

**THE COMPUTER SCIENCE NEEDS OF A RURAL
SCHOOL: POSSIBILITIES AND PITFALLS FOR SERVICE-LEARNING IN
HIGHER EDUCATION**

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**THE COMPUTER SCIENCE NEEDS OF A RURAL
SCHOOL: POSSIBILITIES AND PITFALLS FOR SERVICE-LEARNING IN
HIGHER EDUCATION**

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by

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DECLARATION

I declare that

**THE COMPUTER SCIENCE NEEDS OF A RURAL SCHOOL: POSSIBILITIES AND
PITFALLS FOR SERVICE-LEARNING IN HIGHER EDUCATION**

is my own work, that all the sources I have used or quoted have been indicated and acknowledged by means of complete references and that this work has not previously in its entirety or in part been submitted at any other higher education institution for a degree.



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ABSTRACT

This research study attempted to identify the computer science needs of a rural school and then attempted to see to what extent a higher education institution could meet those needs and to what extent it could not, through a service-learning project. The study also attempted to develop a framework to guide the implementation of a service-learning project in computer science for a rural school.

The study was set against the literature on the need for higher education to transform and demonstrate greater responsibility and commitment to social and economic development of society in general, and the need for increased participation, collaboration and partnership formation through service-learning projects in particular. The literature on computer use in schools and best practice for service-learning in higher education was also reviewed.

Using qualitative approaches and data production methods the school teachers, learners, students and lecturers in a higher education institution were interviewed in order to establish the computer science needs of the school and to find out how the students and lecturers could address those needs through service-learning.

The research findings indicated that the rural school in De Doorns has a serious lack of essential computer-related infrastructure such as the computer laboratory, computers, and well-trained staff in using computers. Other computer science-related

needs included proposal writing, technical assistance and security personnel. The research findings also revealed that students and lecturers in the departments of Information Technology, Office Management, Human Resource Management and Education could be involved in the training of staff, enhancement of computer skills and proposal writing. From the research findings, it became evident that the two school community needs, i.e. the provision of computer laboratories and security services, could not be addressed through service-learning, but through funding proposals and fundraising that involved the Western Cape Education Department and the private sector.

The study therefore demonstrates possible partnerships between schools and higher education institutions and calls for collaborative efforts that include government departments and the private sector in order to make education beneficial to the development of school learners, students in higher education and South African communities in general.

THIS THESIS IS DEDICATED

TO

**MY LATE FATHER
FLEMMER, ZANGOS ARENDS**

AND

**MY MOTHER
SARAH, NOSISI ARENDS-ZWENI**

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DEFINITION OF TERMS

Rural school community

The teachers, learners, parents and governing body of a school in a rural area.

Computer science needs analysis

The process to detect, analyse and specify computer science needs at the school level.

Meeting the computer science needs

The phrase demonstrates a process of investigating possible involvement of students and lecturers in higher education in addressing the computer science needs of a rural school community. The phrase does not imply that students and lecturers were physically involved in meeting the computer science needs.

Service-learning

An involvement of students in organised community service that addresses local computer needs, while developing their academic skills and commitment to the community. Community service is combined with academic teaching, learning and assessment practices that promote critical, reflective thinking and civic responsibility of students.

A higher education service-learning project

A curriculum-linked project in which students in higher education engage in activities that could address the computer science needs of a rural school community, together with structured opportunities intentionally designed to promote student learning and development.

Reciprocity

An idea/notion that every individual, organisation and entity involved in service-learning functions as both a teacher and a learner. This implies that students learn from academics and the community. The academics should also learn from the students and the community. In the same way the community should also learn from the academics and students.

Reflection

The process of deriving meaning and knowledge from community experience. In this process both academics and students engage in a thoughtful and thought-provoking process that consciously connects learning with experience.

Digital Divide

A gap between those that have access to computers and internet and those that do not; an exclusion that results in severe limitation of life chances and a lost opportunity for the rural school community that are unable to use ICT effectively.

Knowledge Society

This implies the ubiquitous use of knowledge-based technologies in society.

Information Society

An ideal situation in which people or a rural school community could get “maximum benefits of computers in all aspects of their lives: at work, at home and at play” (Mlitwa 2005: 189).

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CHAPTER 1

INTRODUCTION

1.1 RESEARCH CONTEXT

1.1.1 The need for community development in South Africa

South Africa has a history that created inequalities in socio-economic development among its population groups. In an attempt to address these inequalities, the South African government committed itself to reconstruction and development after the first democratic elections in 1994. South Africa is challenged simultaneously by globalization trends and local developmental needs. To avoid the pitfalls of other development projects internationally, an integrated holistic approach to development is recommended (Wessels, Mosime and Seitheisho 2000). This approach focuses on the facilitation and strengthening of partnerships towards achieving holistic and sustainable development by ensuring effective social mobilization at all levels to build integrated, united, healthy, sustainable, socially vibrant and economically prosperous communities. It is believed that higher education in partnership with communities, local and provincial governments, the private sector and international partners and donors could play a major role in community development.

1.1.2 Challenges to higher education

There is enthusiasm around the world for curriculum renewal in order to make education relevant to the needs of the workplace and communities (Teichler 2000; Foster and Stephenson 1998; Garrick and Kirkpatrick 1998; Teichler 1998). In South Africa the White Paper on Higher Education (1997) calls on higher education institutions to promote human resource development through programmes that are responsive to the social, political, economic and cultural needs of the country. Consequently, the Higher Education Quality Committee (HEQC) of the Council on Higher Education (CHE) have not only included service-learning as one of the core functions of higher education institutions but have also ensured that clear and efficient arrangements are in place for the management of programmes that have a service-learning component in a way that ensures and enhances quality (HEQC Discussion Document, March 2002: 23). Service-learning has been proposed as one of the criteria for the HEQC's audits of South African higher education institutions in future. In addition, the CHE in collaboration with the Community - Higher Education - Service Partnerships (CHESP) initiative of the Joint Education Trust (JET), have developed a Good Practice Guide and Self-Evaluation Instruments for management of the quality of service-learning in higher education (CHE 2005).

The relevance of education in South Africa has also been stressed in the National Commission on Higher Education Report of 1993 and the National Plan

for Higher Education in 2001. These calls for the development of relevant education programmes have created a need for greater co-operation between the world of work and society and the higher education sector. Service learning is now regarded as an approach that has the potential to integrate students' community service experience with academic study so that learning is enhanced and a recognised community need is met (Smith and Saltmarsh 1998). The White Paper on the Transformation of Higher Education (1997) makes specific reference to the role community engagement can play in transforming the higher education system. In line with the White Paper, the National Plan for Higher Education (2001) sees community service as ideally linked to teaching, learning and research and looks to higher education institutions (HEI's) "where knowledge generation and intellectual development are themselves the product of social interaction and engagement."

1.1.3 Potential of young people with computer skills to transform socio-economic conditions

Computer Literacy was not offered as a teaching subject in schools and teacher education institutions in the pre 1994 South African education system. Consequently, the Department of Education introduced educational reforms that require the learners to "use appropriate information and communication technologies" (Department of Education 2002: 11). Young people with computer skills are regarded as the potent force for transforming social, economic and

political life globally as they are able to use the Internet for school work, for communicating with local and distant friends, for finding information and getting personal help and for social purposes (Subrahmanyam, Greenfield, Kraut and Gross 2002).

Attempts have been made to bridge the "digital divide" (between those who have access to computers and those who do not) by countries such as Nigeria (Chiemeke and Daodu 2005). Governments and international agencies worldwide are increasingly looking for development and prosperity through the use of computers. There are also increasing calls for universities to play a key role in the development of ICT literacy (National Plan for Higher Education 2001; Mlitwa 2005).

While much attention has been given to the availability of computers and computer literacy in South African urban schools, the current status in rural schools remains at an unsatisfactory level. Most universities that are well-equipped and rich in resources operate in urban areas and as a result only urban schools benefit from their influence. The schools in the rural areas are often neglected or forgotten (Hawkrige, Jaworski and McMahon 1990). This research also attempts to develop a framework to guide the implementation of a service-learning project in computer science for a rural school. This framework subscribes to Maybach's (1996) suggestion that service-learning programmes should be designed in such a way that they address identified social needs.

There are few studies that focus on the computer science needs of rural schools and on possible collaboration between rural schools and higher education institutions in terms of computer science needs and service-learning programmes in higher education. Such studies are necessary in South Africa because rural schools cater for the most disadvantaged learners and there is the greatest need for development in rural areas. It was against this background that an attempt was made to investigate the computer science needs of a rural school and to identify possible partnerships with higher education.

1.2 PROBLEM STATEMENT

The focus of this research is on the computer science needs of a rural school in the Western Cape, with the purpose of establishing the extent to which the students and lecturers in a higher education institution could meet such needs, using qualitative research approaches.

1.3 RESEARCH QUESTIONS

The following research questions were identified to guide the research activities:

1. What are the school's needs in terms of computer facilities?
2. Which of these needs could a computer service-learning project address?
3. Which of these needs could a computer service-learning project not address?

The research questions were based on the assumption that service-learning in higher education can satisfy some of the computer science needs of a rural school community.

1.4 DELIMITATION OF THE STUDY

The study was limited to one rural primary school community in De Doorns and one higher education institution (University of Technology) in the Western Cape. Ten grade nine learners, fourteen school teachers, fifteen students and four lecturers in the departments of Information Technology, Office Management, and Human Resource management were interviewed.

1.5 THE STRUCTURE OF THE STUDY

The research report consists of five chapters. Chapter one is the introduction, which portrays the need for community development in South Africa and the challenges that are presented by globalization. The chapter highlights the need for an integrated holistic approach to development which could be possible through the establishment of partnerships between higher education institutions and communities, local and provincial governments, the private sector, and international agencies. This chapter also presents the challenges to, and calls for, higher education institutions to transform education and demonstrate greater responsiveness, responsibility and commitment to the socio-economic needs of

communities by developing information societies and service-learning programmes that are responsive to the social, political, economic and cultural needs of the country. Finally the chapter also highlights the importance of computers and puts forward arguments that the computers are potential transformers of socio-economic conditions.

Following the introduction is a review of literature that emphasizes the need for greater cooperation and partnerships between higher education and society. In this chapter it is clearly stated that higher education institutions are expected to show greater responsibility and commitment to the social and economic development of society. This chapter also stresses the relevance of education to community needs and the need to develop and implement high-quality service learning programmes that are responsive to the needs of the society. The chapter also examines the importance of the needs analysis before the planning and implementation of service-learning programmes. The importance of using computers in schools and the role that computers play in Information and Communication Technology (ICT) is examined. The chapter also highlights the need for higher education institutions to develop ICT literacy in rural areas. The need for technology in the South African education system and training of school teachers in computers is also stressed.

The third chapter describes the methodology and the procedures that the researcher used to conduct this study. The qualitative research paradigm is examined and the way this approach has influenced the researcher is discussed. This chapter also discusses the research design, instrument design, data sources, production methods and the research procedure. The chapter also describes the manner in which data was analysed, interpreted and verified. The selection of participants and their role in the research process as well as the limitations of the study are also discussed in this chapter.

Chapter four presents the findings that were obtained after the collected data were captured, analyzed and interpreted. The chapter is divided into four sections. The first section focuses on the historical background and current condition of the school in terms of its infrastructure, educational programmes, staff capacity, learner profile, extra-mural activities and governance. In the second section attention is focused on the responses of the learners and teachers with regard to the computer science needs of the school. The third section deals with the responses of the lecturers and students who were also interviewed in a higher education institution. These responses relate to what the students can do to address the computer science needs of the rural school community through service-learning. The final section focuses on the responses of the lecturers with regard to other school computer-related needs that cannot be addressed by students through service-learning.

The final chapter (chapter 5) focuses on the summary of the research findings and conclusions and puts forward some recommendations on what should be done to address the computer science needs of a rural school and to develop an Information Society in rural areas. This chapter calls on higher education institutions to form partnerships with school communities including those that are located in the rural areas, and be engaged in curriculum renewal in order to offer effective service-learning programmes that could address community needs while promoting student learning and development. The significance of the study is also set out in this chapter.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

The study was set against the literature on the need for higher education to transform and demonstrate greater responsibility and commitment to the social and economic development of society in general, and on the need for increased participation, collaboration and partnership formation through service-learning programmes in particular. The literature on curriculum evaluation and renewal, the relevance of education to community needs (needs analysis), computer use in schools, role of computers in developing the Information Society and best practice for service-learning in higher education was also reviewed.

2.2 Partnerships between higher education and society

There is an enthusiasm around the world for greater participation and active involvement of the wide variety of interest groups in order to address the social and economic needs of the people (Teichler 2000; Foster and Stephenson 1998; Garrick and Kirkpatrick 1998; Teichler 1998; Birch 1988). There is a belief that co-operative generation and application of knowledge and expertise could contribute to finding solutions to local, national and international demands. The collaboration of all the stakeholders is referred to as a 'holistic integrated

approach' that could possibly address the changes faced by South Africa (Wessels, Mosime & Seitheisho 2000).

Higher education institutions are also challenged to show greater responsibility and commitment to the social and economic development of society. In South Africa the expected contribution of higher education institutions to socio-economic development lies in a national vision of a transformed, democratic and responsive system of higher education (National Commission on Higher Education Report 1993, Education White Paper 1997; National Plan for Higher Education in 2001). These policy documents mention the following three premises as essential pillars for transformation of higher education in South Africa:

- **Increased participation:** Participation by an ever-increasing range of interest groups aims to eradicate the inequalities of the past.
- **Greater responsiveness:** The ability and willingness to respond and seek solutions to various social and economic problems by adapting teaching and learning methods and curricula where required.
- **Increased co-operation and partnerships:** Collaboration and partnerships between institutions of higher education and between institutions and all sectors of society at large to build mutual trust, increased accountability and transparency in higher education.

These three pillars point to a more open system of knowledge generation, application and production in dynamic interaction with community interests.

Bernardt (1999: 153) highlights how the school community could benefit from higher education when he states that higher education institutions

can become partners in the school's improvement efforts by helping them develop and achieve a vision, mission and plan, and possibly perform in the role of external change agent or school coach.

2.3 Service-learning and quality assurance / enhancement

Programme standards have been established to guide the development and implementation of high-quality service learning (Tenenbaum 2000). In South Carolina, the alliance for service-learning in Education Reform and the National Service-Learning has established such programme standards. Likewise, South Africa is faced with increased demands for quality and quality assurance in higher education. In response to these demands, policy documents have identified the importance of quality higher education and the need for a national quality assurance system. The focus in policy documents is on HE quality that includes the following three core functions of every HE institution:

- *Teaching and learning*
- *Research*

- Community engagement

Whereas quality assurance of teaching / learning and research has received significant attention in South Africa and abroad, the quality assurance of service learning is not adequately addressed yet (Erasmus, Fourie & van der Westhuizen 2003). However, the external audit system of the Higher Education Quality Committee (HEQC) identifies service learning, together with teaching, learning and research as one of the areas that will be targeted for attention during HEQC audits for institutional quality assurance (HEQC Discussion document 2003). Studies have revealed that the quality of service learning could be assessed by the impact it has on addressing both the community needs and student needs and by the “level of the reflective process expressed in the writings of students” (Bradley 1996: 24).

2.4 The importance of the needs analysis

Several studies have highlighted the importance of identifying and analyzing needs before any intervention takes place (Babbie and Mouton 2002; Peterson 1998; Bernhardt 1998; Turrell 1980). These studies claim that a needs analysis helps decision making by clarifying the nature and the importance of the needs. Bernhardt (1998: 129) points out that in an educational setting, identifying needs requires use of multiple measures such as the following:

- A knowledge of the population (demographics)
- Values of the people to be served (perceptions)
- *An idea of the success of the programme or process in question (student learning); and*
- The services available to the population (school processes)

In support of the needs analysis Babbie and Mouton (2002: 340) maintain that “social interventions are usually responses to social problems and needs”. Maybach also supports this view when he poses the following question:

If in the process of service- learning we are not hearing the individual service recipients’ voices and are not addressing their long- term needs, whose voice and needs are of utmost concern? (1996: 43).

2.5 Definition of service-learning volunteerism, community service, internships and field work.

2.5.1 Service-learning

There is confusion around the definition of service learning and various studies have defined service-learning in different ways (Tsang 1998; Troppe 1996; American Association for Higher Education 1993). About 147 definitions have been noted in the literature (Eyler, Dwight and Giles 1999). Research has shown that different definitions of service learning stem from different interpretations and

understandings of the concept as well as from the diversity of what is labeled “service learning” in programmes (Furco 1996). The following section portrays a variety of definitions for service-learning.

The American Association for Higher Education (AAHE (2000) defines service-learning as a method under which students learn and develop through thoughtfully organized service that: is conducted in and meets the needs of a community and is coordinated with an institution of higher education, and with the community; helps foster civic responsibility; is integrated into and enhances the academic curriculum of the students enrolled; and includes structured time for students to reflect on the service experience. (American Association for Higher Education (AAHE 2000).

Furco (2002) states that service-learning seeks to engage individuals in activities that combine both community service and academic learning. Because service-learning programs are typically rooted in formal courses (core academic, elective, or vocational), the service activities are usually based on particular curricular concepts that are being taught.

Another definition used by Campus Compact National Center for Community Colleges (1993) emphasizes goals of civic responsibility and community engagement in service learning. “Service-learning is a teaching method which combines community service with academic instruction as it focuses on critical,

reflective thinking and civic responsibility. Service-learning programs involve students in organized community service that addresses local needs, while developing their academic skills, sense of civic responsibility and commitment to the community.”

The International Partnership for Service-learning (2000) defines service-learning as follows: “service-learning responds to students desire to be in the world, learning from experience as well as classes, and to put their education to use for the good of others.”

Another fascinating key element of service learning as it is discussed in *Service Matters* is its explicit connection to academic coursework. This is reflected in Bob Bringle and Julie Hatcher’s (1995) definition of service-learning as a “course-based, credit-bearing educational experience in which students (a) participate in an organized service activity that meets identified community needs and (b) reflect on service activity as a means of gaining a deeper understanding of course content, a broader appreciation of the discipline, and an enhanced sense of civic responsibility.” (1995: 45).

Bringle and Hatcher (1995) maintain that from these definitions the following three general characteristics of service learning could be derived:

- 1) It is based on the experience of meeting needs in the community.
- 2) It incorporates reflection and academic learning.

3) It contributes to students' interest in an understanding of community life.

Decker (1998) also claims that service-learning in higher education is a powerful pedagogy that has the potential to meet a recognized community need whilst enhancing student learning.

From the above definitions it is clear that service learning is different from volunteerism, community service, internship or fieldwork. The following section examines these differences as described by Furco (1996).

2.5.2 Volunteerism

Volunteerism means performing some formal service for others or one's community without receiving any external rewards. It refers to those instances when students or other individuals are engaged in activities where the primary emphasis is on the service being provided and the primary intended beneficiary is clearly the service recipient.

2.5.3 Community Service

Community service refers to service work that is often similar to that performed by traditional "volunteers". However, often there are external requirements or rewards attached to community service activities. For example, the term "community service" conducted as part of a membership requirement, or when

academic credit is awarded but intentional learning outcomes are not a central goal. Students may receive substantial benefits from the service activities, but the primary intended beneficiary is the service recipient.

2.5.4 Internships

Those experiences that are primarily intended to provide students with hands-on activities that enhance learning or understanding of a particular subject or field of study are typically classified as internships. They may involve benefits to service recipients, but that is generally a secondary or even unintended goal. Internships often place students with for-profit organizations, where community service and service-learning placements are almost exclusively with not-for-profit service organizations.

2.5.5 Fieldwork

Fieldwork experiences provide students with co-curricular opportunities that are related to formal academic study. The primary intent is to provide students with an enhanced understanding of the field of study, but there is a definite emphasis on the service provided. Teacher education programs typically have fieldwork experiences built into their curriculum in the form of “student teacher” placements.

2.6 Typologies of service-learning

Furco's (1996) 'Service and Learning Typology' (below) suggests four variations found on many campuses in the US in which service and learning have some relationship. The types are defined by their initial aims rather than whatever outcomes eventually emerge. The typology is not intended to be hierarchical, for each area has a distinctive agenda.

2.6.1 service-LEARNING

As the capitalisation suggests, in this model the learning goals are primary, and service outcomes secondary. Typically such courses are rooted in academic disciplines, which emerge as a primary base to which a discrete service component is added. Examples include:

- Writing and Critical Thinking courses which engage students in writing projects for public agencies;
- Political Science courses that include exposure/engagement with a public agency or leader as part of the course design;
- Educational Courses which are augmented by students doing active tutoring;
- Traditional clinical training programs in which the learning agenda is central, while the service setting is secondary.

2.6.2 SERVICE-learning

As the capitalisation suggests in this model the service outcomes are primary, while the learning goals are secondary. Such programmes begin with a service need being clearly stated by the acquirers of the service. A learning agenda is derived from the knowledge needed to carry out the service assignment with integrity. Advocacy or research projects are identified by the communities' 'fit' in this grouping. Content and methodology are determined by the situation. The service agenda is central, the learning is secondary.

2.6.3 Service learning

The lack of capitalisation is intended to show that service and learning goals are completely separate. This is why there is no hyphen. Some institutions sponsor programmes designed with both service and learning intentions, but with the two components viewed as distinct and separate from the other. No expectation is stated that the service experience will enhance the learning, nor that the learning will enhance the service.

2.6.4 SERVICE-LEARNING

The equal capitalization and hyphen is intended to show that service and learning goals are of equal weight and that each enhances the other for all

participants. In such programmes the service and the learning are balanced – therefore the hyphen is essential. The defined needs/requests of individuals, communities, or agencies are linked to defined learning expectations for students. In a SERVICE– LEARNING approach, all parties to the arrangement are seen as learners and teachers as well as servers and served. In these programmes, we are challenged to respect local situations for what they can teach. Likewise, students are challenged to be their best, to listen, to explore, to learn, to share from their emerging capacities, and gain increased capacity for self-directed learning.

2.7 Best practices and key concepts in service learning (principles of good practice).

Best practices in service-learning have been documented by several authors.

With regard to key concepts, the literature mentions “reciprocity” (Jacoby 1996) and “reflection” (Bringle and Hatcher 1996) as important concepts in service learning.

2.7.1 Reciprocity

Studies stress the importance of reciprocal learning and service and a shift from “seeing the community as a learning laboratory to viewing it as a partner in an effort to increase each other’s capacities and power” (Jacoby 1996: 35).

Reciprocity suggests that every individual, organization, and entity involved in service-learning functions as both a teacher and a learner. Jacoby (1996) points out that when service-learning emphasizes student learning and the academy's agenda without stressing reciprocal learning and service, there is a real risk of exploiting or coercing both the community and the student. She further states *that the degree to which we enter the service-learning endeavour committed to reciprocal relationships will determine whether we move the academy away from seeing the community as a learning laboratory and toward viewing it as a partner in an effort to increase each other's capacities and power.* Reciprocity, therefore, suggests that as students learn from the academics, the community and one another, academics should also learn from the students, the community, and one another, and so on. According to Jacoby "this expansion of the community of learners in service, substantially enriches the outcomes" (1996: 35).

2.7.2 Reflection

The studies also see reflection as playing a central role in the process of learning through community experience. These studies claim that effective reflection engages both teachers and students in a thoughtful and thought-provoking process that consciously connects learning with experience. According to Dewey's (1929) the scientific method approach to education requires students to undergo the following five steps as they process experience.

1. Reflection begins with a particular problem, situation, or experience.
2. The problem is identified and articulated.
3. A hypothesis is formed for a solution.
4. The hypothesis is tested and thereby confirmed or rejected.
5. The resulting knowledge is used as background for future inquiry.

Kolb's (1984) learning cycle follows a similar set of steps, with emphasis on the cyclical nature of the process which begins and ends with actual experience, mediated by the intentional development and application of knowledge.

2.8 Benefits associated with service-learning

According to Sigmon (1994) the following benefits are associated with service learning :

- Students who engaged in high-quality service-learning programs showed increase in measures of personal and social responsibility, communication, and sense of educational competence.
- Students who engaged in service-learning ranked responsibility as a more important value and reported a higher sense of responsibility to their institution.
- Students perceive themselves to be more socially competent after engaging in service learning.
- They would more likely treat one another kindly, help one another, and care about doing their best.

- Students who engage in service learning were more likely to increase their sense of self-esteem and self-efficiency.

It is also clear from Shaffer (1993) that students who participated in service learning were less likely to engage in “risky” behaviour. Shaffer highlights the following benefits to substantiate the statement:

- Students in service-learning programs showed reduced levels of alienation and behaviour problems.
- Those students who engaged in service-learning were less likely to engage in behaviour that led to pregnancy or arrest.
- Students who engaged in service-learning and experienced a structured health curriculum were less likely to engage in unprotected sexual activity or violent behaviour.

2.9 Problems/challenges related to service-learning

Several studies indicate that all the problems that are related to the planning and implementation of SL programmes revolve around time needed for proper co-ordination of activities. Johnson (1995) points out that organizing and implementing her integrated course was much more time-consuming and labour-intensive than she had originally anticipated. Zlotkowski (1995) also states that the students reported that SL courses required a much greater commitment of time than they had originally planned. Other problems mentioned include funding,

lack of efficient administration and communication on issues relating to curriculum planning and assessment (Perusek 1995).

2.10 Case studies of successful service-learning

There is a substantial body of literature that documents case studies of successful service-learning in America (Rothman 1998; Chick 1995). The case studies on service learning have been documented in different fields such as architecture where students designed low-cost houses, business education where students turned their business skills towards a project that benefited the community and in the health fields where students spent time with the community gaining greater insight into public health issues (Rothman 1998: 150). Since service-learning is a fairly new concept in South Africa, there are no similar case studies that have been documented.

2.11 Service-learning programme evaluation

Studies on programme evaluation recommend that the learning programmes should be evaluated according to whether “they are designed in such a way that they address identified social needs adequately” (Babbie and Mouton 2002: 340). Babbie and Mouton’s (2002) “logical model” suggests that an educational programme that is intended to have a relationship to its community needs should be evaluated according to conceptualization, programme design, implementation

and impact of the programme. Research on service-learning programme evaluation in South Africa, conducted by the Evaluation Research Agency (ERA) from 2001 to 2002, revealed that one reason why some SL programmes failed in South African higher education institutions was that the intervention did not address the real community need (Mouton and Wildschut 2002). This study indicated that the SL courses were designed in such a way that the students and academics were the main beneficiaries and that the communities were not sufficiently involved in the development and delivery of the SL courses.

2.12 Research on service-learning

The Joint Education Trust (JET) conducted an extensive survey and analysis of community service in higher education during 1997 and 1998. During 2001 and 2002 JET supported the research and development of more than 80 service-learning courses across 39 different academic disciplines involving more than 3,000 students. Resulting from this work, the following key questions were identified for in-depth research in order to advance our knowledge of community service in higher education (Joint Education Trust 2002):

- What factors promote or prohibit the institutionalization of service-learning?
- What institutional policies, strategies and practices best facilitate the implementation of service-learning?
- What kind of organizational / partnership structures best facilitate the implementation of service-learning?

- What is the role of the community in service-learning?
- What is the role of lecturers and students in service-learning courses?
- What is the role of service agencies in service-learning?
- How is student-learning best assessed in service-learning?
- What are the cost implications of service-learning?
- What are the benefits of service-learning?
- How can service-learning contribute to knowledge production?

From the above questions it is clear that more research on service-learning needs to be conducted. This is also evident from Conrad and Hedin's statement that:

More and better qualitative research is needed to provide deeper understandings and texture to our knowledge of how service-learning can benefit our communities more productively. (1997: 54).

Day (2005) points out that successful community research is based on collaboration between the community and the researcher. Stoecker (2005) also states that one of the best ways to make sure that the research will be useful and that the research methods will fit the culture of the group or community is for the people affected by the research to guide it. He claims that this reinforces the importance of dialogue between community and researcher and illustrates the need for building 'participatory relationships' (Stoecker 2005: 39).

2.13 Computers in schools

The use of computers in schools has been regarded as good educational practice globally. In the Hobart Declaration on the common and agreed goals for schooling in Australia, Ministers for Education included an aim to develop student's skills of information processing and computing (Department of Education and Arts 1993). In Iowa, the Newsweek magazine entitled "We Have Seen the Future: It is in Iowa" introduced the Iowa Communication Network (ICN) that provided high-speed computer communication among all schools (Monke 1999). In South Africa the Department of Education has introduced educational reforms that require the learners to "use appropriate information and communication technologies" (2002: 11). The computer has been used as a focus for group work and as a supplement to other teaching resources. One of the key uses of computers in primary schools has been to motivate and reinforce language skills, and adventure games have been given as examples of software which promote language development and problem solving skills (Australian Council for Computers in Education 2004).

2.14 Computers as vehicles for Information and Communication Technology (ICT)

Information and Communication Technology (ICT) is not only seen as providing a great development opportunity worldwide but is also regarded as a key weapon in The War against world poverty if used effectively (Chiemeké and Daodu 2005).

Although much has been written about the advantages of ICT there are still people who, for economic, social, cultural or educational reasons, do not have access to computers and the internet. Consequently these people are unable to utilize the information provided by these technologies. According to Chiemeké and Daodu (2005) there is a “digital divide” between those that have access and those that do not. Describing the “digital divide”, Burbules and Callister (2000) equate it to exclusion that results in severe limitation of life chances. Sharing the same view Mlitwa (2005: 188) points out that the “digital divide” represents “a lost opportunity for people that are unable to effectively use ICT”. The reasons that have been cited for the inability to use ICT effectively include the following:

- Do not have access to it
- Do not know how to use it
- Uncomfortable using it
- Cannot afford it, and
- Do not understand how it can be relevant to their lives (Bridges 2003; 2004).

2.15 The need for Higher Education to develop an Information Society and ICT in rural schools

According to Mlitwa (2005) the Information Society (and the Knowledge Society) directly or indirectly implies the opposite of the ‘digital divide’. She further describes the Information Society as a society and an economy that makes the best possible use of new Information and Communication Technologies (ICTs),

where people get “maximum benefits of new technology in all aspects of their lives: at work, at home and at play”.

While access to ICT is seen as a basic right of the 21st Century citizenship (Murdoch 2002), the ‘digital divide’ remains a major threat to the development of an Information Society in developing countries, including South Africa (Bridges 2003). Transformative change towards a more literate and knowledgeable society is needed if South Africa is to participate in, and take advantage of, the knowledge-based Information Society. A university can play a significant role in developing society towards this end (Mlitwa 2005).

2.16 The need for technology in the South African Education System

There is a realisation that South Africans should become technologically literate in order to be part of the global economy (Rautenbach 1991). According to Bowyer (1990) more than one third of the world’s adults and children have no access to the knowledge, skills and technologies that can improve the quality of their lives and help them shape and adapt better to social and cultural change. He describes this situation as intolerable and maintains that it can only change if scientific, mathematical and technological literacy are a basic part of everyone’s education.

Technology is acknowledged as the single most powerful force in the world today. It permeates every aspect of public and private life, of work and play. Furthermore, technology is one of the essential cornerstones of productivity and economic competitiveness. Given this, it necessarily follows that systematic education technology must be present in the schools, of any nation that wishes to be a serious economic competitor, a world citizen, and that seeks to enhance its citizenry's quality of life (Dyrenfurth 1995: 42).

Rautenbach (1991) emphasises the importance of technological and scientific changes that need to take place in order for South Africa to be part of the global economy. He explains the situation that might be envisaged in the post apartheid South Africa where economic sanctions will be something of the past and where technological and scientific exchange with the rest of the world would be normalised. His argument is based on the fact that South Africa would become part of the global economy.

2.17 Computer Literacy for Teachers/ Staff Training in computers

It is generally acknowledged that one of the most critical problems facing effective and widespread use of computers in learning is teacher education. Milner points out that "teachers at all levels need to be educated about the use of computers in the classroom and about the impact on society in general" (1981: 88). Daniel (1995: 106) also states that "it is hard to imagine students becoming computer literate without computer literate teachers". He further argues that if we understand how children growing up in a literate culture acquire the knowledge,

skills, understanding and values that the conventional concept of literacy encompasses, we recognize that developing a computer literate school staff is a major aspect of education for computer literacy. According to Stuart (1995) classroom use of computers offers opportunities for enhancing elementary and secondary teaching in many subject areas - opportunities that are being missed because many teachers at all levels do not know how to use computers in the classroom and are not prepared to teach about their impact on our society. It is also clear from him that training and experience requirements for certification for teaching computer related courses are generally lacking.

Several authors have stressed the importance of pre and in-service education for teachers. "Teachers are the frontline troops of change, and progress depends on their own education, motivation and freedom to innovate (Beeby 1986: 37).

Sharing the same view Hartshorne states:

Whatever the educational problem that has to be faced, the key to the situation is the teacher: her academic background and professional training; her further personal and professional development during her teaching career; ... her competence, confidence and commitment in the tasks of education... (1992: 218).

The role of teachers should also be regarded as vital if computer science education is to be one of the agencies through which the transformation to a technologically advanced society is to be achieved.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 INTRODUCTION

As mentioned in Chapter 1, the purpose of this study was to investigate the computer science needs of a rural school community and to establish the extent to which higher education could meet such needs through service-learning. Another objective was to develop a framework to guide the implementation of a service-learning project in computer science for a rural school. In order to achieve the objectives mentioned above, various data generating methods were used. This chapter analyses and reflects upon these methods. Data analysis and interpretation as well as the limitations of the study are also examined in this chapter. Since the data gathering methods and research procedures used in this study were shaped by the qualitative research paradigm, it seems appropriate to start by explaining why this study used narrative or qualitative data gathering and production methods in the context of teaching and learning.

3.2 WHY THE QUALITATIVE RESEARCH APPROACH WAS ADOPTED IN THE STUDY

According to Babbie and Mouton (2001), one of the main strengths of qualitative research is the comprehensiveness it gives researchers. Qualitative research

enables the researcher to develop a deeper and fuller understanding of the social phenomenon by providing opportunities for the researcher to “go directly to the social phenomenon under study and observe it as completely as possible” (Babbie and Mouton 2001: 309). In this study the main social phenomenon was the rural school and the research aimed at gaining a deeper understanding of the school’s socio-economic condition in terms of its computer science needs. Another social phenomenon was the higher education institution and the purpose of the research was to establish the manner in which higher education could meet the computer science needs of the school through service-learning.

The key ways in which qualitative studies are distinguished from quantitative studies include the following:

- Research is conducted in the natural setting of social actors.
- Qualitative research emphasizes process rather than outcome.
- The primary aim is in-depth descriptions and understanding of actions and events.
- Understanding social action in terms of its specific context is more important than attempting to generalize the findings.

(Babbie and Mouton 2001:309)

In the present study the natural setting of social actors is the school as well as the higher education institution and emphasis is placed on the research process that starts with the identification of the school’s computer science needs, then

proceeds to an investigation of the ways in which the computer science needs could be addressed by higher education and finally ends with an investigation on how other computer-related needs of the school (those that could not be addressed through service-learning) could be addressed. The descriptions of actions and events in the research process included the historical background of the school, the nature of the school's extra-mural activities, learning programmes, staff capacity, and actions of students and lecturers in higher education. The research aimed at understanding these actions and events in the context of teaching and learning.

3.3 THE RESEARCH DESIGN

The term "research design" is explained as "the basic plan of the research, and the logic behind it, which will make it possible and valid to draw more general conclusions from it" (Opperman 1996:6). Babbie and Mouton (2001: 74) also define a research design as "a plan or blueprint of how one intends conducting the research". Opperman (1996) further states that the research design makes problems researchable by setting up studies in a way that will produce specific answers to specific questions.

In this study, the research design was a needs analysis that aimed at identifying the computer science needs of a rural school and to see to what extent a higher education institution could meet those needs, and to what extent it could not.

The research design attempted to find answers to the following three research questions:

1. What are the school's needs in terms of computer facilities?
2. Which of these needs could a computer service-learning project address?
3. Which of these needs could a computer service-learning project not address?

It was planned that the answers to the research questions could lead to a workshop that could enable the participants of the school and the higher education institution to have further discussions and plan the way forward.

The following analytical methods associated with qualitative/narrative methodologies were used for each research question.

Research question 1: What are the school's needs in terms of computer facilities?

To find the answers to research question 1 the researcher made use of the following data collection/production methods:

- **Observations and school official documents** that aimed at providing a brief description of the current condition of the school in terms of its: 1) historical background, 2) infrastructure, 3) educational programmes, 4)

staff capacity, 5) learner profile, 6) extra-mural activities and 7)

governance

- **Interviews with school teachers and learners that aimed at investigating the school's computer science needs. These needs were summarized, classified and put into the following categories:**

-

1. Computer Lab
2. Computers and computer programmes
3. Staff training
4. Technicians
5. Security personnel
6. Proposal writing

Research question 2: Which school needs could a computer service-learning project address?

The needs analysis was followed by an investigation into possible service-learning that could be provided by the higher education institution to address the school computer science needs. Interviews were conducted with the lecturers and students in a higher education institution. The lecturers and students were provided with a list of identified school's computer science needs and asked to:

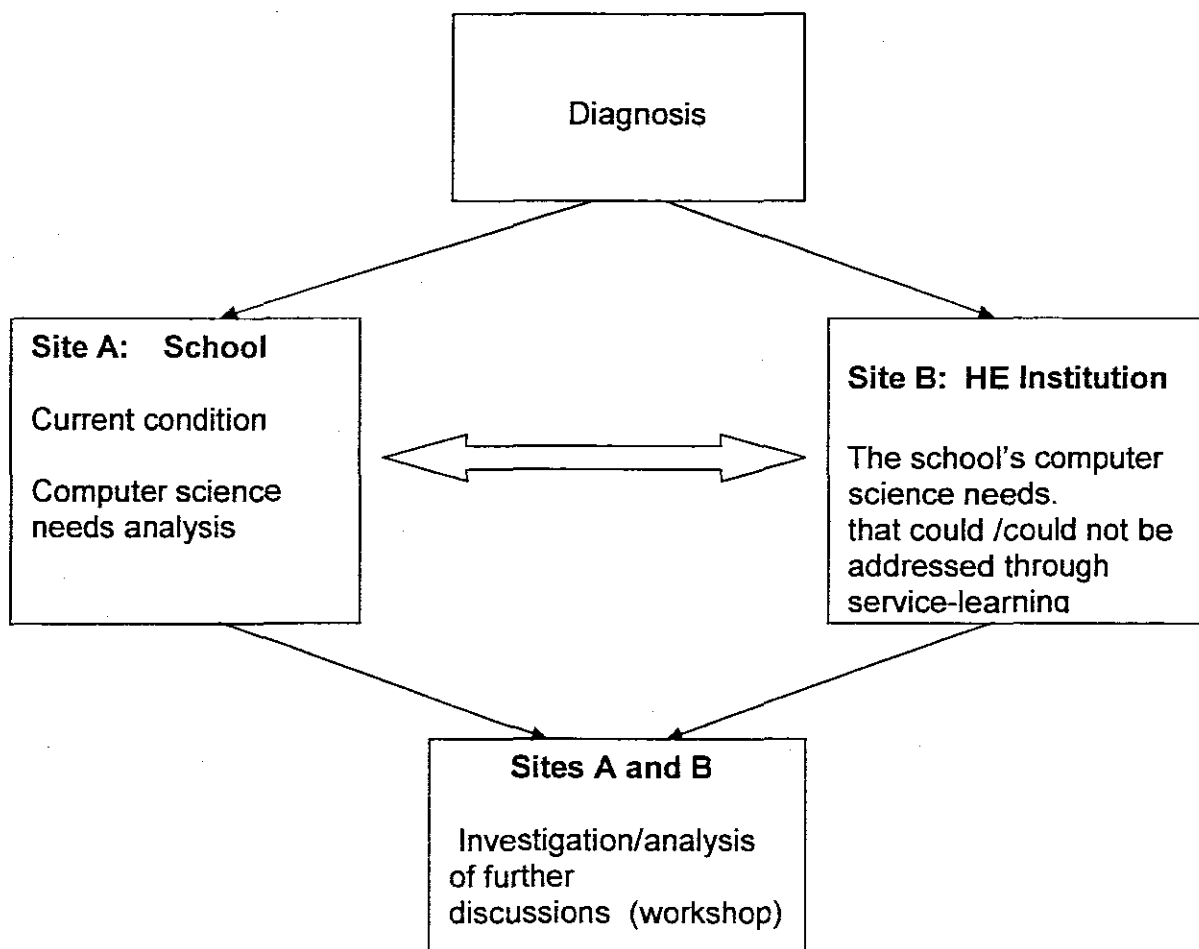
- Select the needs that they could address through a computer science service-learning project.
- Mention how they could address the school's needs

Research question 3: Which school needs could a computer service-learning project not address?

The lecturers and students were also asked to:

- Mention the school's computer science needs that could not be addressed through service learning and
- Suggest other ways of addressing those needs.

The research design could be represented diagrammatically as follows:



3.4 DESIGN OF RESEARCH INSTRUMENTS

The research instruments that were designed were the following:

- An observation schedule for the current condition of the school (Appendix 1)
- An interview schedule for the school teachers and learners (Appendix 2)
- An interview schedule for the lecturers (Appendix 3)
- An interview schedule for students (Appendix 4)

An observation schedule for the current condition of the school was designed in a way that enabled the researcher to record observations in spaces provided for the description of the school in terms of its infrastructure, educational programmes, staff capacity, learner profile, extra-mural activities and governance.

An interview schedule for the school teachers and learners was designed to investigate important school computer science needs which were analyzed and then used as an introduction for the interview schedules of the lecturers and students in a higher education institution. Both the interview schedules of the lecturers and students aimed at finding out what the students and lecturers could do to address the school's computer science needs.

3.5 SITE AND PARTICIPANT SELECTION

3.5.1 Site selection

The following two sites were selected for the purpose of this research

3.5.1.1 The school

One rural primary school community in De Doorns was selected because it was the only long-existing farm school that had dilapidated buildings and lack of infrastructure necessary for the advancement of computer science education.

3.5.1.2 A higher Education institution

The selection of one higher education institution in the Western Cape was based on the fact that it is the only university of technology that has appointed permanent staff to drive the planning and implementation of service learning in a wide range of departments including the department of Information Technology.

3.5.2 Participant selection

3.5.2.1 Selection of participants in Site A (School)

3.5.2.1.1 School teachers

No selection criteria were used for the school teachers as all teachers were requested to participate in the focus group interviews.

3.5.2.1.2 School learners

The selection of school learners was based on the following criteria:

- The learners who were in grade nine (the most senior class).
- The learners who were involved in extra-mural activities
- The learners whose parents gave consent for participation.

3.5.2.2 Selection of participants in Site B (Higher Education institution)

3.5.2.2.1 Lecturers

Staff selection was based on the following criteria:

- Academic staff who are lecturers in the departments of Information Technology, Office Management and Human Resource management.

3.5.2.2.2 Students

Student selection was based on the following criteria:

- Students who had registered for the National Diploma in the departments of Information Technology, Office Management and Human Resource management.
- Students who were in their third year of study.

3.6 DATA PRODUCTION METHODS AND THE RESEARCH PROCEDURE

According to Babbie and Mouton (2001) there are many methods and ways by means of which data can be produced and the idea is not to freeze a method into a certain frame but rather to have as many creative ways to study our world as possible. In this study various data production methods and sources were used. The following section gives a brief outline of such methods, sources and procedures.

Before the interviews and observations took place I sought permission from the Research Unit of the Western Cape Education Department, the school principal and the Vice Chancellor of a University of Technology to execute the investigation.

Permission was granted subject to the following conditions:

- No disruption of the normal academic programme.
 - No use of any material that is the intellectual property of the WCED without a written request (Appendix 5).

I also requested the school teachers and learners to complete consent forms to participate in the study (Appendix 6). Time frames for the scheduling of interview sessions and collection of data were discussed. The teachers and learners were informed as to when interviews would be conducted. Another consent form was given to the parents for the participation of their children (Appendix 7).

The principal of the school was approached for an initial meeting in order to hand over the permission letter from the Western Cape Education Department (WCED) and to discuss the nature of the research.

The research process started from February 2005 to July 2005 with the perusal of official school documents and observations of the current school condition as indicated in the following section.

3.6.1 Official school documents

According to Babbie and Mouton (2001) the use of documents has become one of the main methods of data collection in qualitative research as they provide

readers with documented events and social actions. In this study official school documents were consulted in February 2005 with the aim of accessing the documented historical background of the school and getting information that related to the infrastructure (e.g. plans of buildings), educational programmes, staff qualifications, learner profile, extra-mural activities and governance.

3.6.2 Observations

Neuman (2003:381) regards observations as a method that provides “good qualitative data” by involving researchers personally in their research and providing opportunities for them to be critical towards their methodology. For the purpose of this study, observations were made in February 2005 to obtain information that related to the school’s infrastructure (condition of buildings, number of classrooms availability of a computer laboratory, etc), educational programmes, staff capacity, learners, extra-mural activities and governance. These observations were recorded in the observation schedule.

3.6.3 Focus group interviews with school teachers

According to Morgan and Spanish (1984: 253) focus group interviews bring together several participants to discuss a topic of mutual interest to themselves and the researcher. In this study focus group interviews were conducted with fourteen teachers in March 2005 in order to investigate the computer science

needs of the school and to establish the importance of such needs in the teaching and learning environment.

3.6.4 Semi-structured interviews

According to Cohen and Manion (1989) semi-structured interviews are less formal; the interviewer is free to modify the sequence of questions, change wording, explain questions and add to the questions; the interviewer can also probe for more specific answers to clarify and eradicate any misunderstanding. Interviews also provide opportunities for direct contact with the participant (Bless & Higson-Smith 1997). In this study, the researcher used semi-structured interviews in order to get the responses from the school learners, lecturers and students in higher education.

The following section presents more details of the research procedures and of the way these interviews were conducted.

3.6.5 Interviews with school learners

Interviews were conducted with ten grade nine learners individually in April 2005 to establish the school's computer science needs and their importance to learning. The research findings from the school (Site A) were analyzed in order to

get a clear picture of the school computer science needs as indicated by both school teachers and learners.

3.6.6 Interviews with lecturers

Using the research findings derived from the school, four lecturers from the departments of Office management and Technology (OMT), Human Resources (HR) and Information Technology (IT) were interviewed in May 2005 to find out which needs could be addressed through service-learning, which students could be involved, how students could be involved and how other computer-related needs that could not be met through service-learning could be addressed.

The responses of the lecturers were also analyzed and used to direct the researcher to the students who could be interviewed.

3.6.7 Interviews with students in a higher education institution

Fifteen students in the departments of Office management and Technology (OMT), Human Resources (HR) and Information Technology (IT) (five students from each department) were given a list of identified school computer science needs and requested to mention the school computer science needs that they could address and to explain how they could address such needs. The interviews with the students took place in July 2005.

3.7 ANALYSIS AND INTERPRETATION OF DATA

According to Bell (1993) collected data mean very little until they are captured, recorded, analyzed and interpreted. Describing qualitative analysis, Babbie (2001) states that qualitative analysis is the non-numerical examination and interpretation of interviews and observations. Sharing the same view Strauss and Corbin (1998) point out that qualitative analysis aims at producing research findings that are not derived from statistical procedures or other means of quantification. According to Mouton (1996), analysis in qualitative research means capturing the research participants' own understanding of the topic.

Since the qualitative approach was selected for the purpose of this study, the analysis of data was characteristic of qualitative research in that it was interpretative. Data was not coded in a manner that allows statistical analysis but was analysed qualitatively. The responses of the school teachers, learners, lecturers and students to the interviews were recorded, put into different categories and summarized. A non-mathematical process of interpretation was carried out for the purpose of discovering relationships in the raw data. The relationships were then organised into themes (thematic analysis). The same procedure was followed with analysis and interpretation of data collected by means of official school documents and observations.

The following units of analysis were used:

- The computer science needs of the rural school community
- Students who could be involved
- School computer science needs that higher education students could address
- Ways in which students could address school computer science needs
- School computer science needs that could not be addressed through service-learning

3.8 DATA VERIFICATION

According to Bell (1993) there is always a need to examine data critically in order to assess the extent to which it is reliable and valid. In order to ensure validity and reliability in this study, a variety of data gathering methods was used. The use of various data gathering methods is in line with Burke's (1997) statement that one of the strategies for promoting qualitative research validity is the use of multiple research methods. To improve validity of this research data obtained by means of school official documents and an observation schedule regarding the historical background and current condition of the school was compared. The same procedure was followed with data generated through the interviews with school teachers and learners regarding the school computer science needs. The responses of interviewed lecturers and students in higher education with regard

to their possible involvement in addressing school needs were also compared. Finally the relationships between the current condition of the rural school, responses of the school teachers and learners, and lecturers and their students in higher education were also examined.

The rationale for comparing data from different sources was to find similarities and differences in responses to the interviews with school teachers, learners, lecturers and students in higher education as well as in official school documents and my own observations.

3.9 LIMITATIONS OF THE STUDY

The limited time that I was able to spend with interviewees at the research sites was the only limitation of the study. As indicated in my research design I had planned to set up a workshop to enable participants from the rural school (teachers and learners) and from the higher education institution (lecturers and students) to have further discussions and plan the way forward. Unfortunately I had to leave the Western Cape for the Eastern Cape. It would have been a good idea to bring the participants together to discuss how best the school computer science needs could be addressed.

As the intended planning of the service-learning project did not take place, it is a concern that the expectations of the school which were not met might have been

raised. Despite the limitation of not being able to see the whole project through this research benefited the school as it highlighted the needs of the school in terms of computer facilities and also brought the school's needs to the attention of a higher education institution. The research also benefited the higher education institution by making it possible for it to make future plans for the development of a computer service-learning project that could be responsive to the needs of the rural school.

The results from the qualitative data production methods described in this chapter are documented in the next chapter.

CHAPTER 4

THE COMPUTER SCIENCE NEEDS OF THE RURAL SCHOOL AND THE EXTENT TO WHICH THEY COULD BE ADDRESSED BY A HIGHER EDUCATION INSTITUTION THROUGH SERVICE- LEARNING

4.1 INTRODUCTION

As indicated in the previous chapter the purpose of the study was to gain a deeper understanding of the rural school's computer science needs and to find out which needs could/could not be addressed by a higher education institution through service-learning. This chapter highlights the school's computer science needs by giving a brief history and description of the school in terms of its historical background, infrastructure, educational programmes, staff capacity, learners, extra-mural activities and governance. The chapter also presents the responses of school teachers and learners who were interviewed in order to find out the computer science needs of the school. Attention is also given to the responses of the students and lecturers in higher education who were interviewed to establish the extent to which the school's computer science needs could be addressed by students in higher education.

The chapter is divided into four sections. The first section focuses on the historical background of the school and on the description of the current condition of the school (Appendix 1). In the second section attention is focused on the responses of school teachers and learners with regard to the computer science needs of the school (Appendix 2). The third section deals with the responses of the lecturers and students who were interviewed in a higher education institution (Appendices 3 and 4). A brief analysis and interpretation is given after each section.

4.2 HISTORY AND THE CURRENT CONDITION OF THE SCHOOL

The following historical background of the school was translated from a booklet that documented the history of the school in Afrikaans. The booklet was available in the school principal's office.

4.2.1 Historical background of the school

The school started with only three classrooms and toilets, after the De Doorns Dutch Reformed Missionary school had moved with prefabricated classrooms to the F. J. Conradie primary school. The old three-classroom school building stood vacant for a few years until two farmers, namely Farmer A and Farmer B, decided to purchase this school building for the children of their farm workers from Farmer C, who owned the property.

On the 19 January 1965 the school started to operate with one principal, two teachers and sixty-two learners under the name of Bonne Esperance Dutch Reformed Church Primary School. Only learners in Grades 1 to 4 were enrolled. There were no chairs, tables, desks or books. The teachers were overwhelmed with joy when one day the lorries turned up with broken desks and furniture. The grade 4 boys had to lend a hand with some stones and hammers to repair the desks.

Two new classrooms as well as an office building were built. Unfortunately the school caught fire in February 1984 and the learners had to be kept busy outside under the trees. Farmer A offered the school some of his buildings to serve as preliminary classrooms that had no desks and cupboards for the learners. These buildings were about two kilometers from the school building. Many problems cropped up, for example, the learners stole away into the vineyards, playing truant. Teachers had to face numerous problems until 1988 when they could move back to their rebuilt school premises. More and more learners were enrolled.

4.2.2 Description of the current condition of the school

The information on the current condition of the school was obtained from official school documents and observations that were made by the researcher. The condition of the school presented below is described in terms of its infrastructure,

educational programmes, staff capacity, learner profile, extra-mural activities and governance.

4.2.2.1 Infrastructure

The school has a dilapidated single block of 14 classrooms. There is no library and computer laboratory. There is a small administration building that is shared by the principal and the secretary. The school has only one computer that is used for administrative and managerial purposes.

4.2.2.2 Educational programmes

The school offers the following learning areas in the General Education and Training Band: Language, Literacy and Communication (English and Afrikaans); Mathematics; Natural Sciences; Social Sciences; Arts and Culture; Life orientation; Economic and Management Sciences and Technology. No computer studies are offered because of the non-availability of computers and suitably qualified personnel.

4.2.2.3 Staff capacity

There are sixteen staff members including non-teaching staff. The majority of teachers are college diplomats with only three pursuing further studies. None of

them is highly specialized in computer science education. There is only one teacher who has a one-year certificate in computer literacy.

4.2.2.4 Learner Profile

The rebuilt school has 532 learners but the numbers usually decrease as the parents are seasonal workers and the children are forced to constantly migrate. About 95% of the learners are “Coloured” and Afrikaans-speaking while 5% are “Black” and Xhosa-speaking. Almost all the learners are coming from disadvantaged socio-economic backgrounds. The relationship between the “Coloured” and “Black” learners is good, since all of them speak Afrikaans, as their parents are farm labourers who also speak Afrikaans fluently. There is a lack of reading culture which is caused and aggravated by the parents’ poverty and low levels of literacy.

4.2.2.5 Extra-mural activities

The usual sports are rugby, soccer, cricket, table tennis, net ball, chess and volleyball. The learners are not provided with opportunities for using computers as part of extra-mural activities. The introduction of computer-related games could be a good move for the learners.

4.2.2. 6 Governance

The school does not have regular parent meetings and fund-raising activities as the majority of parents have low levels of literacy, which make them reluctant to involve themselves in school activities. The existing School Governing Body (SGB) is not very effective as it lacks the necessary capacity to deal with school matters.

An examination of data relating to the history and current condition of the school reveals that the school lacks the infrastructure that is necessary for the advancement of computer science education. The history and current condition of the school is in line with Bowyer's (1990) claim that more than one third of the world's adults and children have no access to the knowledge, skills and technologies that can improve the quality of their lives and help them shape and adapt better to social and cultural change. Bowyer (1990) describes this situation as intolerable and maintains that it can only change if scientific, mathematical and technological literacy are a basic part of everyone's education. Sharing the same view, Dyrenfurth (1995: 42) states that "systematic education technology must be present in the schools, of any nation that wishes to be a serious economic competitor, a world citizen, and that seeks to enhance its citizenry's quality of life".

Rautenbach (1991) also emphasizes the importance of technological and scientific changes to take place in order for South Africa to be part of the global economy. The literature studies cited above indicate that there is a realisation that South Africans should become technologically literate in order to be part of the global economy.

An examination of data on the current condition of the school in terms of the staff capacity also revealed that the majority of the staff is not computer literate. Only one teacher had a one-year certificate in computer literacy and none of them were highly specialized in computer science education. This situation corresponds with Milner's statement that one of the most critical problems facing effective and widespread use of computers in learning is teacher education and that "teachers at all levels need to be educated about the use of computers in the classroom" (1981:88). In support of staff training in computers Daniel (1995: 106) also states that "it is hard to imagine students becoming computer literate without computer literate teachers". Sharing the same view Hartshorne states:

Whatever the educational problem that has to be faced, the key to the situation is the teacher: her academic background and professional training; her further personal and professional development during her teaching career; ... her competence, confidence and commitment in the tasks of education... (1992: 218).

Beeby also stresses the importance of pre and in-service education for teachers. "Teachers are the frontline troops of change, and progress depends on their own education, motivation and freedom to innovate (1986: 37).

4.3 THE COMPUTER SCIENCE NEEDS OF A RURAL SCHOOL COMMUNITY

The following are the responses of school teachers and learners who were asked to mention their school's computer science needs and to further explain why they thought that the computer science needs they had mentioned were important for the well-being of their school.

4.3.1 Responses of the teachers

Some of the teachers stated that they would like to have a well-secured, well-maintained and well-equipped computer laboratory or classroom at their school. Some pointed out that they would like to see computers being made available for the entire school community and not only for the school management. One teacher mentioned that she would like computer studies to be introduced into the school curriculum. The need to train the staff in using the computers and a variety of computer programmes was mentioned by all the teachers who were interviewed. The need to write proper and convincing funding proposals in order to get financial assistance was also mentioned.

In an attempt to explain why the teachers thought that the computer science needs they had mentioned were important for the well-being of their school, they gave the following advantages of using the computers:

- The computers enable both teachers and learners to network with the world and share educational experience through the Internet.
- They enhance the learners' understanding of mathematical literacy and contribute to the development of a variety of skills.
- They enable teachers to keep records and educational materials that relate to their teaching

4.3.2 Responses of the learners

The learners expressed their desire to use computers for the following reasons:

- Computers enable the learners to access the latest technological information and educational games.
- They broaden the learners' knowledge about the world e.g. other cultures, religions, languages, etc.
- They enable the learners to access information that relate to their assignments with ease.

Although the learners mentioned the use of computers as the only crucial need for their rural school, it became evident from the responses of both teachers and learners that teachers and learners realized the importance of computer literacy and internet access and acknowledged the contribution of computers to the

improvement of both teaching and learning. The awareness on the importance of using computers could be attributed to the media (especially television) where the learners see other learners in model C or private schools using computers. There is a realization that “students from well-to-do families or those who attend suburban or private schools are already beginning to gain significant advantages in terms of learning” (Thomas 1981: 106).

The awareness on the importance of computer usage corresponds with global trends which regard the use of computers in schools as good educational practice. In the Hobart Declaration for schooling in Australia, for example, Ministers for Education included an aim to develop in students: “skills of information processing and computing” (Department of Education and Arts 1993) One of the key uses of computers in primary schools has been to motivate and reinforce language skills and adventure games have been given as examples of software which promoted language development and problem solving skills (Australian Council for Computers in Education 2004). In Iowa, the Iowa Communication Network (ICN) that provided high-speed computer communication was introduced to all schools. The computer has been used as a focus for group work and as a supplement to other teaching resources.

4.4 RESPONSES FROM THE HIGHER EDUCATION INSTITUTION

The responses presented below were from four interviewed lecturers who belonged to the following three departments: Office management and Technology (OMT), Human Resources (HR) and Information Technology (IT).

4.4.1 Responses of the lecturers

The lecturers were presented with a list of identified rural school computer science needs and were requested to respond to the following aspects:

- Rural school computer needs that could be addressed through service-learning
- Students who could be involved in addressing the computer science needs, and
- The manner in which students could be involved in addressing the computer science needs.

4.4.1.1 Rural school computer science needs that could be addressed through service-learning

The OMT lecturer mentioned that students who had registered for the 3-year National Diploma in Office Management and Technology could be involved with

staff training in using computers and computer programmes, assistance with technical services and proposal writing.

Two lecturers who were interviewed from the HR Department stated that their students could assist with staff training, proposal writing and computer programmes, especially word processing, pastel accounting, spreadsheets, databases and programming.

The lecturer from the IT Department indicated that IT students were capable of assisting with the maintenance and fixing of computers, staff training and installation of computer programmes.

4.4.1.2 Students who could be involved in addressing the computer science needs

The OMT lecturer mentioned that students from the following departments could be involved in addressing the computer science needs of a rural school community.

- Information Technology Department
- Office Management and Technology Department
- Business faculty students from the Human Resource Management
- Education Department (Students who are registered for computer science and computer literacy).

The students who were mentioned by two lecturers from the HR department were second year students in the Departments of Human Resources Management and Office Management and Technology.

The IT lecturer who was interviewed indicated that only IT students could be involved in addressing the computer science needs of the school community.

4.4.1.3 The manner in which students could be involved

The Office Management and Technology lecturer mentioned that her students could be involved in the training of staff, facilitation of workshops and setting up of software.

The two lecturers from the Human Resource Management stated that their students could be involved in compiling materials for manuals, in peer sharing and mentorship, in conducting research on the needs related to computer skills, in co-ordinating and facilitating workshops, and in the enhancement of computer skills.

The Information Technology lecturer pointed out that the IT students could be involved in support, development and training of both teachers and learners.

4.4.1.4 The school's computer science needs that could not be addressed through service-learning

All the lecturers who were interviewed indicated that the other three computer-related needs that could not be directly addressed through service-learning, i.e. provision of a computer laboratory, computers and security services) could be addressed through funding proposals and fundraising that involves the Western Cape Education Department (WCED) and the private sector. The lecturers from the HR department further stated that their students could only assist with staff training in funding proposal writing and not with the provision of computer labs and security services. The responses from the lecturers also indicated that the lecturers would not like to involve their students in fundraising activities as such activities would not enhance and link student learning to their course outcomes.

From the responses of the lecturers it is evident that the lecturers understand that service-learning is community engagement that is not only an activity but is also integrated with the students' scholarly curriculum outcomes. The responses of the lecturers are in line with Bringle and Hatcher's (1995) definition of service-learning who define service-learning as:

a course-based, credit-bearing educational experience in which students participate in an organised service activity that meets identified community needs and reflect on service activity as a means of gaining a deeper understanding of course content, a broader appreciation of the discipline, and an enhanced sense of civic responsibility".(1995: 102).

It is also evident from the responses of the lecturers that they realize the importance of offering programmes which ensure that the service and the learning are balanced and that the defined needs of communities are linked to defined learning expectations for students (Furco 1996). This balanced approach to, and integration of community service and student learning distinguishes service-learning from community engagement that emphasises community service (i.e. volunteerism and community outreach) and community engagement that emphasises student learning (i.e. internships, fieldwork and in-service-training) (Furco 1996).

4.4.2 Responses of the students

The students were also presented with a list of identified rural school computer science needs and were asked to mention the computer science needs that they thought they could address. They were further requested to explain how they could address the needs they had mentioned.

4.4.2.1 School computer science needs that HE students could address

Both second and third year students registered for the National Diploma in OMT indicated that they were capable of doing staff training in using computers and computer programmes.

HR students stated that they would be happy to assist with proposal writing and staff training in computer literacy whilst IT students expressed their interest and willingness to install computer programmes and provide technical services.

4.4.2.2 Ways in which students could address school computer science needs

OMT students mentioned that they could introduce school staff members to computers and enhance their understanding of computers by training them in using Ms Office programmes and other software packages such as Microsoft Word, Excel, PowerPoint, Access and Publisher.

HR students pointed out that they could organize workshops and class schedules and assist with computer literacy, various computer programmes and funding proposal writing.

In addition to training staff on how to use computer applications such as Ms Word, IT students indicated that they could offer assistance in the form of computer maintenance and fixing technical problems that the staff might encounter.

4.4.2.3 The school's computer science needs that could not be addressed through service-learning

All the students who were interviewed indicated that they were unable to address the following school's computer science needs:

- Building of the computer laboratory
- Provision of computers
- Provision of security personnel

From the responses of the students it became clear that they were willing to share their computer science knowledge and expertise with the staff of the rural school. All the students indicated that they could be involved in training the staff to use computers and software programmes. Some indicated their willingness to assist school teachers with writing funding proposals. The only school's needs the students could not address were the building of the computer laboratory, provision of computers and security personnel.

Staff training in both proposal writing and computer literacy is an identified need that could be addressed through service-learning. The development of service-learning programmes that are responsive to community needs is in line with recommendations made by Babbie and Mouton on programme evaluation. These authors suggest that learning programmes should be evaluated according to

whether “they are designed in such a way that they address identified social needs adequately” (2002: 340). Peterson (1998), Bernhardt (1998) and Turrell (1980) also highlight the importance of identifying and analyzing needs before any intervention takes place. These authors claim that needs analysis helps decision making by clarifying the nature and the importance of the needs. Several authors (Mouton and Wildschut 2002; Fourie 2003; Mitchell and Rautenbach 2005) support the same view when they state that one reason why some service-learning programmes failed in South African higher education institutions is that the intervention did not address the real community need. These authors further point out that the service-learning courses were designed in such a way that the students and academics were the main beneficiaries and that the communities were not involved in the development and delivery of the SL courses. By addressing the staff training needs of a rural school community as a starting point, service-learning programmes could be designed and implemented according to recommended best practice guidelines and quality management for service-learning (CHE 2005).

From the responses of both the students and lecturers it became clear that there are possible partnerships between the school and a higher education institution. The establishment of partnerships is documented as one of the requirements for successful service-learning (Wiewel and Lieber 1998). Partnerships seem to work well in developed countries but in South Africa, where needs are more around tangible infrastructural issues, several problems have been documented.

Fourie (2003) states that the effectiveness of community-university partnerships described in service-learning projects of the University of the Free State was never established and that a focus on student needs took wide precedence over community needs. Similarly Mitchell and Rautenbach (2005) highlight the difficulties experienced at the University of KwaZulu Natal (UKZN) with regard to partnership and sustainable community development. They described the UKZN CHESP partnership as a “big-brother, little-brother relationship” and pointed out that “as long as the power dynamics are swayed in the direction of the university true partnerships with the community may never be possible” (2005: 110). Fourie (2003) attributes some of the shortcomings and difficulties for partnerships to a lack of learning from the community by the other parties involved. The allocation of funding for academic modules and not for development priorities is another contributing factor for the documented focus on student needs in South Africa.

The lessons learnt from some of the South African universities could be useful in preparing the rural school and a higher education institution to be aware of the challenges that lie ahead.

In this chapter it has been made clear that the development of service-learning programmes should consider identified community needs and that partnerships are essential for service-learning but challenging. It is against the background of best practice that service-learning programmes for addressing school computer science needs should be conceptualized and designed. The manner in which the

school computer science needs could best be addressed through service-learning is recommended in Chapter 5.

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION

As stated in Chapter 3 data that relate to the computer science needs of a rural school and service-learning opportunities in higher education, was collected by means of interviews and observation schedules. An analysis of data resulted in the research findings that were documented in the previous chapter. The aim of this chapter is to present a summary of the research findings, conclusions and recommendations. This chapter is divided into three sections. The first section focuses on the summary of the findings and conclusions; the second section puts forward some recommendations and the last section highlights the significance of this study.

5.2 SUMMARY OF THE RESEARCH FINDINGS AND CONCLUSIONS

The following section examines relationships between the current condition of the school and the responses of all the participants who were interviewed. Firstly, the similarities in the research findings obtained by means of school official documents and an observation schedule regarding the historical background and current condition of the school are identified. Secondly, the section focuses on similarities in responses of interviewed school teachers and learners with regard

to their school computer science needs. Thirdly similarities in responses of interviewed lecturers and students in higher education with regard to their possible involvement in addressing school needs are examined. Finally the section examines the relationships between the current condition of the rural school, responses of the school teachers and learners, and lecturers and their students in higher education. Some conclusions are drawn from identified similarities in each subsection.

The relationships and similarities that were identified are divided into the following four subsections:

- Historical background and current condition of the school
- Responses of teachers and learners with regard to the computer science needs of the school
- Responses of the lecturers and students with regard to how their involvement through service-learning could address the computer science needs of the rural school community
- Relationships between the current condition of the rural school, responses of the school teachers and learners, and lecturers and their students in higher education.

5.2.1 Historical background and current condition of the school

From both the official documents that portrayed the historical background as well as the current condition of the rural school and the observations conducted by the researcher it became clear that the current farm school started from an old Dutch Reformed missionary church with few classrooms, no computer laboratory and one computer for administration purposes. The school is characterized by a serious lack of infrastructure and resources needed for effective teaching and learning. Although there is only one teacher who has a one-year certificate in computer literacy, no computer studies are offered. The learners have never been exposed to computers as all of them are farm workers' children who come from disadvantaged socio-economic backgrounds. Extra-mural activities exclude computer-related activities and the School Governing Body is composed of farm workers who have low levels of literacy.

It can therefore be concluded that the rural school in De Doorns has a serious lack of essential computer-related elements such as computer laboratory, computers, well-trained staff in using computers, well-educated and rich parents who could contribute to the development of the school

5.2.2 Responses of teachers and learners with regard to the computer science needs of the school

Although the learners mentioned the use of computers as the only crucial need for their rural school, it became evident from the responses of both teachers and learners that teachers and learners realized the importance of computer literacy and internet access and acknowledged the contribution of computers to the improvement of both teaching and learning. From the needs analysis of both teachers and learners, it can therefore be concluded that the following are the computer science needs of the rural school community:

- Computer Laboratory
- Computers and computer programmes
- Staff training
- Technicians
- Security personnel
- Proposal writing

5.2.3 Responses of the lecturers and students with regard to how their involvement through service-learning could address the computer science needs of the rural school community

The responses of both lecturers and students in the departments of Information Technology, Office Management and Technology and Human Resources

Management indicated their willingness to assist with the training of staff to write funding proposals and use computers and software programmes. From the responses of both lecturers and students the following conclusions can be drawn:

- Some of the computer science needs of the rural school community in De Doorns could be addressed through service-learning.
- The students and lecturers who could be involved in service-learning activities are in the departments of Information Technology, Office Management and Technology and Human Resources Management.
- The computer science needs that could be addressed are staff training in using computers and software programmes, writing funding proposals, fixing and maintenance of computers.
- The computer science needs that could be difficult to address through service-learning are the building of the computer laboratory and the provision of computers and security personnel. These needs could be addressed through funding proposals and fundraising that involves the Western Cape Education Department (WCED) and the private sector.

5.2.4 Relationships between the current condition of the rural school, responses of the school teachers and learners, and lecturers and their students in higher education.

The conclusions drawn from the historical background and current condition of the school as well as responses of school teachers and learners portray the situation of a school that is not only a great cause for concern but also a call for a collaborative social intervention as indicated by several authors in Chapters 2 and 4. The responses of lecturers and students in higher education indicate that the higher education institution could contribute in providing a response to such a call through its service-learning programmes. It can therefore be concluded that the establishment of partnerships between the rural school and the higher education institution is crucial for the development of both the school community and students in higher education.

Although the establishment of partnerships is described as an easy process by the US-based literature (Bringle and Hatcher 2002; Arriaga 2001; Torres 2000), some of the more recent South African literature on service-learning indicates that there could be a “betrayal of the mutuality of the partnership relationship” and that there has been a tendency for South African universities to “dominate the partnership to the detriment of the developmental aims of the development project” (Mouton and Wildschut 2002; Fourie 2003; Mitchell and Rautenbach 2005). These studies question whether service-learning in South Africa is appropriate or realistic when set against the vast neediness of many

South African communities but acknowledge that service-learning may be essential to the future of South African higher education communities and the wider context in which the education system operates. The South African literature recommends essential changes within the various sectors that are involved with community development projects to ensure that the ideal benefits of service-learning projects are attained. These studies suggest that if partnerships are to remain the context for service-learning practice in higher education, then the paradoxical nature of the partnership relationship needs to be unpacked and examined more closely. As Mitchell and Rautenbach state:

Partnerships as the context for service-learning practice and research need to be problematised and not assumed as appropriate mechanisms for development. The paradoxical nature of partnerships and their unique dynamics in each developmental context means that individuals, institutions and communities require the capacity to partner. It is up to higher education institutions to develop their capacities to partner to secure the future of successful service-learning within South Africa (2005: 111).

The rural school and a higher education institution should therefore take cognisance of the challenges and recommendations documented by the South African literature when establishing partnerships.

5.3 RECOMMENDATIONS

If priority has to be given to the South African development issues, and if development issues are seen as everybody's responsibility, the following should be done:

- Computer studies should be offered in schools and all schools should be provided with the necessary computer facilities.
- Pre-service and in-service training of school teachers in computer science education should be given more attention.
- More research should be conducted, especially in the rural areas, in order to get a clear picture and number of schools that do not have computer facilities.
- Partnerships should be formed between schools and H.E. Institutions in order to address the computer science needs of schools and to encourage students in higher education to be involved in community development through service-learning.
- Higher Education Institutions should also embark on collaborative efforts with schools in rural areas and not only concentrate on schools in urban areas. This means that there should be increased participation between rural schools and institutions of higher learning to eradicate the inequalities of the past which are prevalent in previously disadvantaged rural schools.

- Institutions of higher learning should adapt the teaching and learning methods as well as the curricula in order to suite the needs of communities, including rural communities.
- Students in higher education should be involved in community engagement that is credit-bearing, integrated into the curriculum and designed to address community development needs.
- The students, lecturers, community partners and service agents should work together in order to reflect and improve the service-learning programmes.

5.4 SIGNIFICANCE OF THE STUDY

This research could add value to ongoing research in higher education institutions in the Western Cape, which aims to prepare graduates, through under-graduate teaching and learning programmes and methodologies, to be effective in the world-of-work and society. This research could also encourage stronger links between the higher education sector and communities, stimulate debate on the role of higher education in community development, and highlight the importance of service-learning. Since there is a growing interest in service-learning, the study could be a useful and valuable contribution to our understanding of service-learning. It could also lead to the development of effective service-learning modules or programmes that could be responsive to the needs of the society. Higher education institutions could also benefit as they

may be engaged in curriculum renewal and offer effective service learning programmes both in terms of community empowerment and student development.

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**APPENDIX 1: OBSERVATION SCHEDULE FOR THE CURRENT
CONDITION OF THE SCHOOL**

DESCRIPTION OF THE SCHOOL IN TERMS OF ITS:	
Infrastructure	
Educational programmes	
Staff capacity	
Learner profile	
Extra- mural activities	
Governance	

APPENDIX 2: INTERVIEW QUESTION FOR TEACHERS AND LEARNERS

THE COMPUTER SCIENCE NEEDS ANALYSIS

1. Beskryf watter rekenaar behoeftes julle het as 'n skool. (Noem soveel behoeftes as moontlik)

What are your school's computer science needs? (Take your time and mention as many needs as possible)

Ingaba ziyintoni iimfuno zesikolo sakho ezinxulumene nezifundo ze computer? (Zinike ithuba elaneleyo ucinge zonke iimfuno ezimalunga ne computer).

2. Hoekom dink jy is die rekenaar behoeftes wat jy in nommer 1 genoem het belangrik vir die skool gemeenskap?

Why do you think that the computer science needs you mentioned in question 1 are important for the rural school community?

Kutheni na ezi mfuno zesikolo sakho ezinxulumene nezifundo ze computer ozibhale kumbuzo wokuqala ucinga okokuba zibalulekile kwisikolo sakho?

APPENDIX 3: INTERVIEW QUESTIONS FOR THE LECTURERS

THE COMPUTER SCIENCE NEEDS OF A RURAL SCHOOL COMMUNITY

The following computer science needs were identified by a rural community school at De Doorns. The school is exploring service-learning opportunities that could assist in addressing these needs. Could you please indicate which students could be involved and how they could be of assistance?

- 1. Computer Lab
 - 2. Computers and computer programmes
 - 3. Staff training
 - 4. Technicians
 - 5. Security personnel
 - 6. Proposal writing
-

A: Which need(s) could be addressed through service-learning?

B: Which students could be involved?

C: How could these students be involved?

D: Mention the school computer science needs that cannot be addressed through service-learning

E: How could other computer related needs which cannot be addressed through service-learning be dealt with?

APPENDIX 4: INTERVIEW QUESTIONS FOR STUDENTS

THE COMPUTER SCIENCE NEEDS OF A RURAL SCHOOL COMMUNITY

The following computer science needs were identified by a rural community school at De Doorns. The school is exploring service-learning opportunities that could assist in addressing these needs. Could you please indicate how you, as an IT student, could be of assistance?

1. Computer Lab
2. Computers and computer programmes
3. Staff training
4. Technicians
5. Security personnel
6. Proposal writing

A: Select the need(s) that you think you would be able to address.

B: How do you think you could address the need(s) you selected in A?

C: Indicate the National Diploma for which you have registered: _____

D: Indicate the course and year level: _____

APPENDIX 5: PERMISSION FROM THE WCED

Navrae
Enquiries Dr RS Cornelissen
IMibuzo
Telefoon
Telephone (021) 467-2286
IFoni
Faks
Fax (021) 425-7445
IFeksi
Verwysing
Reference 20030625-0023
ISalathiso



Wes-Kaap Onderwysdepartement

Western Cape Education Department

ISEbe leMfundo leNtshona Koloni



Mr Jeffery Arends
P.O. Box 148
DE DOORNS
6875

RESEARCH PROPOSAL: MEETING THE COMPUTER SCIENCE NEEDS OF A RURAL SCHOOL THROUGH A HIGHER EDUCATION SERVICE-LEARNING PROJECT.

Your application to conduct the above-mentioned research in schools in the Western Cape has been approved subject to the following conditions:

1. Principals, educators and learners are under no obligation to assist you in your investigation.
2. Principals, educators, learners and schools should not be identifiable in any way from the results of the investigation.
3. You make all the arrangements concerning your investigation.
4. Programmes of educators are not to be interrupted.
5. The Study is to be conducted from **14 February 2005 to 31st May 2005.**
6. No research can be conducted during the fourth term as schools are preparing and finalizing syllabi for examinations (October to December)
7. Should you wish to extend the period of your survey at the school(s), please contact Dr R. Cornelissen at the contact numbers above quoting the reference number.
8. A photocopy of this letter is submitted to the principal of the school where the intended research is to be conducted.
9. Your research will be limited to the following school: **Bonne Esperance Primary.**
10. A brief summary of the content, findings and recommendations is provided to the Director, Education Research.
11. The Department receives a copy of the completed report/dissertation/thesis addressed to:

**The Director: Education Research
Western Cape Education Department
Private Bag 9114
CAPE TOWN
8000**

We wish you success in your research.

Kind regards.

Signed: Ronald S. Cornelissen
for HEAD: EDUCATION
DATE: 2nd February 2005

MELD ASSEBLIEF VERWYSINGSNOMMERS IN ALLE KORRESPONDENSIE / PLEASE QUOTE REFERENCE NUMBERS IN ALL CORRESPONDENCE /
NCEDA UBHALA IINOMBOLO ZESALATHISO KUYO YONKE IMBALELWANO

GRAND CENTRAL TOWERS, LAER-PARLEMENTSTRAAT, PRIVAATSAK X9114, KAAPSTAD 8000
GRAND CENTRAL TOWERS, LOWER PARLIAMENT STREET, PRIVATE BAG X9114, CAPE TOWN 8000

WEB: <http://wced.wcape.gov.za>

APPENDIX 6: CONSENT FORM FOR TEACHERS AND LEARNERS

I have been granted permission by the Western Cape Education Department to conduct research on the computer science needs of your school. You are hereby invited to take part in this study. Information gathered from this study will be treated with the utmost confidentiality

If you are willing to participate please write your name, surname and signature in the spaces provided.

I (Full name and surname) hereby give consent to participate in this study.

- I have been informed that permission to conduct the research has been obtained from the WCED.
- I am aware that I may refuse to have the interview or part thereof tape recorded.
- The purpose/significance of the study has been explained to me.
- My participation is voluntary and I may refrain from answering any or all of the questions with which I feel uncomfortable.
- I have the right to withdraw from the study at anytime.
- I am assured that the information will be used for research purposes only and that there is no risk on my part for participating in this study.

(Participant's signature)

Place:

Date:

APPENDIX 7: PARENT CONSENT FORM FOR CHILD TO PARTICIPATE IN THIS STUDY

Dear Parent

I am currently conducting a research into the computer science needs of your child's school. It is the intention of this study to interview your child and find out if he/she understands the importance of using computers for his/her education. The information will be used to get assistance from a higher education institution and could lead to the introduction of computer science education at your child's school.

I hereby request your permission for your child to participate in the interviews. Your child's input will be treated with the utmost confidentiality

Permission granted [Yes] [No]

Child's name (Please print)

Parent's signature: Date: