

Chapter 1
Introduction, background and research
problem

Chapter 2
Literature review

Chapter 3
Research design and methodology

Chapter 4
Analysing the case, evidence and
discussion

Chapter 5
Conclusions and recommendations

1. CHAPTER 1 INTRODUCTION, BACKGROUND AND RESEARCH PROBLEM.

1.1. Introduction

Brief overview of the study

This study investigates desirable and workable strategies in an eLearning resource for learners at a high school level. A resource with features of this kind is usually only used by students in a university context.

The delimiters in this research are as follows. The sample selected for research consisted of high school learners between the ages of thirteen and eighteen, who, at the time of the research, were all in South African grades 8 to 12 (what used to be called, in South Africa, standards 6 to 10). All of them were at the time studying various subjects through the medium of internationally recognised Cambridge courses for which they had enrolled.

The pedagogical model that I have implemented in the case study is based on mediated instruction. While the learning materials are designed for independent learning, they are from time to time supplemented with direct face-to-face tutoring. eLearning at a high school level in South Africa is the exception rather than the rule and a very small percentage of all high school learners pursue their studies through this medium. My purpose is to investigate the extent to which and the manner in which the learning resource affects and determines the dynamics of interaction (1) between the eLearning resource itself and the students, (2) between the students and other students using the resource, and (3) between the teachers and the students.

While this study is mainly interpretivist-interactionist in design, it also incorporates elements of a pragmatic-functionalist model. The study situates this specific case in its context and provides suggestions as to how the resource may be improved. Interpretation will be used in the analysis of the data.

Although I have based this study on an interpretivist-interactionist theoretical framework, I have incorporated a pragmatic-functionalist bias by attempting to understand this specific case in its context. Chapter 5 offers suggestions about how the resource might be improved. The case study itself focuses on particular elements in the eLearning resource and in the high school eLearning community. It also describes the way in which learners used the resource in practice while engaging with their courses on a daily basis.

My data collection methods utilised questionnaires, interviews and focus groups as well as analysis and synthesis of texts.

The verification methods that I used included member checking, peer review and the crystallization process (triangulation).

1.2. Background

1.2.1. eLearning has seen a remarkable growth.

eLearning is being used more and more widely in tertiary education as universities increasingly resort to online courses as a method of tuition.

While eLearning is well established in tertiary education, it is also being increasingly utilized by high schools throughout the world and in the United

States in particular. This kind of learning has been made viable by the increasing sophistication and affordability of new technology such as the personal computer and by reliable broadband connectivity that makes prolonged Internet use in classroom, home, and libraries both logistically practicable and economically feasible (NCES, 2002).

The United States, however, is not alone in implementing eLearning at high school level. In Europe and Australia, for example, more and more parents and educators are becoming interested in eLearning as a means of educating school-age children. Significant attention is being given in these countries to the potential of eLearning as an alternative to conventional schooling. Under the heading "Adapt school curricula to enable new ways of learning and information and communication technologies", more than 2000 projects were launched in Europe in 2002 in the education and training sector as part of a long-term campaign to provide the knowledge and skills that Europe needs to remain competitive in a digital age (Commission of the European Communities, 2002).

Research into eLearning in secondary schools has, for various reasons, not yet come into its own in South Africa even though the South African government is promoting major initiatives to establish the necessary technological infrastructure in South Africa that will support eLearning for all levels of education (Online, 2006, Thuthong Educational Portal SA, 2006). A database search for research into eLearning undertaken in South Africa (see the section "Current and past research in South Africa in the Literature review" for full details) reveals that nearly all eLearning research at this stage focuses on e-activity at university level.

Since eLearning is already being used in secondary schools (Paloff, 2001), the following question becomes pertinent: "Can it be assumed that the same

principles that apply to tertiary post-school learning also apply to school-aged learners?" This question is assumed in the research question that guides this research.

Writing in acknowledgement of more research specifically in this field, Cavanaugh (Cavanaugh, 2004b) states that only a negligible amount of information about school-going learners and their experiences with online learning is available in the United States. In her view it is important to know whether the eLearning strategies that are applied in higher education will also work for high school learners. She also asks whether eLearning at the high school level can be informed by a hybrid of eLearning theory that draws on research into tertiary-level eLearning and research into secondary-level eLearning. Cavanaugh answers this question affirmatively even though she is of the opinion that high school or secondary school distance education is fundamentally different from the kind of eLearning that is suited to university students.

1.2.2. Setting of this study

This study is set in South Africa, a country of dramatic changes and stark contrasts that has nevertheless emerged as a visible presence in the world of eLearning. While serious shortages, appalling conditions and a lack of even basic amenities exist in many schools, the government continues to spend large amounts of money on getting schools equipped and connected. While some learners eagerly try to gain admission to public schools, others are moving out of overcrowded schools. Africa is a continent with a deep digital divide between those who possess and those who are without various forms of digital technology. Efforts to close this digital divide are being made by institutions such as the World Bank (World_Links-World_Bank, 2004) and Gauteng Online

(Online, 2006). Digital technologies are regarded as a vital accessory in many developing countries such as South Africa, and the ability to communicate instantly by means of a technological device such as an Internet-linked computer or the cellular phone is highly valued as a status symbol by upwardly mobile people in South Africa and other developing countries (Dryden, 1999).

1.3. Problem identification

As has been noted above, eLearning products and research tend to focus very largely on post-school learners. What kind of eLearning resources would best cater specifically for the needs of high school learners, is as yet unknown.

My research builds on the foundation of two meta-studies that preceded it. The first is that of Bernard (Bernard, 2004), who evaluated empirical literature produced between 1985 and 2002, that focused on comparisons between classroom instruction and distance education instruction. The second meta-study is by Cavanaugh (Cavanaugh, 2004b), who dealt more specifically with the same field that this research covers, namely the education of school-going children by means of distance education. She evaluated studies on the effects of distance education on student educational outcomes between 1999 and 2004.

The problem addressed in this research is to what extent the different elements of an eLearning strategy may work towards sustaining a learning community for high school learners. What, in other words, are the desirable and workable elements of an eLearning resource that will sustain high school learning communities?

1.4. Purpose and objectives of study

Reeves (Reeves, 2006) outlines the difference between research goals and methods, which, he says, researchers often fail to distinguish. He describes six major types of research goals that are commonly pursued by educational technology researchers. These goals are theoretical, predictive, interpretivist, postmodern, design-developmental, and action-evaluative.

The type of research goal for this study

In terms of Reeves's taxonomy, this research has both interpretivist and development goals since it sets out to try to understand how eLearning for high school learners works by interpreting selected aspects of learner performance and teacher instruction. This research also aims to contribute to existing theory about the use of eLearning specifically for high school learners and to suggest guidelines for future development.

Purpose and objective

The specific purpose and objectives of this study are to identify and evaluate desirable and workable strategies in an eLearning resource and in an eLearning community for high school learners in terms of the following four broad elements that are investigated in this study:

- pedagogical issues
- learning community issues
- communicative, collaborative and social issues
- technological and instructional design issues

1.5. Relevance of and need for the research

The two most important reasons why this research is relevant and needed are as follows:

- A recent significant meta-study in the United States by (Cavanaugh, 2004b) concludes that further research in the field of high school eLearning is necessary. This research is designed to make one such contribution in this field.
- The same study concludes that high school eLearning will grow in importance because educational authorities will use it as a means to compensate for educational deficits. This study suggests specific ways in which eLearning can be made desirable and workable. This makes it both relevant and necessary.

I shall now briefly review the input of various authors who have contributed to study and research in the field of high school eLearning regarding the relevance of such research.

While elementary and secondary students have been taught by means of electronic distance learning systems since the 1930s, the development of online distance learning schools is a relatively new phenomenon in 2006 (the time of writing). Cavanaugh also believes that online virtual schools may be ideally suited to and may successfully meet the needs of those who want more schooling choices and who desire to be educated in workplace-related skills in the circumstances of the 21st century. The growth in the numbers of students who are learning online throughout the world and the importance of online learning as an increasingly utilized solution to educational challenges has drastically increased the need for researchers to make a close study of the factors that affect student learning in virtual schooling environments.

Cavanaugh (Cavanaugh, 2004b) states: “It is no longer enough to ask whether distance education is effective; we now need to understand why it is effective or

not.” This research tries to establish the extent to which certain elements in eLearning may be effective in a high school context.

Two other meta-analysts, Bernard and Abrami (Bernard, 2004), comment on Cavanaugh's work by saying that the field in which she works, namely eLearning in schools, is a field that is less developed than other branches of eLearning. This confirms the general consensus that high school eLearning is a field of study that needs to be extended and explored.

Several official bodies in Europe (Commission of the European Communities, 2002) have provided substantial funding to commission research into all aspects of virtual high schooling. This also confirms the importance and relevance of research in this area of eLearning studies.

Vrasidas (Vrasidas, 2003) notes that there is a strong need for more research and for evaluation studies that will contribute towards increasing the effectiveness of high school eLearning and that will increase our knowledge of relevant distance education theory and best practice.

Rapid changes and refinements in technology and in educational formats over the past decade have resulted in only a small body of research that is relevant to present conditions and that can serve to guide instructors, planners and developers (Cavanaugh, 2004b). Cavanaugh continues to say that this deficiency may tempt us to apply or adapt findings from studies of ordinary school classroom learning or adult distance learning (which are themselves in short supply) to school eLearning. But she adds that eLearning at school level is intrinsically unique and that a great deal more research is needed if eLearning school environments are to function optimally.

Jochens (Jochens, 2004) says that research into the way in which pedagogics and the technical and organisational spheres of eLearning interact with one another is needed. He also regrets the fact that new technologies are simply imposed onto eLearning contexts with an accompanying assumption that old theories are still applicable in such circumstances without any kind of modification or original critique. It is possible that new instructional methods may be required. This research suggests some relevant and needed answers to these dilemmas.

1.6. Research question

1.6.1. Main research question.

To what extent and why are certain features of an eLearning resource workable and desirable for sustaining a high school learning community?

The research set out to answer the following question:

1.6.2. Supporting questions.

In order to answer the main research question, the following sub questions were devised:

1. To what extent do certain pedagogical theories and eLearning theories inform a high school eLearning resource?
2. Why do certain community elements in an eLearning resource contribute to creating and sustaining high school learning?
3. In what way and why do certain communication, collaboration and social elements influence a high school eLearning resource?
4. How do certain technological aspects and instructional design issues affect a high school elearning resource?

The following table describes the research context and the subsidiary questions of the research.

Research context	Research subsidiary questions
The context for this instrumental case study is the online eLearning Cambridge course for which learners enrolled in the two years 2004 and 2005 inclusive at a distance education institution in Pretoria, South Africa, with the view to obtaining an external Cambridge IGCSE qualification. A number of learners were “international” students (which means they were not resident in South Africa). A modified version of the open-source eLearning application, Moodle, was implemented.	To what extent do certain pedagogical theories and eLearning theories inform a high school eLearning resource?
	Why do certain community elements in an eLearning resource contribute to creating and sustaining high school learning?
	In what way and why do certain communication, collaboration and social elements influence a high school eLearning resource?
	How do certain technological aspects and instructional design issues affect a high school eLearning resource?

Table 1 : Research context and subsidiary questions

The table describes the research context and the subsidiary questions of the research

The research is conceptually represented in the following figure.

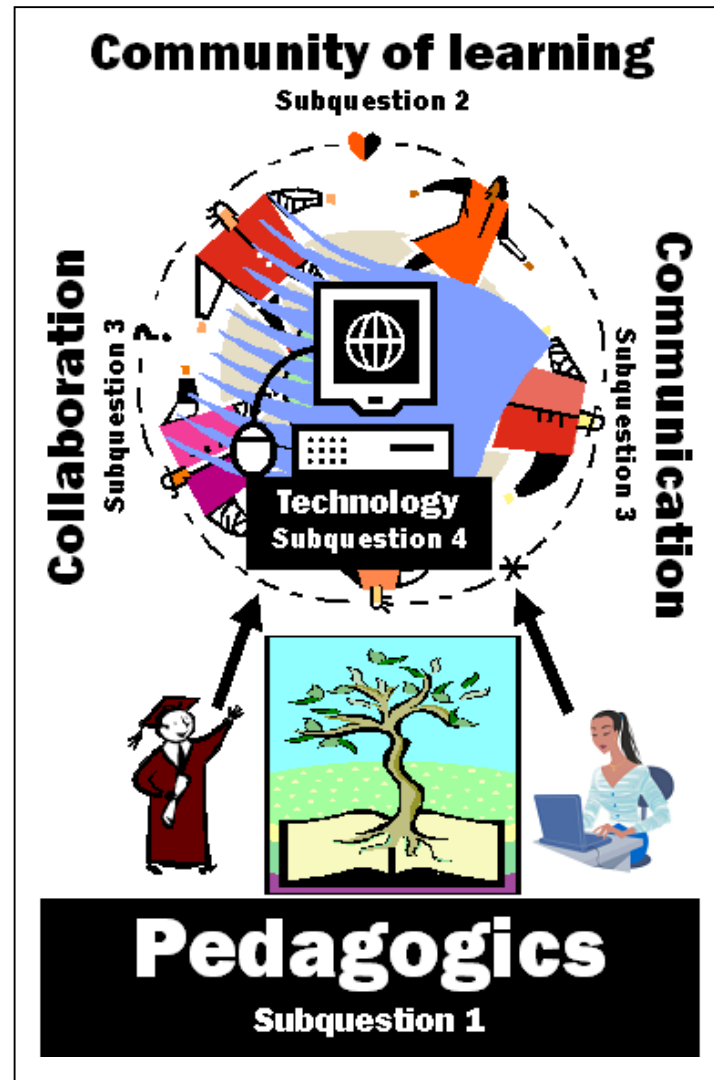


Figure 1 : Conceptual representation of eLearning for high school communities of learning
This figure shows how the researcher conceptualizes eLearning for high school learning communities.

The four research sub-questions together with an outline of the issues in each of these are dealt with in the following section.

1.6.2.1. To what extent do certain pedagogical theories and eLearning theories inform a high school eLearning resource?

How do learning theories (pedagogics) inform an eLearning strategy to sustain a learning community for high school learners?

Which elements in pedagogical theories and eLearning theories inform a high school eLearning strategy and why? How do learning theories (pedagogics) and eLearning theories inform an eLearning strategy that sustains a learning community for high school learners?

There are several other questions embedded in this question. They are: What are the pedagogical issues that influence eLearning for high school learners? What pedagogical issues derived from learning theories and eLearning theories will have a bearing on an eLearning resource for high school learners and why? What can we learn from pedagogics (learning theories) and eLearning theories about eLearning high school learners?

This section will include a specific investigation into educational learning theories, various pedagogical issues in relation to eLearning in general as well as in relation to specific eLearning models.

1.6.2.1.1. A general outline of educational learning theories

The following are some of the questions that my investigation into pedagogical issues and questions raised: What was the learners' response to their own learning? To what extent was the eLearning resource either an aid or an obstacle to learning? Were learners satisfied with the feedback that they got? To what extent can collaborative learning be effectively stimulated? To what extent was the eLearning resource effective in supporting the needs and learning of the high

school student?

1.6.2.1.2. A summary of cognitive learning theories – the Six Cs model

De Villiers (De Villiers, 1999) points out that because the Internet is increasingly used to deliver media and communication for educational purposes, guidelines for the quality assurance of instructional sites should incorporate established principles of instructional theories and apply them to these unique environments. De Villiers has investigated current directions and developments in learning theories and instructional design as well as various positions that have been taken on these points. She has presented this information in a concise model called the Hexa-C Metamodel of Instructional Theory and Design. The six components that De Villiers included in her model are: cognitive science, constructivism, component-based instruction, customisation, creativity, and collaboration.

From the literature on Home Schooling comes another component of the Hexa-C model that could itself be the topic of a separate thesis. This is companionship which I extracted from the home school movement (Klicka, 1995).

Companionship may indeed be a key ingredient for success.

1.6.2.1.3. Multiple intelligences

The popular ideas of Gardner (Gardner, 1993) may inform an eLearning strategy.

To what extent do the multiple intelligences described in Gardner's Theory of Multiple Intelligences exert an effect on the eLearning resource or community? They are intelligences that manifest through human activities associated with

words, questions, pictures, music, moving, socializing and being alone. Gardner challenges the widely held notion that intelligence is a single general capacity possessed by every individual to a greater or lesser extent. Gardner's point of view is that since human beings do in fact give evidence of having multiple intelligences, each individual person must therefore possess a unique cognitive profile.

1.6.2.1.4. Models and theorizing about e-learning

Although conventional pedagogical theories can be applied to eLearning in a general kind of way, the widespread proliferation of this new medium of learning is giving rise to new theories that focus specifically on various aspects of eLearning. New eLearning models continually emerge as new research findings in the area of eLearning become available. So many new eLearning models and theories occur in the literature that it would be impossible to include them all. I therefore decided to include those that are most relevant to this research and those that tend to appear most frequently in the literature.

1.6.2.2. To what extent and why do certain community elements in an eLearning resource contribute to creating and sustaining high school learning?

Frequent references are made in the literature to the creation, existence and sustaining of learning communities. An analysis of the literature reveals a number of points that are frequently made in this regard. Among them are:

- Learning and thinking styles, and gender and personality issues
- Affective-emotional issues that may influence an eLearning resource and community. (I will examine motivational factors, impressions, likes and

dislikes, enjoyment and fears.)

- Learning community-specific elements are prominent in the literature. Apart from user issues, researchers have investigated a number of elements that are unique to online learning communities. These include interaction, help, support, involvement by all concerned, and participation. Elements extracted from the literature include interaction, collaborative work, discussion, a sense of community, information about flexibility and accessibility, a strong focus on real learning in all its forms, and the attitude of participants.

1.6.2.3. To what extent and why do certain communication, collaboration and social elements influence a high school eLearning resource?

There is a strong focus on these issues, and a great deal of research is currently being devoted to the communicative and collaborative aspects of eLearning. Communicative and collaborative elements probably form the crux of current thinking and theorising about eLearning. I shall investigate these in tandem with social interaction issues.

1.6.2.4. To what extent and why do certain technological aspects and instructional design issues affect a high school eLearning resource?

Although any one of the issues from those indicated above could probably form the subject of a thesis, I decided that it would be beneficial for my research to pursue a wider rather than a more narrow form of investigation into the desirability and workability of an eLearning resource. It is for this reason that I have incorporated various technological and technical lines of investigation into the ambit of this study.

I have therefore pursued the following questions in this research. To what extent did the technology that was used support learning? What technological problems did learners encounter as they participated in the system? What technological advantages and disadvantages relating to computer hardware, software and Internet bandwidth can be identified in the implementation and support processes? What are the implications of the above for the system delivery, accessibility and operability?

1.7. Research context

The context for this research (Stakes, 2000) is the online eLearning course for which learners enrolled at a distance education institution (Brainline, 2006, Collins, 2005) between 2004 and 2005 in Pretoria, South Africa, with the view of obtaining an external Cambridge IGCSE (International General Certificate of Secondary Education) qualification. (Cambridge International Examinations, 2006).

A number of these learners were “international” students (which means that they were not resident in South Africa). This study may also be relevant to the international learning community because learning communities are not restricted by national boundaries. This study will show how eLearning for high school learners can be used transnationally.

1.8. Rationale and background for the study

1.8.1. Why this study was undertaken

While working in the field of information technology as a developer and provider of curriculum-related materials to children at school, I became

interested in the problem of how to extend support services so that they included an eLearning resource. As a result of this, I became interested in finding out why certain elements of an eLearning resource work or do not work – and indeed why any system as a whole either works or does not work. The challenge of studying eLearning offered me an opportunity to integrate academic study, practical skills and personal development.

The rationale for this study is consequently to discover what features of an online resource are desirable and workable when it comes to sustaining high school learning communities and why. This study also attempts to determine how valuable the contribution of a learning community is in the promotion of learning, and which elements of the online learning resource are most valuable for sustaining a learning community and why. I will investigate these issues from a pedagogical, community, communication and technological point of view in order to develop a holistic picture in this specific case.

The history of this type of group has a bearing on why this study was undertaken. I started out working with students who were engaged in completing their high school careers by means of an international Cambridge course in 1999. Even though I applied the standard methods and philosophy of distance education as diligently as I could to my business at that time, the pass rate of the learners was deeply unsatisfying and stood at around 10% (Cronje, 2004). In the years after 1999, I went to great lengths to apply various alternative methods of presenting and managing the courses and the students. This must have had a beneficial effect because by 2003 the pass rate had risen to around 80% – a much more satisfactory level of success for both the learners and my business.

In this study I hope to shed some light on why the system worked so well and why the success rate improved so dramatically in the year before I implemented the eLearning resource. But even after I had implemented the eLearning resource, the pass rate remained at between 80 and 90%. The figures themselves might lead one to conclude that an eLearning resource has no role to play, or that it was indeed the implemented eLearning resource (or a combination of the eLearning resource and other factors) that sustained this level of success in the learning community.

In 2004 I offered a high school learning programme using the eLearning resource Moodle (Dougiamas, 2004), which is an “open source” program (Perens, 2004), for students in the Cambridge section of the Brainline high school system. This implementation is the basis of this study.

My purpose in undertaking this study is to describe how and why the eLearning resource worked and the specific ways in which it benefited the students and the learning community of which they formed a part. My ultimate hope is that these desirable and workable features could be replicated in such a way that they will benefit learning communities throughout the world.

1.9. Uniqueness of the study

There are two reasons why this study is unique. Firstly, very little research has been carried out into high school learners who use a university-style eLearning resource, or any eLearning resource. This was confirmed by Cavanaugh in a recent meta-analysis (Cavanaugh, 2004b). This study will therefore contribute to a growing body of knowledge in this sector.

Secondly, the learners themselves belonged to a unique group in that they were all high school learners. All of these learners were exposed to a university-style eLearning resource and were required to work independently, to communicate, to learn collaboratively and to master demanding academic material. English was only the second language for approximately half the group. The research describes how these learners experienced this specific kind of learning environment and what the desirable and workable features are that can be identified in this eLearning resource.

Since the current state of available knowledge about high school learners and an eLearning resource is incomplete, this study will also provide explicit information about:

- the extent to which current learning theories and the eLearning resource were compatible with high school learners of this kind
- the extent to which the elements of the eLearning resource were desirable and workable for high school learners
- what the role of a learning community is in relation to an eLearning resource
- how an eLearning resource can sustain a learning community for high school learners
- how the communication features of the eLearning resource contributed to support the learning of these high school learners
- the technological aspects of implementing an eLearning resource for high school learners
- the quantitative data generated by the study and how it can be interpreted to maximize the implementation and operation of the eLearning resource

1.10. Purpose statement

The purpose of this study is to investigate the desirable and workable features of an eLearning resource that sustained a particular learning community of high school learners. By doing this, the study will contribute to the development of eLearning resources and learning communities.

1.11. The scope of the study

1.11.1. What is included in the study

The research focused on the operation in practice and context of an eLearning resource and the learning community who used it. The community here refers to a group of high school learners who enrolled in a private institution with the intention of obtaining a Cambridge school-leaving certificate. The research data was obtained over a period of two years in South Africa.

1.11.2. What is excluded from the study

The design and development of course material is not included in the study.

The absence of any pre-test or post-test study – Although I am inclined to agree with Kozma (Kozma, 1994) and Cobb (Cobb, 1997) that eLearning and electronic media do make a difference to learning, I did not include any pre-test or post-test research strategy in the design of the study. And while I am also sympathetic to Clark's (Clark, 2000) contention that media do not influence learning, I accept Russell's (Russel, 1999) view that when it comes to performance, there are no significant differences between delivery media. I tend to agree with Cobb (Cobb, 1997) that some media make learning easier because

they reinforce and strengthen the learner's cognitive capacity.

The “No Significant Difference Phenomenon” was once again confirmed by Cavanaugh (Cavanaugh, 2004b) whose meta-analysis showed that distance education can exert the same effects as traditional instruction on measures of student academic achievement. This study does not therefore attempt to compare eLearning and traditional instruction by means of pre-tests and post-tests.

1.12. Related research

The research context in South Africa

In order to position this research specifically in the South African context, I undertook a search into sources of information about research in South Africa, past and present and extended the search through all available international databases to include doctoral theses internationally.

I searched the following databases to find related research (Sabinet Online, 2006):

- Current and completed research – NRF (Sabinet Online, 2006)
- Electronic Theses and Dissertations ETD (Sabinet Online, 2006)
- NDLTD – International Theses (Sabinet Online, 2006)
- UCTD Theses and Dissertations at South African universities (Sabinet Online, 2006)
- SA e-Publications (Sabinet Online, 2006)
- The Internet via search engine Google (Google, 2006)

Related Research - SUMMARY of search results		
(Search refreshed and updated February 2006)		
Search on keyword	Number of items reported	Number of items useful and included
online	67	20
eLearning, eLearning	19	6
School and computer	367	2
Web-learning	13	2

Table 2 : Related Research Search Results Summary Grid

Although some of the related research may be indirectly relevant to this research, it was included in the literature review as part of the "funnel" approach to the literature review.

The number of research projects focusing on eLearning shows that it is an active field and that research of this kind is relevant. A detailed analysis of international and South African research is included in **APPENDIX 1**. A summary is presented in the following paragraphs.

International research - International degrees presented in this field covered the effect of conferencing on outcomes, online experiences and factors associated with successful high school educational programs. Cain (Cain, 2005) found that computer mediated communication did make a difference in outcomes. Ma (Ma, 2005) reported that learners view computer use at schools as limited and that more constructivist elements are needed. Murphy focused on the implementation of eLearning projects in Tennessee (USA) and made implementation recommendations. None of these studies provided substantial material that could be used in this research.

South African research – The research found in South Africa relates to higher

education. There are South African theses dealing with social networking, business applications, quality assurance, online facilitators, communication, mathematics and language teaching on the web, instructional systems design, a virtual campus and asynchronous tools. Although only Giladi (Giladi, 2005) covered school eLearning (done in Israel, presented in South Africa), I was able to extract valuable information from all the research but especially from instructional systems design information (De Villiers, 2005). In South African articles a wide range of topics are covered on higher education eLearning. These include administrative matters, evaluations, effectiveness, comparisons with conventional learning, social factors, learning theories, practical implementations, trends and delivery. Although none of the material covered high school eLearning in particular, I was able to extract valuable information from all this research.

1.13. Research approach

This research positions itself as "soft science". That is to say, it is qualitative research that incorporates some quantitative elements. In the words of Wolcott (Wolcott, 2005), the researcher is a "maker of quilts" who sews together selected pieces so as to arrive at an understanding of what happened in the selected case study.

The research approach

A qualitative research method, with some quantitative elements, was used in this study. The aim of a study such as this is to observe events in their natural settings and faithfully to describe and interpret the meanings that people attribute to phenomena. The goal of this research is defined by Babbie as describing, understanding and distilling practical suggestions (Babbie, 2002).

Theoretical framework

A theoretical framework, as explained by Jansen (Jansen, 2004), is a device that enables a researcher to make sense of the data that has been collected. In such a framework the researcher attempts to refrain from making a priori decisions about the data. Explanations are ultimately extruded through continuous reflection on the data during the course of the study.

The value of this approach is that while one may often find what one was looking for in research, new ways of perceiving a subject or new ways of categorising or applying data that has been gathered may be discovered if the researcher keeps an open mind (Silverman, 1993). Throughout the literature review I reflect and comment on the material, and in some cases I expand the material beyond its original context.

Sampling

The purposive sampling that was selected for this study does not permit any direct generalisation of the research results (McMillan, 2003). Instead it allows different perceptions about the eLearning system to be recorded. These variant perceptions may be useful in further research studies.

1.14. Research design

1.14.1. Type of study

The study is an instrumental case study (Stakes, 2000). An instrumental study consists of a particular case that provides insight into a specific issue such as (in the case of this research) the performance of the eLearning resource as it sustains

a learning community. In this case the instrument used to understand a high school learning community is the employed eLearning resource.

1.14.2. The subject and participants of the study

The subject of this research is the eLearning resource used. The participants were a group of high school students who studied online (and offline) with the intention of obtaining a Cambridge international school leaving certificate. They were in the age group 13 to 18 years old and were enrolled in an online learning institution called Brainline. They were mostly situated in and around South Africa, although some of them lived in Europe, in the United States, Saudi Arabia and other countries. Their parents usually had ties with South Africa. They were of mixed gender and race, although they were predominantly white.

Why I chose this case study

I chose this case study because I am interested in eLearning and have been involved in the development of alternative forms of private distance education for a number of years. Because this group was enrolled and available in the organisation which I owned (The Brainline College), it suggested itself to me as a suitable research group.

This group of students was the first group to use the eLearning resource. Because the eLearning resource is a university-style eLearning resource, it offered me an ideal opportunity to understand how suitable this technology might be for students in this age group in the first two years of the implementation of such a resource.

At the time of this research, I could not locate any other similar learning

community with the same toolset in South Africa. Circumstances seemed to align themselves at the right time and the right place with properly qualified people to make this research possible in 2004 and 2005.

More information about the research group

The gender spread was approximately equal and the learners ranged between 13 and 18 years of age. About half of them were in their first year of enrolment with the institution while the other half had been enrolled with Brainline for more than a year. English first-language students account for about 50% of the group, and the remainder take English either as a second or a third language.

1.14.3. Research methodology

1.14.3.1. Research method

This research follows a mixed research method approach (Reeves, 2000) by combining quantitative and qualitative methods. It includes a literature review that explores, analyses and synthesizes the field of eLearning theories. It also includes case study evaluations that combine qualitative and quantitative research (which is why it may be classified as a mixed research method).

1.14.3.2. Data collection methods

Data obtained from the web server on which the eLearning course was run was analyzed. Questionnaires with research questions that were designed to elicit both quantitative data and qualitative information were used. An interview protocol with open-ended questions was drawn up and the interviews were recorded before being transcribed.

Data collection instruments				
Data collection instruments			Authenticity and trustworthiness	
Observe	Select / Analyse data texts	Interview	Member checks and peer reviews	Crystalization
Researcher observations	Literature study. Messages in discussion forums. Formal tests / assignment responses. Questionnaires	-Focus groups interview with learners -facilitators and technical staff	Verification with students, facilitators and administration staff.	The telling of the same story by means of data gathered from different data collection instruments.

Table 3 : Data collection instruments

The tables above show data collection instruments and authenticity and trustworthiness indicators. The data collection methods were suited to the envisaged research objectives.

A more expanded version of this table is included in Chapter 3 together with a table linking the subquestions to the data collection instruments.

1.14.3.3. Matrix of research questions and methods – The Intellectual Puzzle

A data collection matrix was developed which tabulates the methods and instruments used to answer the research questions. The data collected contributed to answering the research questions. The intellectual puzzle for this study is included in Chapter 3 and 5.

1.14.4. The researcher and his position in the study

There is no value-free science (Denzin, 2000). It is probably impossible to "set

aside" biases. In my opinion it is better for a researcher to confront biases, viewpoints and prejudices head-on and declare all possible information about himself, his motives, intentions, etc.

Information that is fashioned by a human agent is always “cooked”. In other words, “it is always selected, filtered, interpreted, and extracted from a background set of assumptions that are implicit (rarely explicit)” (Burbules, 2004).

In the interest of objective evaluation by others, the researcher declares the following information. I am a minister of religion and a founder member of Brainline (Brainline, 2006), the institution in which the research was conducted. As a researcher I was closely involved with the subjects Economics, Business Studies, History, 3D Art and Design, and Computer Studies, and with the case study, and I worked as part of the technical team in the institution. Although I was closely involved with the learners throughout the research process, and although I obviously cared for them as the principal of the institution in which they were enrolled, I was constantly aware that I was also the owner of a business that was predicated on profit.

It is my observation and belief that neither of these two aspects of my involvement in the research institution interfered with the process or validity of the research because I was not studying either the learners or the success of the business model which I was using at the time. My intention throughout the research process was to determine the extent to which the tool (i.e. the online resource) that I was using served both myself, as an educator and a business person, and the learners.

By paying attention to whatever inherent biases may exist, it is my intention to let the data speak for itself. It is my opinion that I have never had any motive or reason to advocate any one particular system above any other. In short, I believe that research represents a serious attempt to learn whatever may be useful from the available facts and to adapt what may be learned here to other similar cases and situations.

Although I as a researcher am biased towards believing that eLearning does make a difference and does add value, I am not blind to the realities of the "No Significant Difference Phenomenon" initiated by Clark (Clark, 1983, , 1994) and rebutted by Kozma (Kozma, 1994) and Ullmer (Ullmer, 1994).

1.15. Value of the research and beneficiaries

The main contribution of this research is to provide educators and private institutions with possibilities for optimising the usage of eLearning resources, and thereby benefitting learners involved in eLearning.

Comparisons with other research enhance the value of research. To enable comparisons with other research, I describe the case in detail even though the primary aim of this research is not comparison. Comparative description tends to be the opposite of thick descriptions (Geertz, 1973), which is the desired result in this study. Comparisons may be made to online learning in other settings, countries, cultures and income groups.

Kress (Kress, 2004) states that new theories are needed for the new technology on hand. Current theories of learning are founded on theories of learning

developed in an era constituted quite differently around the assumptions of more stable and repeatable systems. These previous theories may be unable to meet the demands of the instant communication era. This research may help point to new theories.

Beneficiaries of this research may include: learners, who will directly benefit from improved eLearning resources, designers and sellers of instructional software, open-source programmers in PHP and MySQL, schools, home school learners, private and public schools, book publishers, web publishers, curriculum suppliers.

1.16. Overview of the research report

In this chapter the main research problem regarding the desirable and workable features of an eLearning resource for high school learners was discussed. The research context, rationale and background for this study were outlined. Furthermore I discussed why this research was undertaken, its uniqueness, value and purpose. All of these are linked to the main research question. Related research both in the local and international context was indicated. I also sketched the research approach, design, methodology as well as the procedures applied to test authenticity and trustworthiness.

The remainder of this research report consists of four chapters. Chapter 2 consists of the literature review, including my reflections and evaluation of the implications of the work of others in the field for this study. It includes investigations related to the research sub questions about underlying pedagogics, communication, learning community issues as well as the technical



aspects of an eLearning resource.

Chapter 3 outlines the research methodology, which is primarily a qualitative approach with some quantitative elements.

Chapter 4 tables the research results of the various research tools including questionnaires, focus groups, interviews and analysis of the text in the eLearning resource.

Chapter 5 provides the conclusions and recommendations of the study. It concludes the research by comparing literature, providing insights, making recommendations and suggesting topics for further research.