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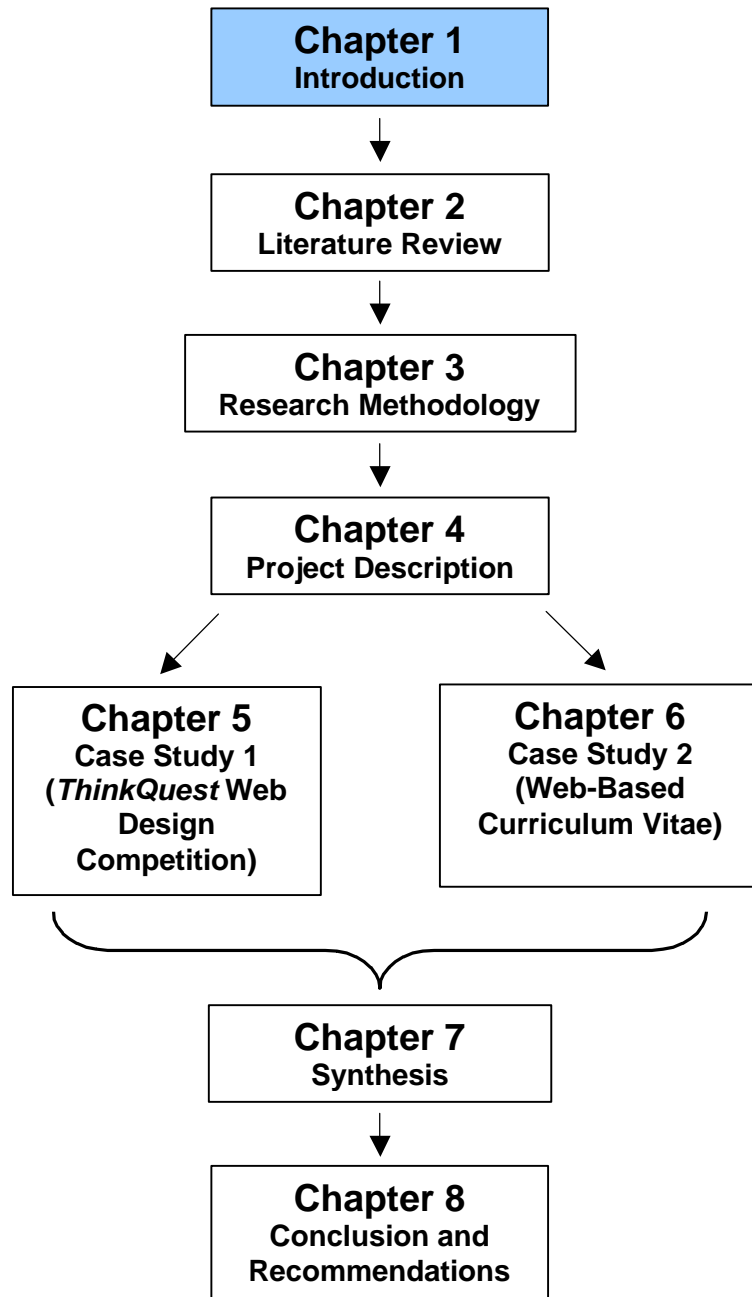
Chapter 1 Introduction

1   Introduction

The personal computer was developed by 1981 (Meyer & Baber, 1998, p. 35) and has become a household item in many affluent and even middle class homes. Sources of digitised information such as computers, television, tape recorders, video machines, digital calculators and CD-ROMs have gained the attention of adolescents and are influencing their leisure time and forms of interaction with information. The format of information is also changing and becoming non-linear (Hackbarth, 1997, p. 57). Changes have influenced society with the result that adolescents spend more time with fellow adolescents and have more time to spend with digital sources of information. The question to be asked is 'how do adolescents in an educational digital environment interact with information?' The question can be further developed into 'how do South African adolescents in an educational digital environment interact with information?'

2   Background

Children of the digital world are perceived to be different when working and using information resources. Both Tapscott (1999a, 1999b) and Rushkoff (1997, 1999), have written on the subject of the *digital* child but Tapscott refers more particularly to the children of the *Internet generation* while Rushkoff refers to children of a non-linear world or the *Chaos Generation.*

Tapscott describes the dynamics between the Internet generation and their world. The *Net Generation* use digital media for entertainment, communicating, shopping, making friends; almost every part of their lives. The *Net Generation* of young people want to be doers and users: 'they are actors in the digital world' (Tapscott, 1999b, online). This generation have become critical thinkers and know about teamwork. They work within an environment where they construct their own knowledge and 'have acquired collaborative, research, analytical, presentation and resource skills' (Tapscott, 1999b, online).

Rushkoff describes the child of the *Chaos Generation*, children born into a non-linear world (Rushkoff, 1999, p. 50-52), in that they

- have a broader attention range and a shorter absorption time;

- are able to 'multi-layer-scan' as they know where to look for information on screens, e.g. email message subject lines or sport scores;
- can process visual information very quickly;
- communicate with basic symbols and relationships; and
- are comfortable in a disassembled landscape such as the Internet, many television channels or multimedia CD-ROMs.

South African teenagers have different environmental influences to those of the American or European teenagers described by Tapscott and Rushkoff, but there are similarities due to globalisation (Codrington, 2000, p. 35).

Papert (1998, online) discusses children who come from a digital environment as follows:

> '… those (children) who at home had these *richer* learning experiences with the computer are beginning to appear in school as a kind of a nuisance because they are demanding from school--"Why aren't we doing here what we know how to do at home?" So these children are beginning to produce a pressure on the school from within, a kind of subversive force coming into the system, not only demanding change …'

Print media and textbooks lack the 'pizzazz of electronic media, do not permit real-time interactivity' (Hackbarth, 1993, p. 82) and require considerable reading skill and intellectual effort. Adolescent learners from a digital environment interact differently with interactive and non-interactive forms of information. Educators need to note the dynamics between the digital environment and the way learners interact with information, as well as the factors that influence them.

Adolescents in the South African education system of 16 years and older in Grades 10, 11 or 12 as well as adults are officially defined as Further Education and Training (FET) learners. The way in which the South African FET learner in a digital environment interacts with information, and the forces influencing that behaviour, need to be examined in order to make optimum use of digital technology to promote teaching and learning.
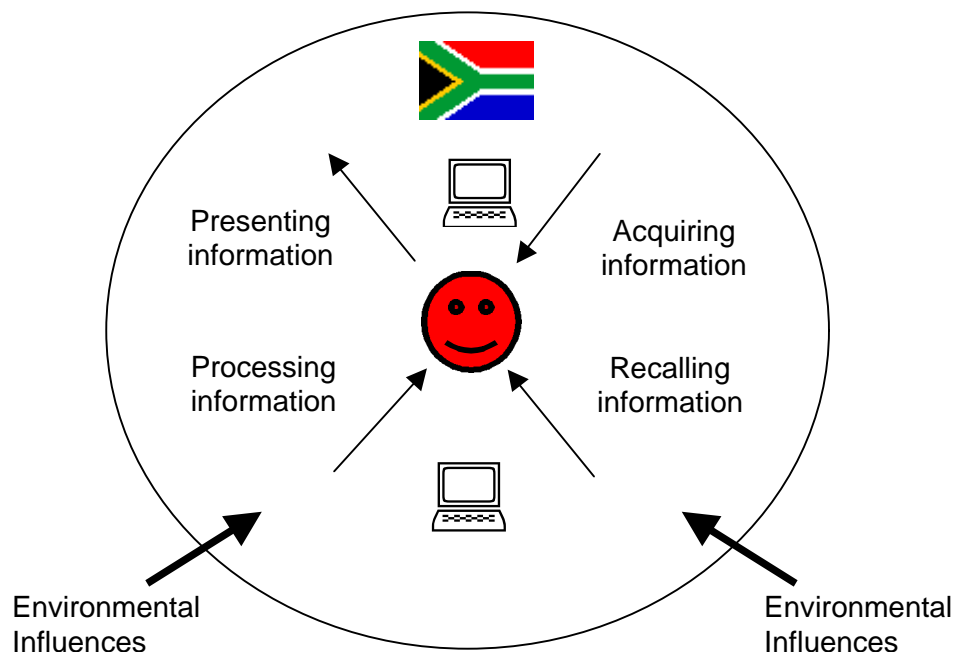
3 Research problem

The aim of this research is to investigate how South African FET learners interact with information in a digital information environment. In this investigation 'interact' encompasses acquiring, recalling, processing and presenting information. The major research problem to be answered by this research is

> How do South Africa Further Education and Training learners acquire, recall, process and present information in a digitally enabled environment?

The research problem, and the context in which it is posed are described in Figure 1 - 1 and operationalised by the four research questions below. The figure illustrates the South African learner within a digital environment influenced by society, technology, economics and politics. The aim of the research is to investigate how learners acquire, recall, process and present information in a digital environment. The figure below is used throughout the thesis illustrating the development of the research.

Figure 1 - 1   Interaction with information by the South African FET learner in a digital environment

In order to address the problem, the following research questions were identified and examined:

- What is a digital information environment in the field of education?
- How have a changing society and advances in technology influenced the way South African FET learners interact with information in an educational environment?
- What is meant by cognitive, affective and physical perspectives with reference to interaction with information?

1 How do South African FET learners interact with information in a digital information environment from cognitive, affective and physical perspectives?

4 Research plan

The study began early in 1997 with the realisation of a problem in the digital environment of the Computer Studies Standard Grade (SG) classroom at Pinelands High School (PHS). The type of research employed to solve the problem, the participants in the research and the data collection methods are discussed below, and more fully in Chapters 3 and 4.

This research follows a relativist viewpoint as it is not large enough for a positivist viewpoint, hence its follows a qualitative case study methodology.

4.1 Action research cycles

The research follows an action research process and a case study methodology characterised by triangulation, long-term observation and field research. The research was divided into three main stages: preliminary, cycle 1 and cycle 2, each of which was further sub-divided.

4.2 Participants in the research

The participants in the research are learners at PHS in grades 10 to 12 who take the subject Computer Studies SG. The research targeted these learners and the way they interacted with information in a digital environment. Learners from two grades were used for the two case studies.

4.3   Data collection methods

The data collection instruments were a literature review followed by non-intrusive instruments of observation, event log, questionnaire, digital document analysis and interviews, described in Table 1 - 1.

Table 1 - 1   Data collection instruments

Instrument	Method
Literature review	Used text resources such as books and journals (print and digital).
Observation	Learners observed over a period of five years, from 1997, but especially in 2001.
Event log	Kept noting the unusual activities of learners in the computer laboratory, trying to understand how they interacted with information.
Questionnaire	Data was collected from the learners in the form of a digital questionnaire with open-ended questions and then analysed in a database.
Digital document analysis	Web sites made in the two case studies analysed, noting the cognitive, affective and physical perspectives of the way in which the learners worked in the digital environment.
Interviews	Held interviews with learners and parents trying to understand why the learners worked the way they did.

Table 1 - 1 describes the instruments and methods used to collect the data. The data collection methods fitted in with the action research process and case study methodology without intruding on the learners' usual class activities.

A data collection matrix, Table 1 - 2, tabulates the methods used to answer the particular research questions. The data collected from text, observation, event log, questionnaire, digital document analysis and interviews are interwoven, contributing to answering the research questions.

Table 1 - 2   Data collection instruments

Question / Method	Text	Observation	Event log	Questionnaire	Digital document analysis	Interview
1. What is a digital information environment in the field of education?	✓					
2. How have a changing society and advances in technology influenced the way South African FET learners interact with information in an educational environment?	✓					
3. What is meant by cognitive, affective and physical perspectives with reference to interaction with information?	✓					
4. How do South African FET learners interact with information in a digital information environment from cognitive, affective and physical perspectives?	✓	✓	✓	✓	✓	✓

4.4   Researcher

As researcher I have endeavoured to find a way to make my teaching in the digital environment of a computer laboratory more effective. For the last six years I have been teaching Computer Studies SG full time in the digital environment of the computer laboratory and have tried to find ways of doing so successfully. I have studied primary education, high school history teaching, librarianship, school media science and computer-assisted education. I have experience in teaching, working with information, writing and academia. My aim in this research is clear: I want the learners to succeed in their interaction with information in the digital environment of the computer laboratory in order to ultimately achieve good academic results.

5   Organisation of the research report

This research report is divided into eight chapters described in Table 1 - 3.

Table 1 - 3   Overview of the thesis

Chapter	Content
1. Introduction	• Introduction and statement of the problem.
2. Literature review	• Definition of a digital environment in education • Investigation into how a changing society and technology have influenced the way learners interact with information in an educational environment, including a South African FET environment • Definition of cognitive, affective and physical perspectives with reference to interaction with information • Investigation into how learners interact with information in a digital environment from cognitive, affective and physical perspectives • Development of a profile of a South African FET learner in a digital environment based on the findings of the literature review
3. Research methodology	• Description of action research process and case study methodology • Description of the cycles of the research • Methods taken to ensure validity and reliability of the research
4. Project description	• General overview and description of PHS • Description of the digital architecture of the school • Description of the participants in the research • Description of usual class activities • Description and comparison of Case Studies 1 and 2
5. Case study 1	• Description of the participants of the research • Description of the data collection methods • Analysis of the completed *ThinkQuest* entries and the process of creating them • Description of the measures taken to ensure validity and reliability
6. Case Study 2	• Description of the participants of the research • Description of the data collection methods • Analysis of the completed curricula vitae and the process of creating them • Description of the measures taken to ensure validity and reliability
7. Synthesis	• Synthesis of the findings of Case Study 1 and Case Study 2 • Description of how South African FET learners interact with information in a digital environment from cognitive, affective and physical perspectives based on the synthesis
8. Conclusion and recommendations	• Summary of the research • Recommendations for further research

Table 1 - 3 gives a concise summary of the contents of each chapter of this thesis.

6   Rationale for this research

It is hoped that this research will contribute to our theoretical understanding of how learners, particularly South African FET learners, interact with information in a digital environment from cognitive, affective and physical perspectives. It takes into account the fact that digital technology is being introduced in South African schools, South African FET learners are entering school from a digital home environment and information is generally available in digital format.

This research provides guidelines on how learners, in particular South Africa FET learners, interact with information in an educational digital environment from cognitive, affective and physical perspectives as they acquire, recall, process and present information. The utilisation of the guidelines can contribute to more effective teaching of and learning by South Africa FET learners in a digital environment.

The information gleaned from this study will add to an understanding of the research problem 'How learners South African FET learners acquire, recall, process and present information in a digitally enabled environment?'

7   Limitations of this research

The limitations of the research are that there are very few Black learners among the participants and the case studies are based in a middle class school environment although the learners may come from rich or poor backgrounds. In addition this research is limited to look for commonalities rather than differences, therefore it does not aim to extract and compare differences.