demands • Repetitive tasks or machine paced work • Shift work, especially rotating shifts • Poor supervision • Poor relations with co-workers • Lack of promotions • Job insecurity • Excessive overtime

Adapted from Cahill, Landsbergis and Schnall (1995).

2.5.3.1 (c) Stress and technology

Bowman (n.d.) mentions that technology is the “new stress” and that it may be that people experience it since they expect technology to work perfectly all the time, and this is not always possible. Factors such as electricity problems or web connections are not always in your power to control and people are distressed when it causes problems. People forget that machines are mere tools and depend on human’s maintenance and power to work efficiently.

Bowman (n.d.) continues to mention that we often are not in control of technology that we are forced to use such as high tech household equipment. The important thing to remember though is that even if you have no control over the type of equipment you have to use, you do have control over how you feel about it and how much you will depend on it.

Mueller (2001) explains that the use of technology has increased in our work environment and at home and some people love this use of technology, while others are questioning the need for it all. He states that it is important to know where the technological stress is coming from, since it is possible to control some of the aspects that cause the stress.

Mueller (2001) mentions a couple of contributing factors that you cannot change. These include:

- Technology that is supposed to enhance efficiency but is not working as planned and employees are held responsible for poor performance.
- Technology is too complicated and too much time is spent on learning how to use, rather than using it.
- Technology is bought for the great price, not value and does not do what is required.
- Technology does not solve the problem at hand.
- Technology does not operate as it is supposed to.
- Tools are standardised and not applicable in all situations.
- The tools have limitations that hinder you from doing the job properly.

Mueller (2001) goes on to give a couple of mannerisms to remember in order to reduce technological stress all around. These include:

- Do not work excessively; you need the break to recharge.
- Try to keep work at work and get away from work and stress when you are at home.
- Don't be on standby all the time. View messages occasionally.
- Consider that other people also need their break before you contact them.
- Admit it if you don't know the solution to a problem and decide if it is important to know it or not.
- Manage your time and decide what needs to be done immediately or not.
- Take precautions such as backing up your system, doing tasks on time and not at the last minute and so avoiding stress you caused yourself.
- Ask for proper training in the tools you have to use.
- Have friends to share your stress with, they may be able to help.
- Allow tools to do what they are supposed to do; do not make extra work for yourself by trying to do it yourself.

- Create occasions where no technology is involved and you don't have to face it.
- Don't upgrade technology unnecessarily and open yourself to learning the new software if it is not necessary.
- Make your working space comfortable to work in.
- Find some easy to do exercises and force yourself to take breaks intermittingly.
- Enjoy what you are doing, laugh more.
- Find innovative solutions to your technological stressors.

Cahill, Landsbergis and Schnall (1995) recommend the healthy use of computers and involving staff in the selection of new equipment to reduce stress in the workplace. This may result in job satisfaction and higher productivity.

2.5.3.2 Coping strategies

According to MacArthur (1998) "Coping strategies refer to the specific efforts, both behavioral and psychological, that people employ to master, tolerate, reduce, or minimize stressful events". They distinguish between two types of coping strategies:

- **Problem solving strategies:** When you do something active to avoid stressful circumstances. Problems are controllable.
- **Emotion focused coping strategies:** Regulate your emotional response. Problems are less controllable; like illness.

MacArthur (1998) continues to say that coping strategies can be active or avoidant. Active when the nature of the stressor is changed, or how one thinks about it. Avoidant when direct contact with the problem is avoided e.g. rather start drinking than handling the problem.

MacArthur (1998) mentions two methods of measuring coping as is illustrated in table 2.9.

Table 2.9: Methods of measuring coping

Ways of Coping Measure	COPE
Folkman, Lazarus and associates are the developers.	Carver, Scheier, and Weintraub are the developers.
Factor analysis.	Theoretically guided.
Respond to specific problems and indicate to which degrees they used the coping strategies.	Coping strategies are pre-determined and then tested.

Table 2.9: Methods of measuring coping (continued)

Ways of Coping Measure	COPE
Eight Coping strategies: <ul style="list-style-type: none"> • Confrontive Coping • Seeking Social Support • Planful Problem-Solving • Self-Control • Distancing • Positive Appraisal • Accepting Responsibility • Escape/Avoidance 	The COPE scales are: <ul style="list-style-type: none"> • Active Coping • Planning • Seeking Instrumental Social Support • Seeking Emotional Social Support • Suppression of Competing Activities • Religion • Positive Reinterpretation and Growth • Restraint Coping • Resignation/Acceptance • Focus on and Venting of Emotions • Denial • Mental Disengagement • Behavioural Disengagement • Alcohol/Drug Use • Humour

Adapted from MacArthur (1998).

Folkman and Lazarus (n.d.) mention the “Eight Coping Factors Measured” by their Ways of Coping. These are:

- *Confrontive Coping*: explains the attempts to change the situation which includes some form of antagonism or daring.
- *Distancing*: explains purposeful attempts to distance you from the situation and seeing it as unimportant.
- *Self-Controlling*: explains attempts to control your emotions and behaviour.
- *Seeking Social Support*: explains attempts to find informational support, tangible support, and emotional support.
- *Accepting Responsibility*: recognizing your part in the problem whilst attempting to correct it too.
- *Escape-Avoidance*: expresses the desire to avoid the problem at hand.
- *Planful Problem Solving*: explains an intentional attempt to change the situation in order to solve the problem in an analytical way.
- *Positive Reappraisal*: explains attempts to create sense through individual development. It has a spiritual aspect.

2.5.3.3 Learning content

CEN/TC 251(n.d.) states that “knowledge can be considered as the distillation of information that has been collected, classified, organized, integrated, abstracted and value added”. They continue to state that knowledge can be applied to construe new knowledge. It can be derived that knowledge and information go hand-in-hand in the learning process. For learning to take place there has to be a learning topic supported by learning content or information. It therefore seems that the leaning content is the starting block for learning.

There are three types of knowledge (Peirce, 2003) that will be discussed in this paper, declarative knowledge, procedural knowledge, and conditional knowledge. According to Philips (n.d.), “declarative knowledge is factual or conceptual knowledge that a person has, whereas procedural knowledge refers to how a person does something”. Jiamu (2001) explains that “declarative knowledge has something to do with facts like propositions, images, and sequences. Procedural knowledge has something to do with motor skills, cognitive skills and cognitive strategies”. Peirce (2003) explains that conditional knowledge is “knowledge about when to use a procedure, skill or strategy and when not to use it”. It can be derived that declarative knowledge is to know what a ball is, whilst procedural knowledge is to know how to throw a ball. Conditional knowledge is to know when to throw the ball at a moving object.

If participants reflect on learning content, it could indicate to the facilitator what they know of the content, what they don't know of the content or how they feel about the nature of the content. These reflections might indicate to the facilitator which topics to revise if a couple of participants do not understand the content. It may also provide the facilitator with ideas on how to restructure the content for the following study groups to adapt to the needs of the students regarding learning content.

Gagne is well known for his nine events of instruction. Kruse (n.d.) lists them as:

1. “Gain attention
2. Inform learners of objectives
3. Stimulate recall of prior learning
4. Present the content
5. Provide “learning guidance”
6. Elicit performance
7. Provide feedback
8. Assess performance
9. Enhance retention and transfer to the job”

The last step is to enhance retention and transfer. This means to encourage learners to recall what they have learned and then to apply it in the appropriate situation.

2.5.3.4 Record of effort

Phelps and Ellis (n.d.) explains that attribution is a learner's justification for their achievement or lack thereof. They continue to say that learners have different ways of attributing, which influences their enthusiasm, performance and emotional responses to a variety of life situations. The three attributional styles are:

- Identifying the cause of an incident;
- Identifying the responsibility for an incident; or
- Referring to personal qualities.

Phelps and Ellis (n.d.) mention that learners can have a pessimistic or optimistic attribution styles. A pessimistic attribution style is when they believe nothing can be done to improve the situation. An optimistic attribution style is when they believe the opposite, that there is a solution to the problem. They relate these attribution styles to performance, mentioning that optimistic style learners perform better than less optimistic style learners. They continue to report that optimistic style learners have a better attitude towards using computers and experiencing them as user friendly.

According to Booth-Butterfield (1996), attribution can be internal or external. External refers to when you allocate the cause of an event to someone other than yourself, e.g. "the devil made me do it". Internal attribution allocates the cause of an event to one self, e.g. "I'm guilty, grant me forgiveness". They furthermore explain the process of attribution as working in a chain of events:

1. "The world asks me, "Why?"
2. I provide an attribution (internal or external).
3. My future behaviour depends on the type of attribution".

As already stated, "In its simplest definition, reflection can be seen as 'consciously thinking about and analysing what one has done (or is doing)'" (John Moores University, 2004). If participants should reflect on what they have done, it is appropriate that they reflect on the effort they have put into the learning experiences. This could include what effort they put in, if they could put in more effort or if they have done enough to contribute to the learning experience. By reflecting on the effort they put in, the participants may realise that they are not doing their part in the learning. This realisation might motivate participants to put in more effort in future.

The researcher can derive that by reflecting whether your own effort was inefficient or sufficient, it influences future behaviour. The ideal is to motivate learners to have internal attribution, thereby taking ownership for learning.

2.5.3.5 Record of progress

According to Simon Fraser University (n.d.), “metacognition involves an element of reflection or looking back at what you’ve done in order to make that experience as rich as possible. In the context of skills transfer, it helps you see how past skills might be used to your advantage in a new situation”. They continue to state that by reflecting on previous thoughts and behaviours, one will make associations which make the optimal transfer of skills possible.

Simon Fraser University (n.d.) states that to be an exceptional achiever, you must develop metacognitive skills which include:

- “Being aware of yourself as a learner.
- Self-monitor your learning.
- Assessing and critiquing your learning, thinking, and resources.
- Continually developing problem-solving skills and setting goals”.

“Learning is both an active and reflective process” (Action + Reflection = Learning, 2000). By keeping record of personal progress, the participants in this study will appreciate what they have achieved already. This realisation might motivate participants to learn more. It might also indicate to participants that they are falling behind the schedule with their learning and should put in extra effort to get up to speed.

2.5.4 The role of a facilitator in reflection

Armstrong and Berry (n.d.) say that learners might find reflection threatening and that caution should be taken to introduce the concept to learners. They continue to give the following guidelines:

- Generate the right atmosphere to show learners the function and importance of reflection.
- Introduce reflective writing by allowing the learners to do activities.
- Let learners write notes to explain reflection to forthcoming learners to guide them in reflective writing.

Armstrong and Berry (n.d.) state that there are two views on the subject whether reflection material should be assessed. On the one side it is difficult to assess these journals since it is difficult to assess a person’s personal growth, learners may not be honest if they know the journals will be assessed or criteria for assessment are vague. On the other hand it may be necessary to do assessment to ensure that learners participate in the reflection activity.

Looker (n.d) states that “meaningful and timely feedback to students improves learning”. He gives the following tips for learning and teaching using reflection:

- It’s essential to clarify to learners the goals and benefits of keeping a learning journal.
- Make sure that learners have the criteria for making entries in the journal from the start. Examples could be used.
- Provide guidelines for journal entries, like questions.
- Provide learners with prompt feedback regarding their journal entries.
- Promote the possibility for learners to reflect on their learning experiences along with the course content.

2.6 Using learning logs to reflect

2.6.1 Where to blog

“At its simplest a blog is a personal web based space for writing managed by the author who compiles lists of links to personally interesting material interspersed with information and editorial” (Armstrong & Berry, n.d.).

Armstrong and Berry (n.d.) continue to say that blogs are able to amalgamate the conventional diary with more modern methods to instantly publish information on the web. They can be kept up to date and added to over time. In this way the learner can write about learning and gather information to use during reflection. Learners would usually write in the first person with an informal tone like they are having a normal discussion with a friend. Reflection needs to be critical where the learner expresses the relation between new knowledge gained and what they already know about the subject.

John Moores University (2004) mentions that promoting a reflective approach to learning fulfils several functions:

- It allows learners to learn through experience.
- It encourages learners to think for themselves.
- It helps learners to identify their strong points and limitations.
- It provides proof of progress.

2.6.2 Reflective questions

A couple of good questions to ask on a learning log are:

- “What did I do in class today?”
- What did I learn?
- What did I find interesting?

- What questions do I have about what I learned?
- What was the point of today's lesson?
- What connections did I make to previous ideas of lessons?" (*Learning Logs*, n.d.).

According to Armstrong and Berry (n.d.) a good way of organising a journal to be logical, is to ask learners to respond to specific questions. Examples of questions are indicated in table 2.10.

Table 2.10: Reflective questions

Type of question	Examples of structured questioning
Description	<ul style="list-style-type: none"> • What happened during the learning experience?
Feelings	<ul style="list-style-type: none"> • What were you thinking during the learning experience? • What were you feeling during the learning experience? • What were you worried about during the learning experience?
Evaluation	<ul style="list-style-type: none"> • What was good and bad about the learning experience? • What were your strengths and weaknesses during the learning experience?
Analysis	<ul style="list-style-type: none"> • What sense could you make of the situation? • What was your part in the success/failure of your learning? • Where did your inspiration come from?
Conclusion	<ul style="list-style-type: none"> • What else could you have done to learn more? • List all of the activities that would have enhanced the learning experience. • List the activities that were unnecessary during the learning experience.
Action Plan	<ul style="list-style-type: none"> • What would you do differently next time? • What changes in approach are needed - personal and technical?

Adapted from Armstrong and Berry (n.d.).

2.7 The value of relevant research relating to the current study

2.7.1 Online facilitation

In this study the researcher will also be the online facilitator. The online facilitator's responsibilities are indicated in table 2.11 as suggested in paragraph 2.2.

Table 2.11: Facilitator responsibilities

Pedagogical Responsibility	Social Responsibility	Managerial Responsibility	Technical Responsibility
<ul style="list-style-type: none"> • Apply suitable facilitation strategy to the particular group. • Encourage positive communication. • Query, sustain, guide, pace, explicate, and give advice to participants. • Incorporate learning in the learning process. 	<ul style="list-style-type: none"> • Assist participants with discipline and motivation skills. • Create a feeling of a community. • Include the learner in the learning process. • Help form relations between participants. • Create a sociable learning atmosphere that inspires learning. • Offer direction and support to learners. 	<ul style="list-style-type: none"> • Help participants with time management. • Ensure all participants have physical and electronic access to learning material. • Listen and provide feedback to participants. • Manage discussions. • Organise and manage groups. 	<ul style="list-style-type: none"> • Assist participant with technical difficulties/fears. • Assist with system and software queries.

Compiled from paragraph 2.2.

It is clear that the social and managerial role of the online facilitator is vast and will consume a lot of the online facilitator's time. The researcher feels that the responsibilities of the online facilitator are not restricted to the above-mentioned responsibilities only. It is important for the facilitator to be aware of the needs of the participants at all times, and be adaptable to their specific requirements during the learning event. It will be advisable to find creative solutions to the problems that occur.

In this study some challenges may arise regarding online facilitation. The researcher's concerns are:

- There is no communal communications space for the participants to use to communicate with each other. They can communicate through e-mail, but the response will be asynchronous. This may cause frustration for the participants as they may feel that their support structure is insufficient.
- Some of the participants are not familiar with the software that will be used, and they might be reluctant to use it. It may cause a delay in the learning event and these participants will fall behind with their learning. Participants may not feel confident when they perform tasks with the new software, which may influence their learning experience negatively.

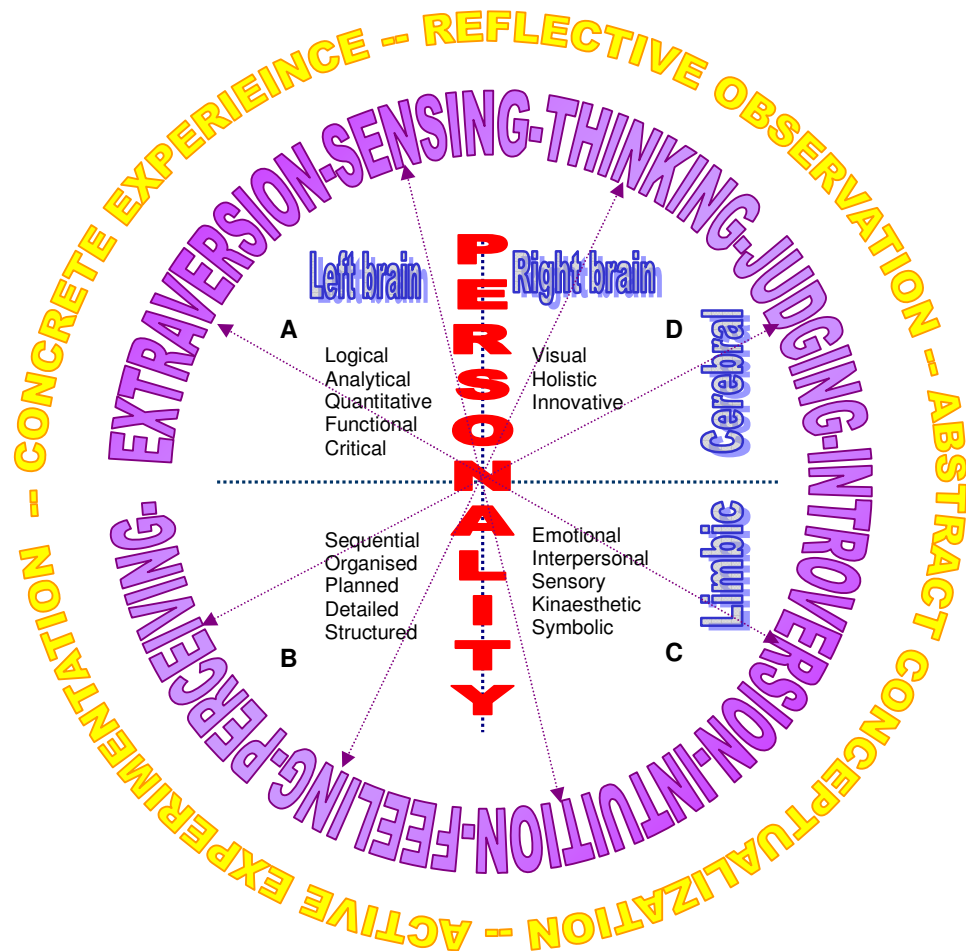
2.7.2 Learning styles

The researcher is aware that participants have various learning styles, which in turn makes every participant unique. An amalgamation of the various learning styles (see 2.3) is indicated in figure 2.6. The learning styles of Myers-Briggs (see 2.3.1) and Hermann (see 2.3.3) is integrated and amalgamated along with the four stages of the learning cycle as given by Kolb (see 2.3.2).

The amalgamated model in figure 2.6 indicates that there is a vast number of learning preferences and styles. A facilitator could attempt a multiple approach which will allow for the accommodation of various individual learning styles. The reality is that no facilitator can foresee what the participants in a learning event's preferred learning styles are.

The researcher prefers to use the Myers-Briggs type indicator (see 2.3.1) when planning learning activities. Learning will take place synchronously and asynchronously. Learners will be provided with various individual challenges requiring planning, problem solution, research, and reflection. By doing this, there will be catered for Introvert/Extrovert learners as well as Intuitive/Sensing learners as mentioned in 2.3.1.

Figure 2.6: Amalgamated learning styles of Myers-Briggs, Kolb and Hermann



Adapted from Master Teacher Programs (n.d.), Businessballs (n.d.) and Felder (1996).

2.7.3 Learning logs

In this study, an online learning log will be used mainly for reflection, but also as a type of portal to provide links to tasks completed (see 2.4.2). Reflection will include keeping record of learning and progress, highlighting problems experienced and sharing learning experiences with other participants. It remains to find a suitable learning log to use. Elements to consider when choosing a learning log are indicated in 2.4.1 as suggested by Armstrong and Berry (n.d.).

The researcher realises that problems that may arise during this study, are:

- Software limitation to personal computers and the network used at the particular tertiary institution.
- Participants may be reticent to share personal views and experiences on the web where anyone can view it.

2.7.4 Reflection

Learners should be given the opportunity to reflect at any stage during a learning experience (see 2.5.2). Participants in this study will be asked to reflect on a weekly basis, at any stage during the learning experience. Various reflective questions have been derived from 2.5.3 as indicated below (also see Addendum D - Reflection questions):

- What did you learn by completing this assignment? (Derived from 2.5.3.3.)
- What extra effort could you have put in to achieve the outcomes easier? (Derived from 2.5.3.4.)
- How well did you cope with the workload? (Derived from 2.5.3.1 and 2.5.3.2.)
- How well did you cope with the time constraints? (Derived from 2.5.3.1 and 2.5.3.2.)
- How well did you cope emotionally with your studies during this assignment? (Derived from 2.5.3.1 and 2.5.3.2.)
- What did you do to help yourself cope with your studies during this assignment? (Derived from 2.5.3.1 and 2.5.3.2.)
- What do you still not understand about the learning content in this assignment? (Derived from 2.5.3.3.)
- What are you going to do to ensure you understand all relevant learning content sufficiently? (Derived from 2.5.3.3.)
- How did you progress in your learning process from the previous weeks? What personal growth did you experience? (Derived from 2.5.3.5.)
- What interesting or new computer programmes or gadgets did you discover this week and what can it be used for? (Derived from 2.5.3.3.)

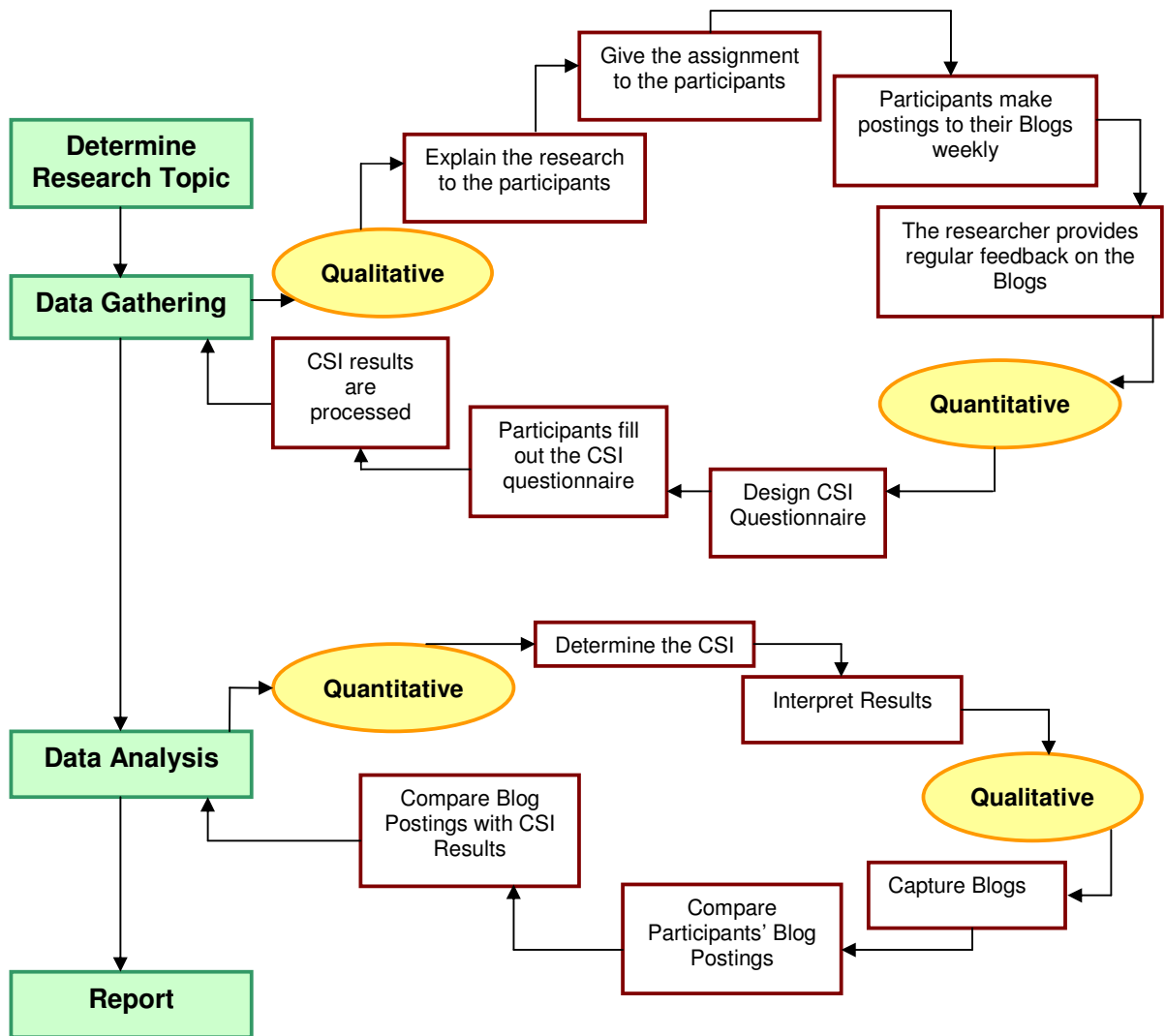
The researcher's greatest concern regarding reflection is that participants will neglect to reflect and hurriedly finish reflection which is then not honest and detailed, and defies the purpose of reflection. If reflection is delayed, the facilitator's response will also be delayed. This will result in further asynchronous learning which could de-motivate participants.

Chapter 3: Research design

3.1 Methodology

The research process that will be followed in this study can be demonstrated in figure 3.1 below.

Figure 3.1: Research process



The researcher already determined the research topic being: “Weblogs as an instrument for reflection in an e-learning environment – A case study in higher education”.

Both qualitative and quantitative data will be gathered. The qualitative data will be gathered before the quantitative data is gathered.

After the research data is gathered, analysis of the data will take place. Quantitative data analysis will be followed by qualitative data analysis. After the data is analysed, the results will be reported.

3.1.1 Participants

Students attending the module CIA 722 at the University of Pretoria (2005) will be the participants in the study. This module forms part of the Honours programme in Computer Integrated Education.

Participation is not compulsory and participants can withdraw from the study at any given time. Participants have the option to stay anonymous if they wish to do so. The participants are of varying age, sex and race. Both males and females will participate in the research. The participants are from 24 years to about 45 years of age. There are both Caucasian and African students among the participants.

Since the participants are enrolled for an Honours degree in Computer Integrated Education, a few assumptions are made about their computer literacy. It is assumed that they will be able to navigate their way on the Internet with the necessary guidance of the researcher. Furthermore it is assumed that they know what an online facilitator is. It is also assumed that they will understand what reflection is and that they will be able to put it in context of learning, since they have been trained in education. The participants have been introduced to weblogs in previous modules and the researcher will build on this knowledge, always being available for assistance if participants should need it.

There are not many participants in this study. Each participant will be treated as an individual and given personal attention. The researcher wishes to determine the value of this personal involvement to the participants and their learning experience.

3.1.2 Research process

While completing the module CIA 722, participants will keep their own online diary at www.blogger.com. Each week the participants will report on how they coped with the previous weeks' studies by completing a questionnaire and posting it to their weblogs. The researcher will keep track of these postings and attempt to assist and motivate participants with their studies. It is the intention of the researcher to determine:

- Whether the participants value this action of reflecting in their learning.
- Their ability to cope with their studies.

After the course is completed, the participants will fill out a questionnaire to determine their customer satisfaction with the use of weblogs as an instrument for reflection. The

results of this test will be processed and reported. The research material will therefore be:

- The Customer Satisfaction Index questionnaires.
- The blog postings participants make.

The questionnaires will present quantitative data whilst the blog postings will present qualitative data to the researcher.

3.2 Data gathering instruments

3.2.1 Customer Satisfaction Index questionnaires

The participants will fill out the Customer Satisfaction Index (CSI) questionnaire at the end of the module CIA 722 (see Addendum A – Customer Satisfaction Index Questionnaire).

3.2.1.1 Defining Customer Satisfaction Index

“The Customer Satisfaction Index represents the overall satisfaction level of the customer as one number, usually as a percentage” (Bhave, n.d.). It is the intention of the researcher to produce such an Index to determine the level of participants’ user satisfaction for using weblogs as an instrument for reflection in an e-learning environment.

3.2.1.2 Purpose of the Customer Satisfaction Index questionnaire

The purpose of the questionnaire is to determine the participants’ satisfaction with the use of weblogs in their learning experience during the course CIA 722. It will determine how satisfied the participants are with using blogs as well as how important it is for them to include the use of weblogs in this course (see Addendum A - Customer Satisfaction Index Questionnaire).

By dividing the questionnaire into sections, it is the intention of the researcher to focus the results not only on the use of weblogs as a whole but focus on more detailed elements such as the role of a facilitator in reflection, and the tools used to reflect. Once again the user satisfaction can be determined as well as the importance of these elements to the participants of the study.

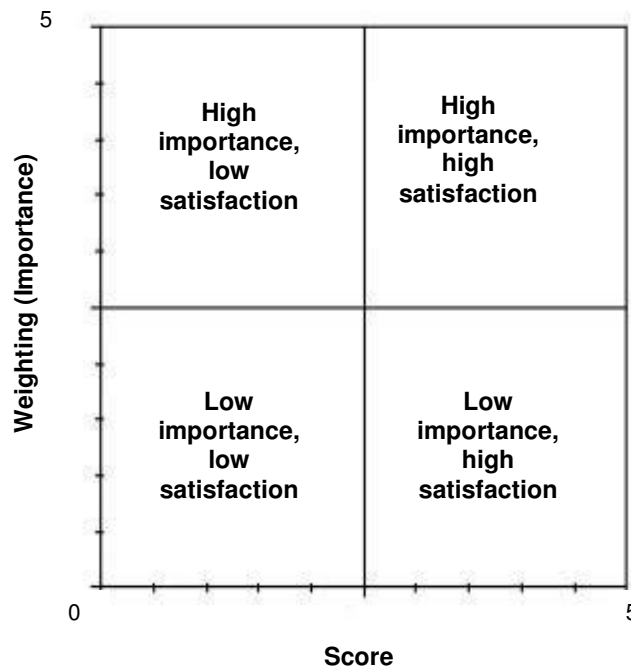
The results will fall into one of four categories:

- High importance, high satisfaction.

- High importance, low satisfaction.
- Low importance, high satisfaction.
- Low importance, low satisfaction.

These categories can be put on a graph as shown in figure 3.2.

Figure 3.2: Categories of Customer Satisfaction Index



Should the results fall in the category high importance, high satisfaction, it will indicate that the participants find it **very important** to use weblogs as an instrument for reflection, and that they are **satisfied** with the course presented to them.

Should the results fall in the category high importance, low satisfaction, it will indicate that the participants find it **very important** to use weblogs as an instrument for reflection, but they are **unsatisfied** with the course presented to them. This result will indicate to the researcher that the participants in the study feel that another way should be found to allow students in higher education to reflect.

Should the results fall in the category low importance, high satisfaction, it will indicate that the participants find it **unimportant** to use weblogs as an instrument for reflection, and that they are **satisfied** with the course presented to them. This result will indicate to the researcher that the participants in the study feel it is nice to reflect, but not very important to do so.

Should the results fall in the category low importance, low satisfaction, it will indicate that the participants find it **unimportant** to use weblogs as an instrument for reflection, and

they are **unsatisfied** with the course presented to them. This result will indicate to the researcher that the participants in this study feel that there is no place for using weblogs for reflection in an e-learning environment.

3.2.1.3 The design of the Customer Satisfaction Index questionnaire

Creative Research Systems (n.d.) gives the following guidelines when designing a Customer Satisfaction Questionnaire. These guidelines will be taken into consideration when designing the Customer Satisfaction Index. These tips are indicated in table 3.1, and it is indicated how the researcher will apply these tips in the study.

Table 3.1: How to design a Customer Satisfaction Questionnaire

Tips	Implementation
<ul style="list-style-type: none"> Design the questionnaire to fit the medium. 	<ul style="list-style-type: none"> This questionnaire will be paper based therefore questions must be clear and understandable. Questions must be numbered clearly and correctly. The font must be easily readable and the correct size. Spacing should be considered.
<ul style="list-style-type: none"> Keep it short and simple. 	<ul style="list-style-type: none"> The questionnaire will consist of no more than 40 questions and will not be longer than 3 pages.
<ul style="list-style-type: none"> Start with an introduction or welcome message. 	<ul style="list-style-type: none"> The introduction will clearly state the name, purpose and instructions of the questionnaire.
<ul style="list-style-type: none"> There are two broad issues to keep in mind when considering question and answer choice order. One is how the question and answer choice order can encourage people to complete your survey. The other issue is how the order of questions or the order of answer choices could affect the results of your survey. 	<ul style="list-style-type: none"> Questions will be categorised to prevent confusion. Questions will be sequenced as to firstly enquire about importance, then satisfaction.

Table 3.1: *How to design a Customer Satisfaction Questionnaire (continued)*

Tips	Implementation
<ul style="list-style-type: none"> Reassure your respondent that his or her responses will not be revealed to your client. 	<ul style="list-style-type: none"> It will be stated that providing personal information is optional.
<ul style="list-style-type: none"> Do not put two questions into one. 	<ul style="list-style-type: none"> Meticulous care will be taken to ensure that questions are simple and direct to the point.
<ul style="list-style-type: none"> Make sure your questions can accurately tell you what you want to learn. 	<ul style="list-style-type: none"> Questions will be revised to determine if their context is relevant to the study.
<ul style="list-style-type: none"> Avoid emotionally charged words or leading questions. 	<ul style="list-style-type: none"> An external opinion will be of help to determine if the questions are leading.

If all these principles are applied when designing a questionnaire, the participants will complete the questionnaires honestly and the results of the questionnaire will therefore produce accurate results to the study.

3.2.1.4 Distribution and collection

The questionnaire will be handed to participants at the end of their last contact session during the module CIA 722. The researcher will explain to the participants what is expected of them and how they should complete the questionnaire. The researcher will be available for questions if there are any uncertainties during the completion of the questionnaire. Participants will be provided with enough time to complete the questionnaire without being pressurised to finish it. The researcher will collect the questionnaires when the participants are finished, not allowing anyone else to view, or alter the questionnaire. The participants' responses will remain confidential at all times.

3.2.2 Blog postings

Participants will make postings to their blogs weekly. The researcher acting as a facilitator will monitor these postings. Recommendations and encouragement will be corresponded using the comment function on the blog. Participants will not be penalised if they do not make their postings, it is their own responsibility to make the postings. It will however be part of the formative assessment since all the addresses of the location to their tasks are linked on the blogs. Participants need to realise that their formative assessment will be influenced if they do not post to their blogs.

3.3 Data analysis

3.3.1 Customer Satisfaction Index

The Customer Satisfaction Index questionnaire will form part of the quantitative data collection. A value in the form of a percentage will be obtained that will indicate the level of user satisfaction in the categories of satisfaction and importance. The questionnaire will consist of three sections and an index will be calculated for each section as well as for the course as a whole. The Index of the sections will be compared to determine which section is more important to the participants and which they are more satisfied with.

3.3.2 Blog interpretation

The content of the blogs will form part of the qualitative data collection. Participants' postings will be captured onto a spreadsheet, categorising questions and weekly postings. No alteration to spelling errors will be made when the postings are captured, since it is merely capturing the work of the participants. Only five postings will be captured.

The comments of the participants will be compared to each other's to determine their similarities and difference in attitude and perception. The researcher might find the opinions posted on the blog to be different to the results of the Customer Satisfaction Index. The researcher will therefore also compare the results of the Customer Satisfaction Index to the postings made on the blogs.

3.3.3 Clustering

It is assumed that some of the participants' answers in their blog postings might be similar. The researcher will attempt to cluster these similar postings to obtain general themes. There will be 10 questions and each question will be viewed separately. All seven participants' postings will be viewed and similar postings clustered under each question. The ideal is to determine what the participants learned, how well they coped with various aspects, and what actions they will take to cope better with their studies.

Chapter 4: Data collection, analysis and interpretation

4.1 Data collection

4.1.1 Customer Satisfaction Index questionnaire

4.1.1.1 Compiling a Customer Satisfaction Index questionnaire

A questionnaire was designed and developed to determine the customer satisfaction index of students, enrolled for CIA 722 (2005) at the University of Pretoria, in the use of weblogs in their learning experience during the course. In the questionnaire the participants were informed of the purpose of the questionnaire. It was optional to enter a name and/or student number. This option was given to ensure the participants' privacy.

The nineteen questions were so structured to determine how important a certain aspect was to them and how satisfied they were with this aspect during the course of the research. They were to indicate the importance/satisfaction on a scale of 1-5, where 5 indicated "extremely important/satisfied" and 1 indicated "extremely unimportant/unsatisfied".

This questionnaire (see Addendum A - Customer Satisfaction Index Questionnaire) consisted of the questions that were the guideline for the blog postings, plus other relevant questions added. The questionnaire was divided into 3 sections, covering three areas of the research. These sections are indicated in table 4.1.

Table 4.1: Sections of Customer Satisfaction Index questionnaire

Section	Content	Description	Question numbering
Section A	Reflective Terms	This section covers the questions used to reflect. It will determine if the right questions were used as guidelines for reflection. This section also determines the satisfaction/importance of reflective practise and using reflection to improve further studies.	1-12
Section B	Tools used for Reflection	This section covers the simplicity and reliability of the tools used to reflect, covering Blogger, w.bloggar and Bravenet.	13-15

Table 4.1: Sections of Customer Satisfaction Index questionnaire (continued)

Section	Content	Description	Question numbering
Section C	Facilitators in Reflection Practise	This section covers the feedback the facilitator provides, the importance thereof and the participant's satisfaction in this study.	16-19

By dividing the questionnaire into these sections, it was possible to determine which of these sections were more important to the participants.

4.1.1.2 Filling out the Customer Satisfaction Index questionnaire

Participants were asked to fill out the questionnaire in the course of a contact session. The researcher was present at all times to assist with queries. It was explained to the participants that they could only mark one option per question. They were encouraged to be honest when completing the questionnaire. They were supplied with sufficient time to complete the questionnaire.

4.1.2 Blog postings

Participants in the research were required to keep a detailed online diary in a blog at <http://www.blogger.com/>. They were instructed to open a new blog for the course CIA 722. Blogger is a free blogging service available to anyone on the Internet. Participants had to register and then sign in to be able to make postings.

The sign in page is shown in figure 4.1.

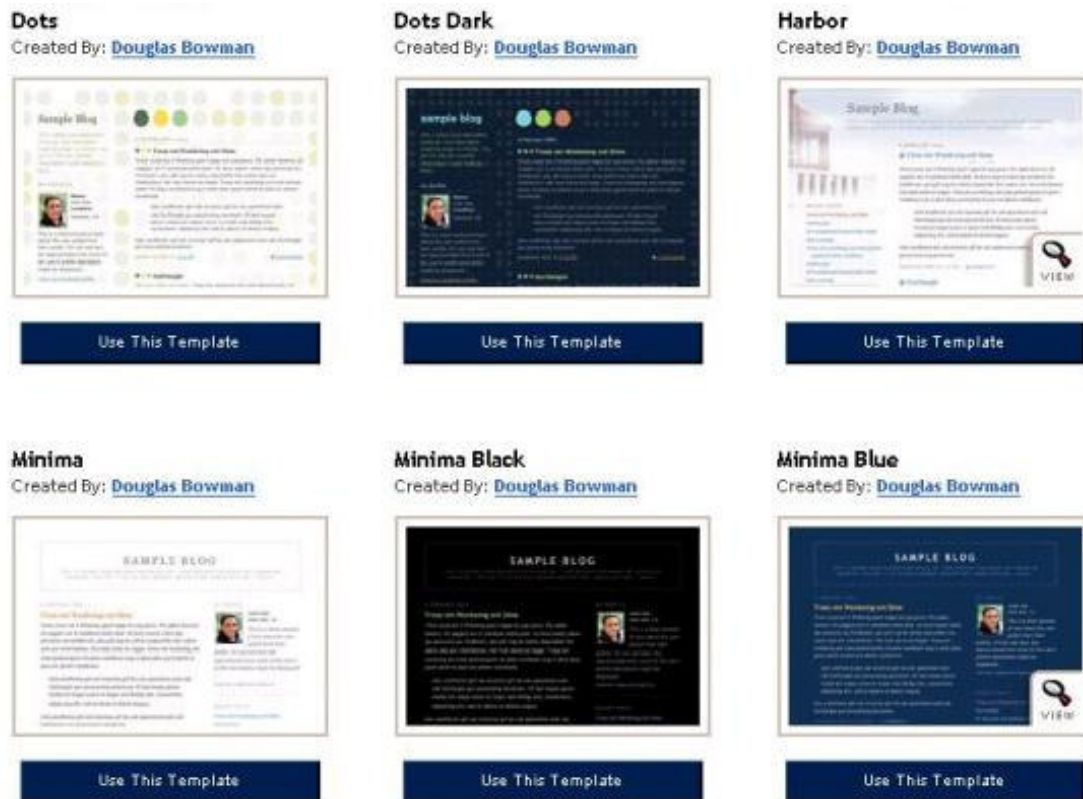
Participants then chose their own title for the blog they were creating. This title usually relates to the content of the blog. Participants were advised to choose a title relating to CIA. Blogger allows the user to give a short description of the content of the blog. This function is optional.

Participants chose the layout of their blogs from various templates. Participants could also use their own format. Examples of these templates are shown in figure 4.2.

Figure 4.1: Screen shot of Blogger sign in page



Figure 4.2: Examples of blog templates available



Postings made to the Blogger could be deleted at any stage. These postings could have been amended at any time should the participants have felt that changes were necessary. Participants could have chosen whether the posting had to be available to anyone on the web or private. A further option was to choose if comments to the blog may be allowed. Participants in the study were informed to make use of this function, since the researcher intended to give comment on postings, acting as an online facilitator.

The participants were informed on the different possible ways of making postings to these blogs. The advantages and disadvantages of these methods are indicated in table 4.2.

Table 4.2: Advantages and disadvantages of blogging methods

Method description	Advantages	Disadvantages
<p>Short Message System (SMS):</p> <p>Participants type in the message on their cellular phone. They then SMS the posting to the Site Feed URL that they obtain from their blog settings after setup is complete.</p>	<ul style="list-style-type: none"> • Postings can be made from any location in the country with cell phone coverage. • Relatively inexpensive, prices varying on individual cellular packages. 	<ul style="list-style-type: none"> • Participants must be in possession of a cellular telephone with Internet access or WAP. • Only text of limited length can be posted. • It can take 5 minutes or 2 weeks before the posting is displayed on the blog, depending on the service providers' efficiency.
<p>E-mail:</p> <p>Participants type in the message in an e-mail/html form. They then e-mail the posting to the Site Feed URL that they obtain from their blog settings after setup is complete.</p>	<ul style="list-style-type: none"> • If Blogger is inaccessible, a posting can still be made, even though it might take longer to appear on the blog. 	<ul style="list-style-type: none"> • Internet access is required. • E-mail client needs to be set up and working smoothly.
<p>Posting tool - w.bloggar:</p> <p>Participants will type the posting in the posting tool and post it immediately to the blog.</p>	<ul style="list-style-type: none"> • w.bloggar is freeware. • It takes a very short time to make a posting. • Download time is very fast. 	<ul style="list-style-type: none"> • Downloading the programme might cost the participants money.

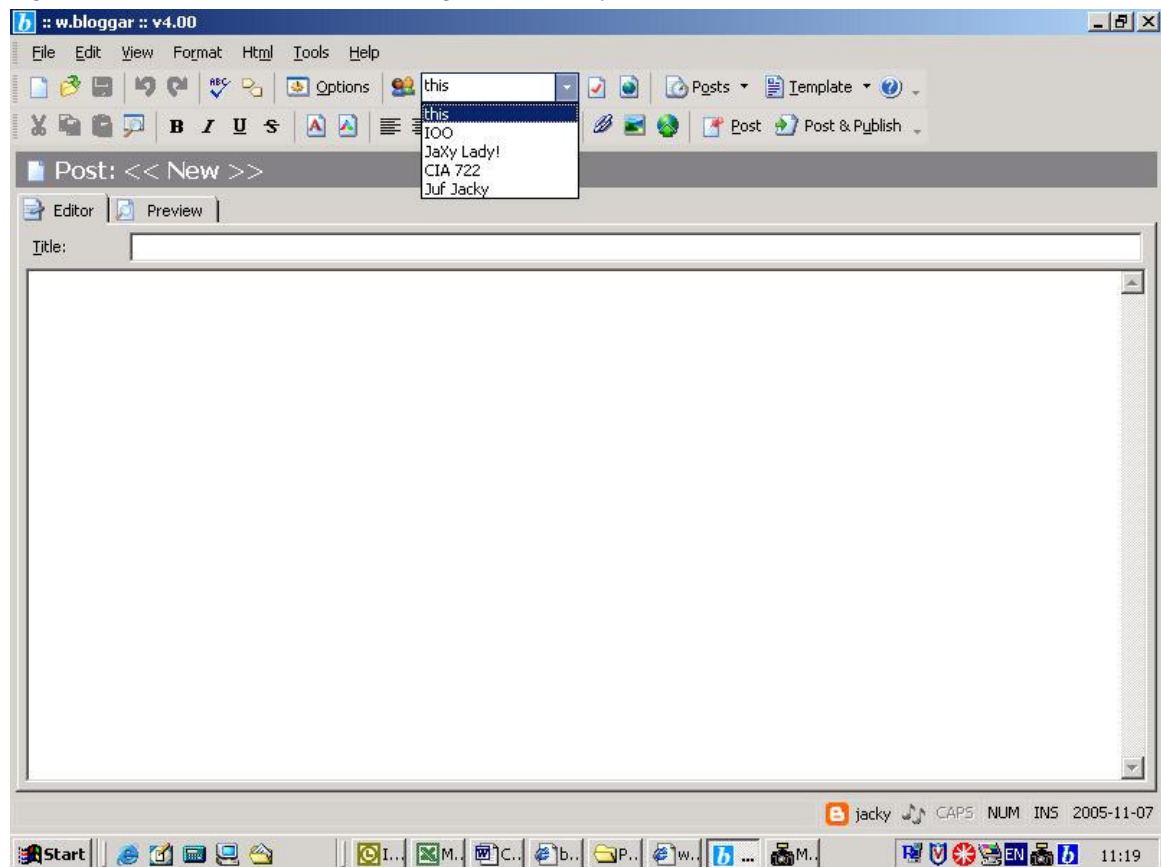
All of the options were considered. The researcher started by using the e-mail option. An html form was designed and used. Problems with this method occurred since the

computer laboratories used did not have e-mail clients set up. A tedious method would allow the students to setup temporary e-mail clients, which had to be done at the beginning of each contact session. After searching for a better option, it was decided to rather use the posting tool w.bloggar (<http://wbloggar.com>) since it was very reliable and gave no problems.

The participants downloaded the programme to their computers at home. The computer laboratory administrator at the University of Pretoria ensured that the programme was downloaded to the computers in the laboratory. Participants logged in to the programme using the username and password used to sign in on the Blogger web site.

The first step was to select the blog participants wished to post to. This blog was selected from a drop down box as indicated in figure 4.3 below. Each participant's options were different, depending on the number of blogs they had registered under their name.

Figure 4.3: Users should choose a blog from this drop down list



The next step was to open the template of the questionnaire that the participants saved. The template consisted of the questions, on which the participants should have reflected (see Addendum D – Reflection questions). It was saved as a text file and used every time to fill out and post. Participants then filled out the questionnaire in the Editor function of

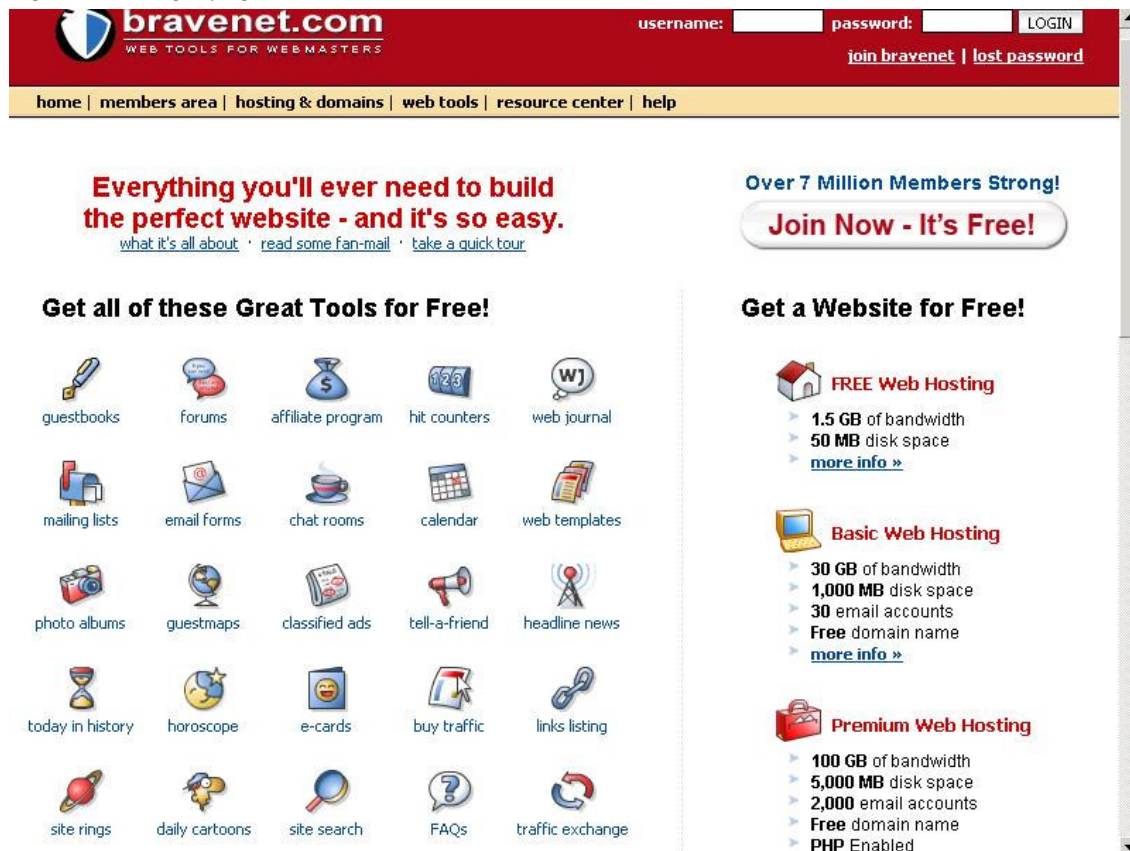
w.bloggar. The posting could have been previewed using the “Preview” tab available. Text format could have been changed e.g. font size, colour etc. The posting then had to be posted, by selecting the “Post & Publish” button on the toolbar.

The participants had to insert a link of the URL to their assignments saved on the free web hosting service Bravenet.

Bravenet (available at www.bravenet.com) allowed participants to upload html files or pictures ending with .htm, .html, .gif, .jpg, .png, .txt, .swf, .mid, .rmi, .au, .wav, .js, .css, .ico, .bmp, .class, .jar to their own sponsored website. Other files ending for example with .doc, .ppt, .exe were not allowed on this free hosting service. Should participants have wished to upload such files, they would have had to pay subscription fees. The other option was to convert these files to any of the above-mentioned authorised files.

Participants had to register to use this free hosting service Bravenet.com. The login page is indicated in figure 4.4 below. They had to choose a name for the space on the web they were using. Then the participants had to convert restricted files to files authorised (where applicable) and upload it to their space on Bravenet.

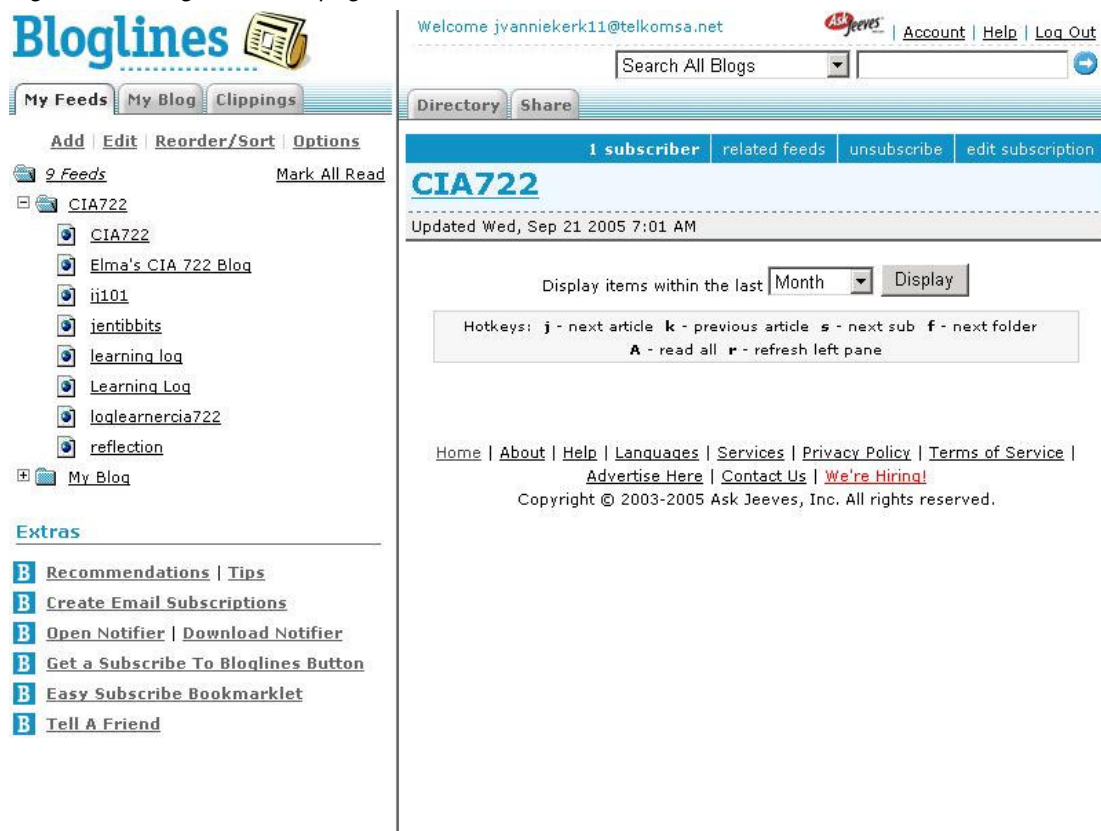
Figure 4.4: Login page to Bravenet



Only the URL link was inserted and visible on each participant's blog postings.

The researcher viewed these blog postings each week and posted comments to support the participants. The blogs of the participants were accessed using a blog aggregator called Bloglines (<http://www.bloglines.com/>). This tool allowed the researcher to view all the blogs together and see when each one was updated. New postings made by participants were indicated on this tool. The researcher could then view only the new postings made, without having to view the whole blog of each participant. The selection of the blogs available is indicated on the left of the screen, and the blog posting is then displayed on the right as shown in figure 4.5 below.

Figure 4.5: Bloglines index page



To be able to use this blog aggregator, the researcher had to register and then use the participants' site feed URL. The participants received these URLs by accessing their blog and viewing it under the settings of their blogs. Participants were required to provide the researcher with these URLs. The researcher did not post comments to postings made late because of time constraints.

The postings the participants made are available on the web. The researcher captured these postings according to the week it was made and specific question per student (see Addendum C - Data analysis).

Examples of these Blogs can be viewed at:

- <http://elmacia722.blogspot.com/>
- <http://ij101.blogspot.com/>
- <http://reflectioncia722.blogspot.com/>
- <http://cia722.blogspot.com/>
- <http://sophiamaodi01.blogspot.com/>
- <http://masote.blogspot.com/>
- <http://jentibbits.blogspot.com/>

Examples are also included in Addendum B - Electronic copy of participant's blogs.

4.2 Data analysis

4.2.1 Customer Satisfaction Index

The total score for the customer satisfaction index was 79,65 %, meaning that the participants in this study were satisfied, and found it important to use weblogs as an instrument for reflection in an e-learning environment. This is a high score indicating that the participants were satisfied with the learning experience as a whole (see Addendum C - Data analysis).

4.2.1.1 Reflective terms

The participants were 77,89 % satisfied with the reflective questions provided to them for this learning intervention and using reflection in general and to improve future performance. It has high weighting and high score, meaning that the right questions were used as reflective guidelines and that they are important too according to the participants in this study.

4.2.1.2 Tools used for reflection

The participants were 76,23 % satisfied with using the specific tools for reflection. It has high weighting and high score, meaning that using specific tools for reflection is what participants want since it is important to them in their learning experience.

4.2.1.3 Facilitators in reflection practise

The participants were 86,43 % satisfied with having a facilitator involved in reflection practise. It has high weighting and high score, meaning that having a facilitator involved

in reflection is what the participants want since it is important to them in their learning experience.

4.2.1.4 Conclusion

It appears that the participants were generally satisfied with using Weblogs as an instrument for reflection; with using the specific tools to perform the reflection and that a facilitator was involved in the reflection process.

4.2.2 Blog postings

The different questions used as guidelines to reflect were viewed individually. The responses were clustered to obtain general similarities in participants' learning experience.

4.2.2.1 What did you learn through the completion of the task?

The participants' responses to this question can be categorised in the categories computer tools, responsibility, psychological well-being and computer-based testing. The categories and sub-categories are indicated in table 4.3.

Table 4.3: Categories and sub-categories of what participants learned

Categories	Sub-categories
Computer tools	<ul style="list-style-type: none"> • Web hosting using Bravenet. • Online reflection using Blogger. • Using Microsoft Excel.
Responsibility	<ul style="list-style-type: none"> • Daily reflection is necessary. • Class attendance is important. • It is frustrating to be left behind on learning. • It is important to remember the passwords and usernames to use. • Learning becomes easier through practise.
Psychological well-being	<ul style="list-style-type: none"> • Personality styles. • Emotional intelligence.

Table 4.3: Categories and sub-categories of what participants learned (continued)

Categories	Sub-categories
Computer-based testing tools	<ul style="list-style-type: none"> • The programme Hotpotatoes. • Measurement, assessment and evaluation. • Cognitive, affective and psychomotor domains of human abilities. • Learning objectives. • Types of objective questions. • Standard deviation. • Converting raw scores to standard scores. • Statistic descriptions.

4.2.2.2 What extra effort could you have put in to achieve the outcomes easier?

The participants felt they could have put in the following efforts:

- Prepared better for contact sessions.
- Nothing, I put in all the necessary effort.
- Approached people.
- Taken responsibility for my own learning.
- Studied to master the learning content.
- Motivated myself.
- Managed my time and tasks adequately.

4.2.2.3 How well did you cope with the workload?

Most participants had minimal coping problems as they stated that they coped fine with the workload and that it was manageable. Other participants had more significant coping problems and stated that they felt frustrated and stressed. These participants did not feel that the workload was easy to manage and that they were falling more behind.

4.2.2.4 How well did you cope with the time constraints?

Participants again had either one of two feelings about the time constraints. Most had a minimal problem with the time constraints and felt that they had enough time to complete their work. Others had more significant problems with the time constraints and felt that

not enough time was allocated to complete the work, they had to dedicate a lot of time to their studies and some felt that they had to work faster.

4.2.2.5 How well did you cope emotionally with your studies during the assignment?

The participants indicated that they usually coped well emotionally, remained focussed, calm and motivated. More to the end of the course, participants did indicate that they had some difficulty coping emotionally.

4.2.2.6 What did you do to cope with your studies during the assignment?

The participants' responses could be categorised into categories such as prepared, asked other people and managed myself. Various sub-categories were also identified. The results are indicated in table 4.4.

Table 4.4: Categories and sub-categories of what participants did to cope with their studies

Categories	Sub-categories
Prepared	<ul style="list-style-type: none"> • Studied the learning content before contact sessions. • Did research on the topics. • Took notes as needed.
Asked other people	<ul style="list-style-type: none"> • The tutor. • Fellow participants. • Had a study group.
Managed myself	<ul style="list-style-type: none"> • Managed my time. • Remained calm and tried not to stress. • Be disciplined.

4.2.2.7 What do you still not understand about the learning content you covered during the assignment?

The participants' responses could be categorised into categories such as nothing, I understand everything, computer tools, and computer based testing tools. Various sub-categories were also identified. The results are indicated in table 4.5.

Table 4.5: Categories and sub-categories of what participants still not understand

Categories	Sub-categories
Nothing, I understand everything	
Computer tools	<ul style="list-style-type: none"> • Uploading pictures to Bravenet. • Lertap 5. • Viewing an e-mal created in Blogger.
Computer-based testing tools	<ul style="list-style-type: none"> • Some features of Hotpotatoes. • Difference between outcomes and learning objectives. • Objective test items. • Statistics description. • Converting raw scores to standard scores.

4.2.2.8 What are you going to do to ensure you understand all relevant learning content?

The participants' responses could be categorised into categories such as prepare, ask someone and take responsibility. Various sub-categories were also identified. The results are indicated in table 4.6.

Table 4.6: Categories and sub-categories of what participants are going to do to understand the learning content

Categories	Sub-categories
Prepare	<ul style="list-style-type: none"> • Do research on the topic. • Make notes of the learning content. • Study the learning material.
Ask someone	<ul style="list-style-type: none"> • The lecturer. • Other participants. • The study group.
Take responsibility	<ul style="list-style-type: none"> • Do exercises. • Stay up to date with studies.

4.2.2.9 How did you progress in your learning experience from the previous weeks?

Some participants felt that there was no progress for them from one week to the other. Others felt they mastered the learning content better and acquired some new knowledge from the previous weeks. A few participants realised that they experienced personal growth such as being more disciplined, patient and dedicated than before.

4.2.2.10 What new computer programmes and their uses did you discover?

The participants' responses could be categorised into categories such as web tools, online reflection tools, Microsoft programmes and other programmes. Various sub-categories were also identified. The results are indicated in table 4.7.

Table 4.7: Categories and sub-categories of what new computer programmes participants discovered

Categories	Sub-categories
Web tools	<ul style="list-style-type: none"> • Converting pages so that they can be uploaded to the web. • Bravenet hosting. • Dreamweaver. • FrontPage. • Using Google as a search engine.
Online reflections tools	<ul style="list-style-type: none"> • w.bloggar. • Blogger. • Learning logs.
Microsoft programmes	<ul style="list-style-type: none"> • Access. • Excel. • Templates in MS Word.
Other programmes	<ul style="list-style-type: none"> • Hotpotatoes. • Lertap 5. • Wink. • Mindset.

4.3 Interpretation

4.3.1 Customer Satisfaction Index

The participants indicated that overall they were satisfied with the learning experience. The questionnaire was divided in three sections, with the intention to rank the level of importance of different aspect of the study. The three sections, their scoring and ranking are indicated in table 4.8.

Table 4.8: Sections and scoring of Customer Satisfaction Index questionnaire

Section	Scoring	Rating
Reflective terms.	77,89%	2
Tools used for reflection.	76,23%	3
Facilitators in reflection practise.	86,43%	1

If the three sections of this questionnaire are compared, it is obvious that facilitators play a very important role in reflection practise. The other factors are also important to the participants, but having a facilitator involved in their reflection is most important to them, than using Weblogs as instruments for reflection, followed by the tools they used to reflect with.

Reasons that participants were less satisfied with tools used for reflection might be that they had problems with Blogger, w.bloggar or Bravenet. After the postings to the blogs were viewed, the researcher gathered that the biggest problem occurred with the hosting service Bravenet. As Participant 2 explained in a posting:

“It got me frustrated at a certain stage. I couldn’t figure it out how to upload to BRAVENET, and asked somebody to help me. The strange thing is that we repeated the same steps, in the same order, and each time got different results. This is frustrating and confusing”.

The role of the facilitator in reflection practise is obviously very important in this study. It can be derived that if the facilitator should be removed from the reflection process, the whole process might fail and be unsuccessful. Participants may feel that they are doing the reflection for no reason if no-one checks up on it. This might cause that they do not even bother to make postings. They might also leave the posting to blogs till the last minute and reflection will not be accurate, therefore defying the purpose of reflection.

Positive feedback from facilitators serves as motivation and inspires the participants to perform better. Other tools might be used for reflection; or other means of reflection may be considered, it will make little or no difference to participants. The fact that a facilitator

is present and participates in the reflection practise is the key factor in reflection in e-learning.

4.3.2 Blog postings

4.3.2.1 Coping and coping strategies

After the blog postings were analysed, it became apparent that participants' coping and coping strategies during the learning experience can be put into two categories as indicated in table 4.9.

Table 4.9: Coping and coping strategies

Category	Sub-category
Positive Coping	<ul style="list-style-type: none"> • Coped fine. • Coped well. • A minimal problem.
Negative Coping	<ul style="list-style-type: none"> • Frustrated and stressed. • Some difficulty. • More significant problems.

From table 4.9 it is evident that participants either coped positively or negatively during their learning experience.

4.3.2.2 Knowledge and skills acquired

After the blog postings were analysed, it became apparent that participants' knowledge and skills acquired during the learning experience can be put into two categories as indicated in table 4.10.

Table 4.10: Knowledge and skills acquired

Category	Sub-category
Practical skills	<ul style="list-style-type: none"> • To use computer tools and programmes. • To use computer-based testing tools. • To use web tools. • To use online reflection tools. • To use Microsoft programmes.
Life skills	<ul style="list-style-type: none"> • Taking responsibility. • Understanding of psychological well-being.

From table 4.10 it is evident that participants either acquired practical skills or life skills during their learning experience.

4.3.2.3 Personal growth

After the blog postings were analysed, it became apparent that participants' personal growth during the learning experience can be put into two categories as indicated in table 4.11.

Table 4.11: Personal growth

Category	Sub-category
Life skill	<ul style="list-style-type: none"> • Taken responsibility for my own learning. • Motivated myself. • Experienced personal growth. • Managed myself.
Behavioural actions	<ul style="list-style-type: none"> • Prepared better for contact session. • Studied to master the learning content. • Ask someone for help.

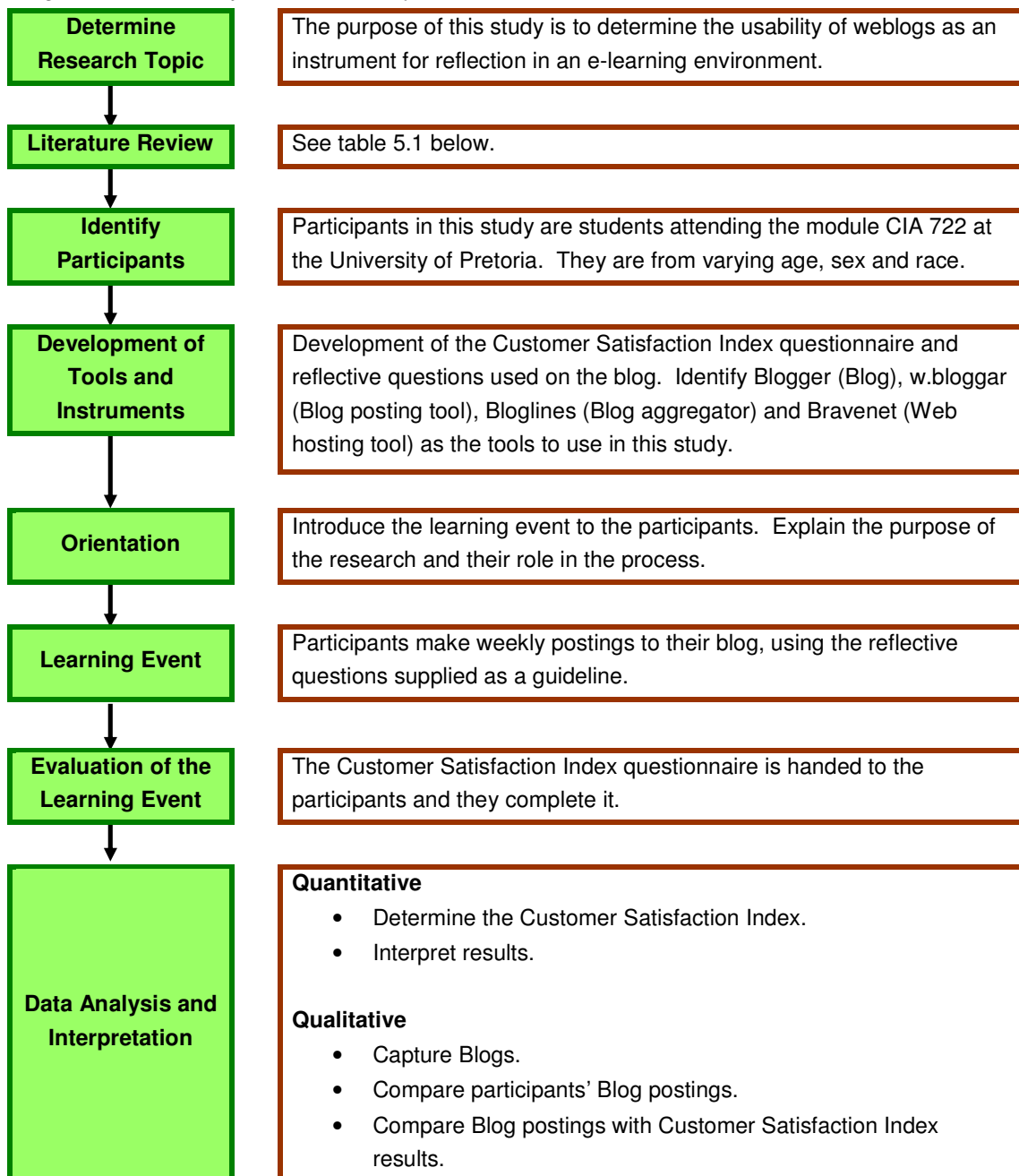
From table 4.11 it is evident that participants either experienced personal growth by using life skills or behavioural actions.

Chapter 5: Summary, conclusion and recommendations

5.1 Summary

The process followed in this study is illustrated in figure 5.1.

Figure 5.1: Summary of the research process



The context of this study can best be described using activity theory. The three “corner elements” of the activity theory formed the foundation of the research questions in this study.

The issues evident from the literature review are indicated in table 5.1.

Table 5.1: Literature review summary

Topic	Description	Concerns
Online facilitation	<ul style="list-style-type: none"> • It is imperative to realise the difference between “online” and “offline” facilitation. • There are techniques to use to assist non-ideal students. • The online facilitator has various responsibilities in an online environment. 	<ul style="list-style-type: none"> • There is no space for the learners to “chat”. • Participants may be unfamiliar with software, causing uncertainty.
Learning styles	<ul style="list-style-type: none"> • Various learning styles were discussed including: <ul style="list-style-type: none"> ○ Myers-Briggs type indicator. ○ Kolb’s learning style model. ○ Hermann brain dominance instrument. • The researcher prefers keeping the Myers-Briggs type indicator in mind when designing learning activities. 	<ul style="list-style-type: none"> • It is difficult to know the participants’ preferred learning styles prior to the start of the learning event. The researcher used the Myers-Briggs type indicator as a guideline for developing activities.
Learning logs	<ul style="list-style-type: none"> • Learning logs are ideal to use for reflection. 	<ul style="list-style-type: none"> • There are software limitations to consider. • Participants may not want to share their experiences on the web.

Table 5.1: Literature review summary (continued)

Topic	Description	Concerns
Reflection	<ul style="list-style-type: none"> • Topics for reflection might be: <ul style="list-style-type: none"> ○ Stress. ○ Coping strategies. ○ Learning content. ○ Record of effort. ○ Record of progress. • The facilitator plays a very important role in reflection. 	<ul style="list-style-type: none"> • Participants may not reflect honestly, jeopardising the research results.
Using learning logs to reflect	<ul style="list-style-type: none"> • Participants should receive directive questions to guide them when they reflect so that reflection is honest and to the point. 	<ul style="list-style-type: none"> • There are software limitations to consider. • Participants may not want to share their experiences on the web. • Participants may not reflect honestly, jeopardising the research results.

5.2 Conclusion

5.2.1 Customer Satisfaction Index

The Customer Satisfaction Index questionnaire was aimed at determining how satisfied and how important specific issues relating to online reflection were to the participants of the study. The issues questioned that contribute to the success of the study were:

- Whether the participants depend on having pre-set questions to guide them through reflection and what to reflect on.
- Whether specific tools used for reflection can determine the success of the learning event.
- Whether the role that facilitator play in the reflection process is indispensable.

The findings on the relevancy of the abovementioned issues are reported below.

5.2.1.1 Reflective terms

The Customer Satisfaction Index score on this category came to 77,89 %. This scoring puts the issue in the high importance, high satisfaction category of the Customer

Satisfaction Index. It can be concluded that the participants find the reflective questions used as a guide very important, and are very satisfied with using them. It can also be derived that the participants feel that reflection in a learning experience is very important and that it could be used to improve future learning. It could be used as a remedial tool, giving advice to learners so that they do not make the same errors the next time they perform the same task.

Overall, this aspect of the research was rated second. It can be derived that participants were satisfied with using the particular questions supplied, but that the success of the learning experience was not dependant on them.

5.2.1.2 Tools used for reflection

The Customer Satisfaction Index score on this category came to 76,23 %. This scoring puts the issue in the high importance, high satisfaction category of the Customer Satisfaction Index. It can be concluded that the participants find the tools used for reflection an important issue, and are very satisfied with the tools used in this study. Thus it can be derived that the participants were satisfied with the weblog tool Blogger, the posting tool w.bloggar, and the web hosting tool Bravenet.

Overall, this aspect of the research was rated third. It makes the tools used for reflection the least important issue in the reflection experience, and also the factor that the participants were least satisfied with. It can be suggested that the participants had difficulty with the tools used, but that they would still have reflected sufficiently if other tools for reflection were used.

5.2.1.3 Facilitators in reflection practise

The Customer Satisfaction Index score on this category came to 86,43 %. This scoring puts the issue in the high importance, high satisfaction category of the Customer Satisfaction Index. It can be concluded that the participants find it important to use facilitators in reflection practise and were satisfied with the facilitator used in this study.

Overall, this aspect of the research was rated first. It makes the use of facilitators in reflective practise the most important issue in the reflection experience, and also the factor that the participants were most satisfied with. At the beginning of this study, the researcher thought that the use of weblogs would be the most important factor during reflection, but is has become apparent that the role that the facilitator plays in reflection was more important to the participants in this study.

It suggests that either:

- Participants were not coping and appreciated the support provided.
- Participants were anxious to study on their own and need the support of the facilitator to study effectively.
- The learners in the study merely prefer interactive learning.
- The learning content was unclear/too difficult for participants and they had the need for support from a facilitator.

5.2.2 Blog postings

The participants reflected on their learning experience by answering pre-set questions. Their responses were posted using a weblog. From these postings, the researcher could cluster similar topics that the participants reflected on. These topics are:

- Coping and coping strategies.
- Knowledge and skills acquired.
- Personal growth.

The summary of their responses are reported below.

5.2.2.1 Coping and coping strategies

Participants in this study indicated that they either coped positively or negatively during their learning experience. Most of the participants coped sufficiently and had minimal problems with their learning.

5.2.2.2 Knowledge and skills acquired

Participants gained practical and life skills during their learning experience in this study. Practical skills mostly covered gaining knowledge and operating computer-based tools. Life skills included taking responsibility for their own learning and realising their state of being during a learning experience.

5.2.2.3 Personal growth

Participants experienced personal growth by using life skills and behavioural actions. Life skills include managing themselves, and behavioural actions include preparing for learning events and proactively finding solutions for their problems.

5.3 Recommendations

5.3.1 Customer Satisfaction Index

After examining the findings of the Customer Satisfaction Index, some recommendations can be made for the future use of weblogs as an instrument for reflection in an e-learning environment.

5.3.1.1 Reflective terms

Learners reflecting in an e-learning environment should be provided with reflective guidelines such as specific questions and criteria on when and where to reflect. Topics to use to reflect could include:

- What learners have learned in the lesson.
- What effort was put into the learning experience.
- What issues are still unclear to the learner.
- How the learner is coping.
- What the learner should do to cope and master the learning experience.
- What progress the learner experienced.

5.3.1.2 Tools used for reflection

Tools used for reflection should adhere to certain qualities. These qualities are indicated in table 5.2 below.

Table 5.2: Qualities of tools used for reflection

Quality	Description
Simplicity	Tools should be easy to use, providing learners minimal difficulty with the act of reflecting, providing more time for cognitive activity.
Accessibility	Tools should be unnecessary/easy to download. Access should be available to everyone.
Flexibility	Learners should be able to change the look and feel of their spaces as they wish, personalising the space and thereby taking responsibility or learning.
Speed	Speed of publishing should be high. One should be able to view all work completed and published immediately.

5.3.1.3 Facilitators in reflection practise

Facilitators play a very important role in reflection. They should be intensely involved in the learning experience, providing guidance to every learner in the learning experience. Facilitators should remember that they play a multiple role in online facilitation and have various responsibilities, namely:

- Educational
- Societal
- Administrative
- Technological

They should make learners feel comfortable in the e-learning environment and gradually ease them into the learning experience. Be clear of what you expect from learners. Provide learners with timely feedback, they might be dependant upon it to proceed. Overall be supportive, providing constructive feedback, whilst having empathy for the needs of every learner.

5.3.2 Blog postings

After examining the findings of the blog postings, some recommendations can be made for the future use of weblogs as an instrument for reflection in an e-learning environment.

5.3.2.1 Coping and coping strategies

Technology, time and workload can cause stress in a learning environment. Learners need to realise whether they are coping with the learning experience or not. If they are not coping, they can manage their learning to better cope in future and change the behaviours that are causing their inability to cope. If learners realise what they did to cope better, they can work on compiling their own coping strategies that will assist them to better cope with difficult situations.

5.3.2.2 Knowledge and skills acquired

If learners document what they have learned, it enforces the knowledge they have gained. Learners should reflect on declarative, procedural and conditional knowledge. They should reflect in detail so that they can refer back to their postings in future and use it as a summary of knowledge gained.

5.3.2.3 Personal growth

The realisation that personal growth took place during a learning event may motivate learners to learn more. It will confirm to them that they actually accomplished something by putting a lot of effort into their learning.

5.4 Future research recommendations

It is suggested that in future studies, online reflection be compared with written diaries. Previously Internet users could only read the web, but technology has progressed immensely which allows Internet users to read or write on the web. In this study the participants indeed read from the web and wrote on the web in the form of their published weblogs. The participants primarily made postings to the web using text.

There are various other “writing” tools that can be used when publishing on the web. These tools come in the form of multimedia such as video, graphics, sound and animation. Postings can be made by means of podcasting and vodcasting.

According to Podcasting News (n.d.), “podcasting is delivering audio content to iPods and other portable media players on demand, so that it can be listened to at the user’s convenience. The main benefit of podcasting is that listeners can sync content to their media player and take it with them to listen whenever they want to. Because podcasts are typically saved in MP3 format, they can also be listened to on nearly any computer”.

Vodcasting, also known as video-casting, is similar to podcasting, the only difference is that it is the delivery of video content to users (New University Television, n.d.).

Recommendations for further research are to determine the role of podcasting and vodcasting in reflection. Do these multimedia tools assist learners in the reflection process; does it help them to blog more efficiently? Will visual and audio learners benefit by using podcasting and vodcasting when reflecting?

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