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Has it happened in Mpumalanga?

An evaluation of the implementation of Curriculum 2005

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SUMMARY

Since 1997, curriculum implementation was introduced in South African schools. A timetable was given to all schools to implement C2005 in each grade for each year. The study had attempted to identify major factors that hindered or promoted the implementation of C2005 in two schools in Mpumalanga. A case study was conducted where one learning area, namely, natural science was investigated. Each school was visited for an entire week by the researcher. During the visit, the researcher conducted individual interviews with principal, two science teachers and two focus group interviews composed of five learners. Observations of natural science lesson were made of which two of them were recorded on video camera for further analysis. Practices, which were captured in classes, were compared to Rogan and Grayson (2001) model of curriculum implementation. In the final analysis, the study compiled a profile for each school. Both schools rated poorly (level one) in the implementation of C2005. The capacity to support innovation was poor in one school. The study also found that teachers in their attempt to implement C2005 were actually moving from 'frying pan into fire'. Lack of resources and intensive training was creating stress and making most of teachers want to leave the profession. Recommendations were also provided by the study for short and long-term considerations.

OPSOMMING

Curriculum 2005 is sedert 1997 reeds aan Suid-Afrikaanse skole vir implementering voorgestel. 'n Rooster is aan skole verskaf waarin die implementering vir elke standard in elke jaar uiteengesit is. In hierdie studie is gepoog om die hoof faktore wat die implementering van C2005 in twee skole in Mpumalanga inhibeer of aanmoedig identifiseer. 'n Gevalle studie is gedoen waarin daar op een leerarea gefokus is naamlik, natuur wetenskap. Elke skool is vir 'n periode van een week deur die

navorser ondersoek. Tydens die besoek is drie individuele onderhoude met die hoof, twee onderwysers en twee focus groep bestaande uit vyf leerlinge uigevoer. Waarnemings van die natuur wetenskaplesse is gemaak, en twee daarvan is vir die doeleindes van verdere analise op video geneem. Prosedures wat waargeneem is is dan vergelyk met Rogan en Grayson (2001) se model van curriculum implementering. In die finale analise is 'n profiel vir elke skool saamgestel volgens. Beide skole het swak gevaar (vlak een) in die implementering van C2005. In hierdie studie is ook verder gevind dat sommige onderwysers, in hul poging om C2005 te implementeer vanuit 'die pot in die vuur' in beweeg. Gebrekkige hulpbronne en intensiewe opleiding het spanning veroorsaak en maak dat die meeste van hulle die professie wil verlaat. Voorstelle word vanuit hierdie studie gemaak wat beide kort en langtermyn oorwegings insluit.

Key Terms	Sleutelwoorde
Innovation	Innovasie
Outcomes-based education (OBE/C2005)	Uitkomsgebaseerde onderrig (OBE/C2005)
Curriculum Implementer	Curriculum Implementer
Natural science	Natuur wetenskap
Learning programme	Geleerheid program
Specific Outcomes	Spesifiek Uitkomste
Assessment Criteria	Assesseringskriteria
Senior phase	Senior fase
Programme organiser	Program organiseerder
Educator	Opvoeder

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CHAPTER 1

INTRODUCTION AND ORIENTATION

1.1 Background

At the time the researcher thought about this research project, the researcher had been seconded by the education department and was working for a project called Science Education Project (SEP). SEP was a project initially intended to uplift the standard of physical science teaching in the former KwaNdebele homeland, (now Mpumalanga) in South Africa. The project used the title 'Science Implementers' for its fieldworkers because they were carrying out activities related to the implementation of science at schools. It was during this period that the researcher became a patriot to the whole idea of science implementation. With the introduction of the new curriculum (C2005), the researcher had general questions relating to the implementation thereof. However, as the changes swept the country, all government officials seconded to various projects were recalled to their original position in the newly structured education departments.

The researcher was recalled into the curriculum section in the Mpumalanga Department of Education (MDE). The title of the researcher was consequently changed to Curriculum Implementer the popular title given to all subject advisors in the Mpumalanga province. As the reader of this project, you may wonder 'what led the Curriculum Implementer to ask questions relating to his new job. Questions asked included, has it happened in

Mpumalanga? Has the curriculum reached the outcomes it intended to achieve? To the researcher, these were not simple questions to answer since he was still in the curriculum section involved in implementing the curriculum itself.

Being a Curriculum Implementer in the province of Mpumalanga was a great challenge for the researcher. On arrival within the circles of this curriculum component, the researcher was provided with a series of workshops intended to empower him and ultimately implement various programs related to science in the entire province. Various service providers conducted the workshops in the province. Among the providers, both abroad and locally, Sussex University (United Kingdom) ran a joint project with Mpumalanga Government called Mpumalanga Primary Science Initiative (MPSI). Japan International Cooperation Agency (JICA) and University of Pretoria (UP) ran a joint project with Mpumalanga Department of Education (MDE), which was named Mpumalanga Secondary Science Initiative (MSSI). The main objective of the project was to support the implementation of curriculum in all secondary schools (grade 8 and 9) in the province.

1.2 Research problem

Realizing the importance of science to development, South Africa has been eager to develop its scientific human power to attain a measure of self-reliance in the production of goods and services (<http://www.scienceinafrica.co.za/scicrisis.htm>). The Dakar Declaration indicates large socio-economic obstacles against efforts towards human

power development in the field of science and a poor state of science education (Ogunniyi, 1996). The problems in science education are numerous. Only a few are briefly highlighted under the following headings, all of which require further research: Teacher's belief in science; Problems in the science classrooms; Language and cultural barriers (<http://www.scienceinafrica.co.za/scicrisis,htm>). Ogunniyi (1996) notes that no education system is higher than the level of the teacher. Thus, standards in science classrooms may fall because of the insufficient in-service training given to teachers.

Deficiencies in practical skills and conceptual understanding are passed on from teacher to learner who then becomes a teacher - from one generation to the next (<http://www.scienceinafrica.co.za/scicrisis,htm>). This cycle perpetuates incompetence and can lead to a deterioration of standards over time. The belief in 'knowable facts', particularly in textbooks, is so entrenched in teachers even if workshops are conducted for them to change this belief. Whether a practical is done or not, lessons are often statements of 'facts' or absolute truths from textbooks such that they cannot be challenged. Science education is also likely to suffer from changes in the curriculum and syllabi, which have changed almost every two years (<http://www.scienceinafrica.co.za/scicrisis,htm>). A shift to Curriculum 2005 (C2005) has not been accompanied by a change in resources. Despite the efforts to support implementation of C2005 no clear evaluation systems was done to see whether anything was happening in classrooms. In Mpumalanga where the researcher was working, it was speculated that the level of implementation was minimal. The study intends to share some light on factors that hinder the implementation of C2005.

1.2.1 Aim of the research

The aim of the research is to evaluate the performance of two schools on the factors that hinder the implementation of Curriculum 2005 in Mpumalanga province.

1.2.2 Research question

The main research question, which this study attempts to answer, is as follows:

1. What relationship exists among factors such as support from outside and capacity to innovate in the implementation of curriculum 2005?

In order to obtain the answers to this question, subsidiary questions were formulated:

- Can schools implement an innovation without receiving adequate support by outside agencies?
- What role does capacity to innovate play in the implementation of curriculum 2005?
- Can any two schools with different capacity and culture implement an innovation the same way?

1.2.3 Definition of terms

The present study will use words, which may sometimes confuse the reader. For this purpose, the definition of terms as used in this research is given below.

Innovation

An integrated approach to learning-teaching; or 'new' mathematics in place of old; or a comprehensive system of education as against the more traditional transmission approach. It is essentially a social process and so takes place over a period of time (Bishop, 1986).

OBE/C2005

This is a significant curriculum reform in South African education system. Education and training, content and skills, values and knowledge are main features of C2005. An Outcome Based Education (OBE) curriculum derived from nationally agreed on critical cross-field outcomes that sketch our vision of a transformed society and the role education has to play in creating it (DOE, 1997a). The two concepts will be used interchangeably.

Curriculum Implementer (CI)

Education specialists are widely known as Curriculum Implementers particularly in Mpumalanga Province. This title will be used in this report. They receive further training from National Department, Provincial and other agencies. Their role includes the following functions:

Overseeing curriculum implementation plans for C2005

Training teachers in curriculum matters

Programme organiser

A programme organiser is similar to a topic. In the past teachers would choose topics for themes or lessons. In the new curriculum teachers choose topics to help organise the learning programmes. This is why they are called programme organisers (Lotz, Tsidi and Wagiet, 1998).

Department of Education (DOE)

Government umbrella organization focusing on occupational qualification requirements of teachers. Develop national policies and laws that provinces should implement.

Natural Science (NS)

The learning area Natural Science (NS), one of the eight is described as follows: -

The Natural Science, comprising the physical-, life-, and earth science, involve the systematic study of material universe – including natural and human-made environments – as a set of related systems. A variety of methods, that have in common the collection, analysis and critical evaluation of data are used to develop scientific knowledge. While some knowledge in Natural Science has become accepted as unchanging, theories are acknowledged to be open to change because they are the result of human activity which is influenced by social, cultural and historical settings (DOE, 1997a).

Learning programme

A learning programme provides guidance for teachers and learning within outcomes-based framework. It is similar to a plan of work, which includes guidance on activities, assessment, and the application of specific outcomes.

Specific Outcomes (SO)

Specific outcomes have been derived from the learning areas. They refer to the specification of what learners are able to do at the end of a learning experience. This includes skills, knowledge and values, which inform the demonstration of the achievement of outcome or set of outcomes (Department of Education, 1997a).

Assessment Criteria (AC)

According to policy document (DOE, 1997a: p.17), "assessment criteria are sort of evidence that teachers need to look for in order to decide whether a specific outcome or aspect therefore has been achieved."

Senior phase

"The senior phase (Grade 7-9) of the General Education and Training Band is the last phase of the General Education and Training Certificate" (DOE, 1997a: p.5).

Teacher/educator

Departmental officials responsible for implementing C2005/OBE at school level. The two terms will be used interchangeable in the study.

1.3 Research methodology

In February 2002, the database of the University of Pretoria (UP) and the Human Science Research Council (HSRC) between the years 1990 and 2002 were each searched separately as follows:

- PsycLit and ERIC

The following search terms were used:

- Teacher training; evaluation of in-service training; training of physical science teachers,
- Science assessment; training needs of science teachers; implementation and evaluation models; problem- based and learners-centred education within the framework of Curriculum 2005;
- In-service training of teachers for curriculum 2005; outcomes-based education,
- Curriculum 2005;
- perception of curriculum 2005;
- perceptions of assessment in OBE approach;
- Perception concerning the implementation of OBE.

Although there is much literature documenting Curriculum 2005 and its implementation in South Africa, not much had been investigated on the relationship of factors (capacity of school, outside support) to enhance the implementation of C2005. The findings from the study done by (Vereen, 2000) suggest that Curriculum 2005, as an approach to the South African educational system, has enormous advantages to the learner since Continuous Assessment (CA) contributes to the holistic development of the learner. However, participants experience various concerns and constraints during the practice of

CA and OBE. It appears that teachers struggle with the vague and ambiguous language associated with C2005. The implementation of C2005 in senior phase (grade 7-9) only started in 2001 and not many studies had been done on how it is implemented. Thus, it appears that the topic under study namely, an evaluation of the implementation of C2005 in Mpumalanga is relatively new.

New topics require a review of literatures essential in some way to the problem, to provide the conceptual framework and a rationale for a study. This is according to McMillan and Schumacher, cited in Brown (2000). According to McMillan and Schumacher (in Brown, 2000) an extensive literature review is essential in order to provide the conceptual framework and rationale for a study of which the topic is relatively new or unknown. It is hoped that this study will contribute to continuing research in this field.

In two selected schools, a case study method was used to investigate the topic. An extensive review of the relevant literature served as background for the formulation of the research topic. Topics and questions were adapted from Rogan and Grayson (2001) model and refined by the researcher for use in the study. This process ensured that the questions selected were relevant to teachers and appropriate for the cultural context of Mpumalanga schools. The researcher attended training session at the University of Pretoria (UP) prior to the visits. Training on the general procedure of conducting case studies was provided to the researcher during April 2002.

1.4 Related research

Major themes in current literature are:

An evaluation of the in-service training of Grade Seven teachers for Curriculum 2005.	Geduld (2001)
Dissemination of OBE-based and diagnostic assessment instrument: development, implementation and evaluation of a model for in-service training for teachers in South Africa.	Louw, Du Toit, Kotze, Steyn, Steyn, van Tonder, Maehela, Rosseel and De Corte (2000)
In-service training of teachers for Curriculum 2005.	Lopes (2001); Magalela (1999)
Implementing a problem-based model in the training of teachers for an outcomes-based technology curriculum	Van Loggerenberg (2001)
Perception of curriculum 2005 implementation	Yende, (1999); Mothobi (2001)
Perception of assessment in an outcomes-based education approach	Verren (2001); Abrahams (2001)

1.5 Overview of the study

This study is partitioned in the following manner:

Chapter 2 looks at literature survey on curriculum and implementation

Chapter 3 describes the research methodology used in the study.

Chapter 4 deals with analysis of school A

Chapter 5 deals with the analysis of school B

Chapter 6 provides the conclusions and findings of this study and recommendations for further research.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

Before anything can be said about the curriculum models and theories that inform school development, it is important to give a brief background of the reasons that led to the introduction of C2005 in South Africa. The reason for studying curriculum development in the South African context is that it would provide more information about the implementation and the evaluation especially in Mpumalanga schools. In the following section, a closer look into activities that led to the introduction of C2005 and its objectives will be discussed.

2.2 Governmental mandate to plan education and training

The last years of the 1980's in South Africa saw major education transformation processes. Many exiles returned to South Africa with enormous experience in the developments of education internationally. Their contribution was felt in many education forums where the need for a paradigm shift in education was crucial. Among these ideas, particularly those related to education and training and the formation of single national qualification framework (NQF) helped to shape the reform proposals that became incorporated in the first Election Manifesto of the African National Congress (Young,

1998). As observed by Jansen (2000a), a flurry of education policies was developed in anticipation of the formal and legal termination of the apartheid state.

When the ANC led government came into power in 1994, education construction was given a top priority. As stated in the White Paper on Education and Training (Government Gazette 1995: p.17), “For the first time in South Africa's history, a government had the mandate to plan the development of education and training system for the benefit of the country as a whole and all its people”. Nineteen racially fragmented education departments needed to be brought under one united, non-racial department. Apartheid legislation governing teachers, learners, governance and curriculum needed to be replaced. Policy and planning positions had to be specified with the context of a political system founded on reconciliation as expressed in the terms of a negotiated settlement - that is, a government of national unity (Manganyi, 2001 and Nzimande, 2001).

2.3 Curriculum 2005 and Outcomes-Based Education

As its second ambitious undertaking, the new government introduced a new curriculum, Curriculum 2005 (1997), which had a very different philosophy from the one, which underpinned the syllabus/examination-dominated practices of the past. As seen by Rogan and Grayson (2001), Curriculum 2005 is modeled on outcomes-based educational (OBE) principles, and incorporates many practices that have gained favour worldwide, such as child-centred learning and continuous, performance-based assessment. “Curriculum 2005

arose out of coalition process designed to ensure the integration of education and training through the NQF” (Chisholm, 2000 p.10). According to Young, (1998) South Africa adopted the New Zealand model for establishing its National Qualifications Framework. Adding his voice, Young (1998) indicated that the NQF had its origin in Congress of South African Trade Unions' (COSATU) proposal in the early 1990s for career pathways for workers and OBE arrived on the educational policy agenda later. He concluded by mentioning the following important reasons for the adoption of OBE- based curriculum in South Africa:

It was new and undoubtedly represented a 'clean break' with the old apartheid curricula, in particular its heavy content basis. In the form in which it was adopted in South Africa, OBE has been associated with learner centredness, 'freeing teachers', and the idea that 'everyone can succeed'; it therefore appeared to fit the post-apartheid emphasis on democratic participation and access.

In the two cases mentioned above, the 'apartheid and freeing teachers' are seen as political statements. It therefore suggests to the researcher that C2005 carries with it a strong political and educational jargon. It is the researcher's view that if schooling, together with many other forces, continues to encourage polarization, it will fail South African development. Curriculum 2005 brings hope to South Africans by replacing school subjects with eight learning areas within which occupational and disciplinary knowledge are integrated. It also stresses the non-school experience and everyday life of learners and

the importance of learners being able to apply knowledge that they learn (Chisholm, 2000).

Rote learning, memorization and passivity that used to be in the apartheid curriculum are therefore discouraged (Young, 1998). This has been endorsed by the policy document when it states that: -

South Africa has embarked on transformational outcomes based education (OBE). This includes the most radical form of an integrated curriculum. This implies that not only are we integrating across disciplines into learning areas but also we are integrating across all Learning Areas in all educational activities (Department of Education, 1997c).

However, Taylor and Vinjevold (1999) see the scheme for effecting this integration as enormously complex. For the General Education and Training (GET) framework, the starting point is a set of 66 specific outcomes across 8 learning areas (Department of Education 1997c). Each specific outcome is further specified by a number of assessment criteria, each of which in turn is elaborated by means of a number of range statements and performance indicators. The policy document (1997) outlines twelve critical outcomes (CO). According to the policy document (1997) everything that anyone does at any level of the education system should be aimed at helping learners achieve these outcomes. It is also necessary to continuously assess learners' progress towards achieving these outcomes. Explaining outcomes, the policy document (1997) refers to them as end

goals of learning; they are things that learners can DO. They are not lists of subject matter or content that has to be memorized.

Knowledge, skills and values cannot be separated. Curriculum 2005 sets out to provide young South Africans with a broad educational experience that will enable learners, as they progress through the system, to achieve these outcomes – and grow into the kind of citizen we all desire. Critical outcomes are to be achieved through eight learning areas (LA) and specific outcomes (SO).

This research will only concentrate on the learning area natural science. The learning areas are not “subjects” in the old sense with a syllabus of “prescribed content”. Rather, they are defined by a set of closely related specific outcomes.

In view of its potential to improve the quality of life, learning in the Natural Sciences must be accessible to all South Africans. The investigative character of knowledge acquisition in the Natural Science should be mirrored in education. Learners should be active participants in the learning process in order to build a meaningful understanding of concepts, which they can apply in their lives.

(Department of Education, 1997d.)

A deeper study into a policy documents reveal visionary an educationally sound ideas. The combination of skills, knowledge and values are important requirements for all citizens of many countries of the world. Development theorists argue that improving

education is a primary means of building human resources, which Harbison (1973, p.3) calls the “ultimate basis for the wealth of nations.” The outcomes of C2005 are thus designed to produce an educational product (a student) that will function appropriately in that future. The crucial question that arises and need to be answered is related to the implementation of these excellent ideas embedded in the curriculum 2005.

2.4 Curriculum 2005 and implementation

“International development organizations such as the World Bank have invested billions of dollars in strengthening education in developing countries, but the impacts of these investments are often undermined by developing countries’ weak capacity to manage and implement changes.” This is according to Rondinelli, Middleton and Verspoor (1990, p.4) who were concerned about implementation of educational reforms such as C2005 in South Africa. When the Minister of Education announced the introduction of the curriculum 2005, the implementation was scheduled to take place in all grades (1-12) by the year 2000. However, in 1997 the implementation timetable was revised to end in 2005, hence the name Curriculum 2005 (C2005) (DOE, 1997).

The development of new curricula is a common event in countries across the globe. In many cases, as observed by Rogan and Grayson, (2001), these curricula are well designed and the aims they are intended to achieve are laudable. South Africa has enormous amount of documents and publications on what C2005 will do and can do. Much energy has been spent on the ‘what’ the curriculum will produce and what educational changes

will come thereafter (Jansen and Christie, 1999a). It is however, unfortunate that less energy is spend on ‘how’ the process of implementation will take place (Rogan and Grayson, 2001).

Porter (1980, p.75) had expressed his concern on the role of national government in educational change in the USA and Australia and said: “the people concerned with creating policy and enacting the relevant legislation seldom look down the track to the implementation stage.” Adding his concern, Verspoor (1989, p.13) said “large scale programs tend to emphasize adoption and neglect implementation.” In conclusion, he stated that, “in nearly all instances low outcomes resulted from poor implementation of what was essentially a good idea.” Huge amount of money, time and resources end up wasted because of good programs which are not translated into classroom reality (Rogan and Grayson, 2001).

For effective planning and execution of innovations such as C2005, the implementation phase should be regarded as a distinct process from the ‘trial’ phase. According to Bishop (1986) the ‘trial’ phase involves promoting awareness and interest in the innovation, adjusting internal organizational procedures and arrangements, locating and arranging appropriate resources, providing training courses (and possibly incentives), setting up monitoring and feedback procedure to assess the relevant and effectiveness of the innovation. It is however the researcher’s contention that if such processes have not taken place implementation might experience some problems along the way.

The implementation of C2005 as innovation requires considerable change in the teacher behavior (Bishop, 1986). To break away from old modes of behavior and acting in an entirely different way is far from easy and takes time (Bishop, 1986). In the section that follows, salient aspect of literature related to developmental models for schools and to educational change will be summarized. A model of best practice in implementation will be adopted and used in the evaluation of curriculum implementation in two schools selected in Mpumalanga province. As indicated earlier, the natural science, as a learning area will be used.

2.5 Developmental models for schools and their implications for curriculum implementation

Maslow (1954, p.83) stated that; “human needs are organized into an hierarchy of relative prepotency: physical needs, safety needs, belongingness and love needs, esteem need, and the need for self-actualization.” It is therefore crucial that needs at one level be partially satisfied before an individual seeks to satisfy another level. Schools as individual systems have needs that must be satisfied first in order for them to function and implement any innovation effectively. It was the Minister of Education who was concerned about the poor quality of teaching and learning in large parts of South African schools (Asmal, 1999). He acknowledged that poor learning was associated with poverty, bad or absent facilities, under-prepared teachers, lack of learning resources, and a serious lack of purpose and discipline in many schools.

That schools differ from one another is an indisputable fact of life. In South Africa, as observed by Rogan and Grayson (2001) these differences are compounded further by the previous discriminatory funding policy of the old Apartheid system. The damage done to schools by these policies is still felt in some schools. There are schools whose buildings and educational programs rank amongst the best in the world. On the other hand, some schools are collapsing almost on a daily basis. Concluding on the disparities amongst schools, Bagwandeem (cited in Keevy, 1998) summarized, “Decades of inferior, racially based education, as the iniquitous legacy of apartheid, have contributed to a plethora of education problem.”

It is against the background of the realities surrounding schools that a form of categorizing them might be useful. In this study categorizing schools is not an attempt at labeling them but to better understand and serve their needs. Both researchers and policy makers may use this model to understand the process of implementation. For instance it was envisaged that C2005 would be implemented in ‘all schools in a given grade level in a given year’ irrespective of the differences in capacity of the school involved (Rogan and Grayson, 2001, p.14).

A critical analysis made by Bonville (<http://www.sntp.net/education/OBE>) into Curriculum 2005 and OBE indicated that it is not about education at all. At least, not in terms of traditional academically based teacher-directed instruction as was seen in the traditional classroom. The fundamental strategy of the restructuring movement known as Outcomes Based Education is elimination of all moral and psychological barriers to

social change (<http://www.sntp.net/education/OBE>).

Another view that compounds the curriculum implementation problem comes from the perspective that knowledge is socially constructed (Gergen, 1999). It follows that the curriculum is not a body of content but the outcome of political struggle over what counts as knowledge to be transmitted (Young, 1998). From this kind of social constructionist perspective, the task of the reformers becomes to replace a racist, sexist or out of date curriculum that differentiates learners by social class with one that treats all learners as equal (Young, 1998). This appears to be the aspiration of Curriculum 2005.

Schools in South Africa differ but differences can also be found amongst teachers especially in terms of knowledge and skills (Jansen, 1999). Many competent teachers are in the field with many years of experience but no qualifications or formal training. In 1995, over 50% of practicing mathematics teachers and 60% of science teachers had no formal training in these subjects (Arnott, Kubeka, Rice and Hall, 1997).

It therefore becomes imperative that such differences be taken into account in preparing teachers for C2005 implementation. Adding his voice about C2005 implementation, Jansen (1999, p.90) argued that large-scale changes “without discriminatory measures are more likely to benefit advantaged schools”. Better-resourced schools stand a good chance of developing more as a result of human and physical capabilities. Arguing further for implementation of any innovation like C2005, Bishop (1986:X) stated, “the difference between innovation and change lies in the fact that innovation is planned.” So for

educational change to be effective it must be deliberately planned and rationally organized. He continues to say that “if the innovation is some ‘ad hoc’ process; if it is a pragmatic, haphazard affair, conjured up by well intentioned administrators or inspectors, not preceded by careful research, not based on adequate expertise; if it is a case of hit or miss, it will often be the latter.”

Indeed, if schools are poor in human and physical resources they cannot afford to waste scarce resources on misses (Bishop, 1986). It becomes important therefore that the diversity of schools be recognized when implementation is carried out. One needs some theoretical framework for planning innovation such as C2005. Without proper planning chances of bringing effective change will be less. Hopkins and MacGilchrist (in Rogan and Grayson, 2001) opt for a differentiated approach to implementation and professional development. They suggested a three-tier approach. Their so-called Type One strategies are aimed at helping low-performing schools achieve some measure of success, in that they are put on the road to becoming functional. The goals that these schools set are within their reach and achieving them instills a feeling of confidence. The Type Two strategies are designed for moderately successful schools, and concentrate on helping schools improve in areas that are already competent. Finally, the Type Three strategies are for schools that are already at some level of excellence, and are aimed at helping them to introduce sophisticated teaching and learning methods of the kind that would characterize C2005 at its best.

In South Africa, there is a danger that educational change agents had put a “blueprint” for C2005 implementation. Current efforts to implement C2005 are based on the assumption that all schools are the same and will benefit from the same kind of ‘blueprint’ training. The in-service training (INSET) for teachers is also conducted in the same way. One teacher-training manual was constructed and all provinces were expected to follow it without discrimination. As observed by the researcher, teachers as facilitators were subjected to ‘sensitive training’, which upset teachers’ frame of reference. They were told to abandon their traditional unproductive way of teaching, abandon textbooks and chalks, follow the new order, go along or get out of the system if they resist change.

For many experienced teachers implementing curriculum 2005 as one large project seem impossible and others simply ignore the training and continue with their old practices. A small scale, step-by-step approach is suggested by most of them. They are supported by Johnson, Monk and Hodges (2000) who suggested that introducing regular small changes can allow teachers to vary their practice, find successful variation and be prepared for further changes. Such a gradualist policy allows for an accelerated evolution of classroom practice.

Flexibility must rule, now that implementation is out of the blueprint room and into operating reality. Most new programs that succeed need someone who knows about the program and who is responsible for its implementation. This person can be considered the key ‘sustaining sponsor’ in business language. It is therefore necessary that such persons should be placed in each school. If such persons are not yet ready to sustain the program,

de Feiter et al. (1995, p.88) suggested, “If teachers lack a proper background and confidence in their subjects, in-service education should start concentrating on this”. If a school lacks capable force for driving implementation then schools should start with intensive empowerment program for such people before even starting to implement.

Concluding the argument on implementation processes, Verspoor (1989, p.97) stated,

It is critical to pay careful attention in the design of training programs to the level of teachers’ knowledge of relevant subject areas and teaching experience. When training courses fail to take teachers’ level of knowledge into account, implementation of the reform will be hampered.

The developmental models serve as basis for this research especially in understanding the process of implementation. There could be some shortcomings from the models, which are outside the scope of this research. The researcher considers C2005 as a large-scale event, which need to be implemented as a process.

In the subsequent section to follow, various components of educational system, teachers, pupils and school environment will be discussed. This will help develop an evaluation model that will be used in the case studies. Since different schools have different strength in implementation, the study will focus on the developmental strengths of the school rather than their downfall. The profile of implementation will focus on school strength and how ultimately C2005 can be implemented with greater success. It therefore becomes

crucial for this study to know who the drivers of educational change are and what impact they have on the entire implementation process of curriculum.

2.6 Educational change agents

According to Bishop (1986:3) any process of innovation like C2005 need to involve some factors to be involved. The following factors are suggested:

The change agent

The innovation change itself

The user system and

The time

An overview of the change agent and user system will be is discussed briefly in the following paragraphs.

The change agent, the innovator, is the person or group (e.g. the head master, individual, teacher or local authority or national education department) that decides upon and initiates the innovation or educational change. In the case of C2005, national department of education (DOE) mandated the implementation by setting down timeframes. The innovation has followed a top-down approach right from national, province, district up to schools for implementation. As policy-making authority, however, the DOE is not involved in the actual implementation of C2005.

Provincial departments are the ones who sit with the dilemma that they are forced to implement government policies such as C2005. As observed in other provinces, lack of funds and the know-how to implement are prevalent among implementers. Hopkins et. al (in Rogan, 2001) warned about top-down events; “It is almost always the case that centrally imposed or top-down change implicitly assumes that implementation is an event rather than a process; that a change proceeds on autopilot once the policy has been enunciated or passed. This perspective ignores the critical distinction between the object of change ... and the process of changing – that is how schools and local agencies put the reform into practice”.

An event such C2005 took place in the South African context which has different political parties. Some appreciated the event whilst others saw it as top-down event imposed upon them. The process of change was also taking place in different school setting. Khulisa Management Services (1999) has looked into the process of change and implementation in various schools. It found that there was an uneasiness and confusion among user systems. It appeared that the change agent and the user were in opposition. Two possibilities for the opposition considered were: firstly, the large-scale, top down nature of the innovation since the national department of education has mandated the change and the timetable for implementation. Secondly, teachers’ needs, based on their developmental stage as well as the context in which they work were not considered (Rogan & Grayson, 2001). Adding his voice, Bishop (1986, p.25) stated, “the readiness of the ‘school culture’, the readiness of the community, the managerial group, the teachers and students is more essential than the products”.

In top down authority, it is sometimes not easy to consider the school culture.

The user system is an important factor in the success or fall of any innovation. The action or implementation happens in this system. It therefore becomes crucial that this system becomes ready and accepts the innovation from top-down authority. Bishop (1986, p.25) noted,

The best of intentions are likely to be frustrated if too much attention is paid to the nature of a proposed innovation, whilst too little attention is given to the nature of the innovators and to the nature of the social system in which they work.

Pointing out some of the problems that were made in a top-down innovation, Sarason (cited in Bishop, 1986, p.25) reported that there was:

Little sensitivity to the plight of the teachers – they were being asked to learn procedures, vocabulary, and concept that were not only new but likely to conflict with their highly over learned attitudes and way of thinking... no one formulated the problem as one requiring teachers to unlearn and learn.

He goes on:

It is extremely difficult for a teacher to state to the principal; to other teachers or supervisors that he or she doesn't understand something. One consequence of a lack of openness, supportiveness and readiness to accept failure is the 'facade' phenomena, the situation in which teachers, schools and inspectors present an

image to each other and to outsiders, which suggests that an innovation is working extremely successfully, whereas objective observers report differently.

Adding his voice, Fullan (1991, p.4) stated,

Neglect of the phenomenology of change – that is how people actually experience change as distinct from how it was intended – is at the heart of the spectacular lack of success of most of social reform.

2.7 Relevant theories informing the implementation of education reforms

Critical analysis of educational policy in South Africa was shaped by a number of debates and theories from many individuals since early 1990 (Young, 1998). Some theories as indicated earlier came from exiles that influenced the formation of National Qualification Framework (NQF). Other theories included those around social constructionism and post-modernism (Muller, 2000a), around progressive education and many more that this study may not mention. The study will however confine itself to the theoretical ideas that have had a particular impact on debates about curriculum implementation, school development and whole school evaluation. Research carried out by distinct C2005 proponents will be considered in the following section.

2.7.1 Michael Young (1998; 2000)

Background

Michael Young wrote much about the implementation and education reform in South Africa. In his recent article, 'Educational Reform in South Africa (1990-2000); An International Perspective he indicated that he was personally involved in the educational reform process in South Africa. Between 1990 and 1994, he was involved in a number of working groups such as National Education Policy Investigation (NEPI), National Training Boards (NSB), Congress of South African Trade Unions (COSATU) and the Centre for Education Policy Development (CEPD). The study looks at some of his arguments as part of the theoretical forces behind the implementation process taking place in South Africa.

The broader theoretical ideas that shaped the implementation of a new curriculum arose from dissatisfaction with the educational implications of Marxist analyses of western capitalism and in particular the one-dimensional focus on the de-skilling that followed from Harry Braverman's (1974) highly influential book, *Labour and Monopoly Capital*. According to the author, ideas such as flexible specialization from Piore and Sabel (1986) were used to argue that a more democratic alternative could emerge for the kind of education system that would be possible, as well as its curriculum, qualifications and pedagogy. This had led to the formation of a new democratic South Africa, which ultimately led to the introduction of new education system. The urgency and speed of the

political transformation in South Africa has led the author to conclude that social scientists are not so different from political activists and politicians; they tend to believe what they want to believe and choose the theories that seem most congruent with their beliefs. However, critical analysis of the author indicated that more cautious steps need to be taken about the short-term possibility of democratic educational change and more aware that implementing any kind of egalitarian change is more difficult than radical social theory prepared us for.

Real democratic educational change does not follow in any straightforward way from a change of government. The author feels that the more reforms in South Africa get involved in the process of implementation, the more important the issue of pedagogy becomes. Theories supporting learner-centered pedagogy are seen as the major philosophical theories fundamental to the changes which are taking place in South Africa. They advocate the thesis that human beings are lifelong learners and can direct their learning. However, theories of knowledge and the curriculum are also important. The traditional view is that the curriculum is a given body of knowledge to which learners, teachers and the community have to adapt.

The struggle against apartheid in South Africa could be linked to critical education theory. Radical theorists in South Africa used critical theories to expose the apartheid system and provided a new model for education system. Unfortunately the whole process of implementation was left behind in the process and as such a new theory of implementation becomes urgent especially for C2005 to succeed.

2.7.2 J.M. Rogan and D.J. Grayson (1999; 2002)

Background

An event is a global affair that transcends a particular context. Decrees on educational policy such as C2005 are example of events. But the process of change is content specific and will play out different in each and every school.

The authors have both played a significant role in research and development in the field of INSET. They are still engaged in a large-scale project in one province on the implementation of curriculum 2005. Only a few aspects are mentioned regarding implementation. Implementation and development of curriculum faces many challenges and if not solved these challenges will fail the good intentions of the C2005. In trying to rescue the implementation problems faced by schools, the authors proposed a theory based on three constructs. They hypothesized that a theory of implementation can be based on three major constructs: Profile of Implementation, Capacity to Support Innovation and Support from outside Agencies. These construct share three characteristics:

- (i) They can be measured by means of indicators,
- (ii) They are broad enough to encompass a number of related factors, and
- (iii) They are narrow enough to include one main idea.

The nature of these constructs is outlined below. Their theory is based on the learning environment as unit of analysis. Learners, teachers, curriculum and educational resources were considered for the theory.

Their focus is based on what happened in the classroom and this refers to the implementation. A brief overview of constructs is given below.

Profile of implementation

According to authors, this construct attempts to understand and express the extent to which the ideals set out in the curriculum proposal are being put into practice. It assumes that there is at least a vaguely defined notion of what constitutes ‘good practice’ and what this looks like in the classroom. It also recognizes that there is as many ways of putting a curriculum into action, as there are teachers teaching it. However, it does assume that broad commonalties will shape notion of excellence. For example, based on the old syllabus in South Africa, excellence of schools was judged primarily on one criterion only – the percentage pass rate on the external matriculation examination. Excellence, as seen from the perspective of C2005, will need to be determined by criteria that are in line with its values and expected outcomes, such as what learners are actually able to do at various points in their schooling.

The authors point out an important feature of C2005 inherent in the profile of

implementation. The levels indicating next steps as implementation improves from a low to high level. Hence one of the insights that the construct could offer might be to conceptualize levels of implementation of C2005. Hall and Loucks (1977) cited by the authors indicate that there are different degrees of implementation of a new curriculum. The beginning levels, orientation and preparation, essentially encompass the period of becoming aware of and preparation to implement the new curriculum. Mechanical and routine levels are the levels during which the curriculum is used as envisaged by the developers with little addition and adaptation to the local context. The final level, refinement, integration and renewal is where the teacher begins to take ownership of the curriculum and may make other extended modification.

The authors see the profile of implementation as a ‘map’ of the learning area and offer a number of possible routes that could be taken to a number of destinations. It will assist curriculum planners at school level to determine where they are – to identify their current strengths. They can then take into account the context and capacity of their schools, and select a route to follow in working towards a meaningful implementation of C2005. The curriculum will be taken as a long process, ongoing and developmental. This involvement and self-assessment is in line with the notion of developmental planning in which various stakeholders are involved in the destination they want reached. School and staff development plans become crucial in this regard. The whole school development notion is carried effectively when school community drives it themselves. Hargreaves and Hopkins cited by the authors support the idea of self-development as follows:

Development planning increases the school's control over the content and pace of change. It provides a rationale either for saying 'no' to certain demands, since not everything can be put into a single year's development plan, or for saying 'not yet' since some changes are sensibly placed in the second, third or even later years of the plan. In other words, a strategic approach to planning is adopted and the school ceases to be target of demands for instant change.

The authors tried to put the dimensions of the profile of implementation for a natural science learning area of Curriculum 2005 in the table 1(appendix A). As they explained the profile of implementation illustrated what C2005 might look like in practice in the classroom. It draws on the international literature regarding best practice in science education. The dimensions of the Profile of implementation are the nature of the classroom interaction, use of and nature of science practical work, incorporation of science in society elements, and assessment practices.

The dimensions 'classroom interaction' and 'assessment' are generic in the sense that with minor changes they could apply to any learning area (subject). The dimension 'science practical work' is unique to science. The level indicates teacher-centered demonstration (level 1) to open-ended learner centered investigations (level 4). The dimension 'science in society' reflects one of the central tenets of C2005 – that of making science relevant and action oriented in the pursuit of national goals such as socio-economic development and the wise and equitable use of natural resources. On this

dimension, the levels progress from a simple awareness of the role of science in everyday life to actively engaging in community upliftment projects.

Level one on all four dimensions describes a well-organized, teacher-centered lesson. Learners are engaged to some degree, mostly in a question and answer mode. Assessment is of the pencil and paper test only, but the tests are well designed and are beginning to ask some questions that require more than simple recall. Unlike the developmental models, level one does not describe the 'lowest type of practice' in existence, but rather good transmission type lesson. The authors acknowledge that some schools may possibly not display any of the practices in the levels of profile.

Capacity to Support Innovation

In the words of the authors the construct capacity to support innovation is an attempt to understand and elaborate on the factors that are able to support, or hinder, the implementation of new ideas and practices in a system such as a school. Possible indicators of the capacity to support innovation construct fall into four groups; physical resources, teacher factors, learner factor and the school ecology and management.

Physical resources include buildings, centers and facilities for making learning possible. Poor resources and conditions can limit the performance of even the best teacher and undermine learners' efforts to focus on learning.

A second factor pertains to the teachers' own background, training, and level of confidence and their commitment to teaching. Schools are said to get better when educators build a shared understanding of what good teaching and learning look like. To build a shared understanding, educators commit themselves to studying and learning from one another over time. Study groups provide a good structure for sharing and learning together.

A third factor relates to the background of the learners and the kind of strengths and constraints that they might bring to the learning situation. Learners come from different home environments and their family members support them differently. Family setting at time may force learners not to attend school on regular basis. Lastly for many learners in South Africa, language of instruction is also a problem. Hence the proficiency in language of instruction is likely to be a major determinant of the learners' success.

A fourth factor, or set of factors, pertains to the general ecology and management of the school. The implementation of C2005 requires different management strategies than those needed for administering an existing school system (Verspoor, 1989). If the school is in disarray and dysfunctional it is obvious, that no innovation can be implemented. A school where there is no order or discipline for learners and teachers is likely not to succeed in its attempt to implement innovation. Leadership of the school is also very important in trying innovations. A shared vision as to how the innovation will play out depends largely on the leadership of the principal. Research (Berman and McLaughlin 1977; Fullan, 1991; Hall and Hord, 1987) showed that the leadership role of the principal

is crucial when it comes to implementation of innovations. As implementation begins to become a reality so the role of the principal begins to take on new dimensions. Change has to be realistically planned and subsequently monitored. Continuous support needs to be provided to schools as they improve on their implementation.

The four factors together paint the picture of the capacity of the school to implement curriculum change. In table 2 (appendix B), the authors attempted to create a profile of these factors. Unlike the Profile of Implementation, the levels here do represent a progression, and the ultimate goal for a school would be to achieve level four on all four factors.

Support from outside agencies

For the purpose of this study, Rogan and Grayson (2001) define outside agencies as defined as organizations, including the department of education, that interact with a school in order to implement some kind of change. Support of outside agencies, in the South African context, comes from both traditional and unique sources. On the traditional side are national department of education and nine provincial departments. The national department is charged with major policy decisions, while the provincial departments are responsible for the implementation and also for the day to day running of the schools under their jurisdiction. In addition to outside agency a list of the following are included: donors (local and international), NGOs and unions.

The profile developed in this section takes into account the range of the types of support that each of these types of organization provides and the pressure they are able to apply. The ability to support or to apply pressure is tied up with issues of authority and credibility. A government department of education can, for example, make changes by decree, or at least attempt to do so, whereas an NGO can only use persuasion and inspiration. Policies and actions of trade unions can however, temper with government authority. However, donors and NGOs can choose to work under the mantle of a department and hence evoke some of its authority. The profile of outside support is intended to describe the kind of actions undertaken by these outside organizations, as well as the ways in which they manifest their intentions. In table 3 (see appendix C) a profile indicates the type and levels of support and pressure that various organizations might bring to bear on a school in order to facilitate change. According to Rogan and Grayson (2001) the first column in table 3 deals with two forms of support to schools, material and non-material. Material support is divided into two categories, the provision of physical resources such as building, books or apparatus on the one hand, and direct support to learners on the other. This support could include food, safe place for studying and field trips. Both of these kinds of support can be provided at various levels.

Non-material support includes professional development, which is visible from outside agencies. The dimensions include INSET concentrating on policies and other strategies to promote implementation. Moving through the levels, there is an increasing emphasis of professional development, which is focused on implementation of change rather than just

providing information. The duration of support is also important. The levels here range from a one-short workshop to continuous, school-based development (Rogan and Grayson, 2001).

2.7.3 Vygotsky's zone of proximal development

Vygotsky's zone of proximal developmental theory will be considered in this study. His best-known contribution to development and cognitive psychology was his various explanations to the question of how development came about as an outgrowth of learning. The study will feature only one of his explanations, namely his concept of the Zone of Proximal Development (or, for short, "ZPD"). Vygotsky (1978) referred to the distance between the abilities displayed independently and with social support as the ZPD; his thesis being that this "zone" was created by learning. To cite directly from Vygotsky (1978, p.86), this most widely known concept of his theory represented "the distance between the actual level of development as determined by independent problem solving (without guided instruction) and the level of potential development as determined by problem solving under adult guidance or in collaboration with more capable peers". Measurement according to Morris (1995) would thus be measured by comparing the students' performance on both tasks.

The thesis behind this "zone" is that at a certain stage in development, children can solve a certain range of problems only when they are interacting with people and in cooperation with peers (Morris, 1995). Vygotsky (1978, p.86) suggests that "instruction is good only

when it proceeds ahead of development, when it awakens and arouses to life those functions that are in the process of maturing or in the zone of proximal development.” By analogy, the study argues that curriculum implementation strategies are good when they proceed just ahead of current practice (Rogan and Grayson, 2001). The levels indicated in the above profiles can serve as zone of feasible implementation. Thus, a teacher whose practices are limited to level 1 (see table 1) on the profile of implementation may experience serious problems if s/he employs practices described by level 4.

To be effective, a curriculum implementation strategy needs to take into account both the current level of classroom interaction and the current capacity to support innovation (Rogan and Grayson, 2001). The study argues that it is difficult to adopt innovatory practices when the wider community of parents and other interested stakeholders do not support these practices. It is here; that the study believes that Vygotsky's legacy can be of greatest value in suggesting the directions in which curriculum 2005 can be implemented effectively in provinces like Mpumalanga.

2.8 Concluding remarks

Many different perspectives, opinions and even governmental strategies have been discussed in this chapter. Much has been said about the development of Curriculum 2005 in the early years of South African democracy. Like many capital initiatives that fail not because of failures in planning, assessment, or design; failure in C2005 will come during the implementation phase.

Taking into consideration, the implementation phase and the model discussed in this section may help improve many innovations currently underway. In the next chapter, the model discussed will be used to evaluate factors, which can influence the implementation of C2005 in two selected schools in Mpumalanga province.

CHAPTER 3

RESEARCH METHODOLOGY

3.1. Introduction

The study was conducted in Mpumalanga province because of the diversity it had among its schools. The two schools selected differed in terms of socio-economic status, geographical location and resources. These schools provide to a certain extent a picture of Mpumalanga schools and classrooms especially those that were classified as underprivileged schools. The selection of the schools was done on the principle of convenience and the researcher adopted a non-probability sampling technique (Huysamen cited in Taylor and Vinjevold, 1999) in choosing the research site. A case study method was used. The study had no intention of generalizing its findings as only two schools were selected. In the following section reason for selecting case study method and research design are discussed.

3.2. Why case study method?

In Bassey's terms (cited in Taylor and Vinjevold, 1999), case studies are singular, involving the systemic description of a unique situation so as to bring out its characteristics features. Case studies, on the other hand, are designed to bring out the details from the viewpoint of the participants by using multiple sources of data. Since the

study attempted to gain an in-depth understanding of the process and problems associated with the implementation of C2005 in the natural science area, this method seemed ideal.

Yin (<http://people.cs.uct.ac.za/~dnunez/reading/papers/tellis2.html>) identified some specific types of case studies: *Exploratory*, *Explanatory*, and *Descriptive*. Stake (<http://people.cs.uct.ac.za/~dnunez/reading/papers/tellis2.html>) included three others: *Intrinsic* – when the researchers has an interest in the case; *Instrumental* – when the case is used to understand more than what is obvious to the observer; *Collective* – when a group of cases studies is carried. The researcher considered intrinsic and instrumental types when designing the study. As an employee of Mpumalanga Education Department, the researcher regarded these types of case studies important in his day-to-day working environment. The study therefore selected only two schools from the many secondary schools in Mpumalanga to represent the ‘case’ in this study. This however limits the study in that the findings cannot be generalized to other secondary schools.

3.3. Research design

The recruitment and details of participants, interviews and questionnaires are discussed in the following sections.

3.3.1. Recruitment and details of participants

The two schools selected were better placed for the case study of this research project. Both schools had grade 8 and 9 classes. The first school (school A) was opened in 1989. The second school (school B) was opened in 2001 with principal and deputy principal not yet officially appointed into their positions. Both schools had to implement curriculum 2005 according to the timetable set up by national education department. The researcher accepted these two schools for the study on the assumption that school A with good result will definitely have good teachers and implement C2005 effectively.

Even though the researcher was employed by the Mpumalanga Department of Education and had free access to every school in the province, a special request to access the two schools for research purposes was done according to proper research protocols. The permission was sought from the principals. A written letter describing what the researcher would do and how the research will be conducted was given to both schools. The teachers to be interviewed were also consulted on individual basis and all gave a written consent and approval to participate in the study.

A consent form was provided guaranteeing confidentiality and anonymity. The two schools were also given the draft report on the last day of the visit for correcting what could have been a construed or wrong perception from the researcher. Teachers asked about the benefits for participating and the researcher indicated that future assistance on the implementation would consider the schools' needs and more support would come.

There were some obstacles along the way of research. Initially the researcher planned for the entire week for collecting data. Part of the plan was to collect some documents for further analysis. In school B it could not take place. Two teachers who initially agreed to take part in the interviews could not attend.

The participants are best characterized as follows for both schools: -

SCHOOL A	SCHOOL B
<p>Principal :</p> <ul style="list-style-type: none"> ▪ 39 years old male ▪ almost fifteen years of teaching experience ▪ acted as vice rector for two almost three years ▪ appointed as principal for four years ▪ serve as regional chairperson for South African Democratic Teachers Union (SADTU) 	<p>Principal:</p> <ul style="list-style-type: none"> ▪ 40 years old female ▪ Almost sixteen years of teaching experience ▪ Not yet appointed in her position as principal
<p>Science teacher:</p> <ul style="list-style-type: none"> ▪ Male, early thirties ▪ Three years experience in teaching ▪ Has Secondary Teachers' 	<p>Science teacher:</p> <ul style="list-style-type: none"> ▪ Female; late thirties ▪ Almost twelve years experience in teaching ▪ In possession of Secondary Teachers

Diploma (STD) in technical subject.	Diploma (STD), Further Diploma in Education (FDE) and B.Ed.
	<p>Science teacher:</p> <ul style="list-style-type: none"> ▪ Female; late thirties ▪ Almost fourteen years teaching experience ▪ In possession of STD and FDE
<p>Learners:</p> <ul style="list-style-type: none"> ▪ Five grade 8 (2 boys & 3 girls) ▪ Five grade 9 (1 boy & 4 girls) 	<p>Learners:</p> <ul style="list-style-type: none"> ▪ Five grade 8 (2 boys & 3 girls) ▪ Five grade 9 (2 boys & 3 girls)

3.4. Interviews and questionnaires

Research data can be categorized broadly into two kinds, namely independent and dependant measures (Taylor and Vinjevd, 1999). A dependent measure, which does not involve writing down answers or responses, was selected in this study. In accordance with the ideal qualitative research, namely to gain insight into and understanding of the phenomenon, soft data collection methods were employed. In particular, semi-structured (in-depth) interviews, observation and some collection of documents provided the necessary information.

The interviews used in this study characterized as being "semi-structured". The questions posed in the interviews are presented in Appendix D. However, at the researcher's discretion, some questions were omitted if answers were already known or observed. Answers to the questions were recorded in writing during the interview. In all cases the interviewees gave the researcher permission to record the interview responses on video. The research project gathered contextual data on the identity and characteristics of the two schools. In the main, the data captured consisted of general information on the number of pupils and teachers, facilities and resources.

The teacher interviews occurred after two lessons were observed. This assisted the researcher to ask follow-up questions based on the observations. The principal was interviewed towards the end of the week, as there were things that arose during the study that required his/her clarification. Learners were interviewed in a 'focus group' of five. The teachers were requested to select five learners. The learners were selected as representative of the class, gender and ability to talk freely. The interview was carried in English and Sotho languages because some learners failed to express themselves efficiently in English only. At the end of the day, the researcher did a full write-up while the memory of the interview was still fresh in the mind. All these responses were analyzed qualitatively.

3.4.1. Classroom observation

Mixing with teachers and learners in classroom can provide an enormous rich source of data about the real conditions in schools, teaching methods, assessment, and the quality of learning, the use of material and the general interaction (value and attitudes) than just asking the teacher. However, some unusual behavior might occur because of the visitor in the classroom (<http://people.cs.uct.ac.za/~dnunez/reading/papers/tellis2.html>). Before going to classroom the researcher attempted to find out from the teacher about what would happen in the lesson. All the observations were analyzed qualitatively.

3.4.2. Collection of documents

During interviews, certain documents were requested as evidence/sample for the responses given by interviewees. Document, such as lesson plans, worksheets, assignments and tests were collected. With the permission of the interviewees, photocopies of such documents were made at the researcher's cost. The data collected from interviews, observations and documents were synthesized to provide a coherent and composite account of classroom interaction in the school especially science classroom.

3.5. Data analysis

Analysis of the multiple sources (interviews, observations and documents study) can determine evidence for each step or phase in the evolution of the case (http://www.personal.psu.edu/users/s/b/sbf116/3_q1-mth.htm). Stake (1995) advocates four forms of data analysis and interpretation in case study research, which this study had considered: namely; -

- ◆ **Categorical aggregation:** the researcher selects a collection of instances from the data, hoping that issue-relevant meaning will emerge
- ◆ **Direct interpretation:** the researcher looks at a single case and draws meaning from it, without looking for multiple instances
- ◆ **Patterns;** the researcher establishes patterns and looks for a correspondence between two or more categories.
- ◆ **Naturalistic generalizations:** these generalizations, developed by the researcher, enable people learn from the case for themselves (http://www.personal.psu.edu/users/s/b/sbf116/3_q1-mth.htm)

Responses on observation sheet were interpreted according to the profile of implementation, profile of capacity to innovate and profile of outside support. Documents collected were thoroughly scrutinized and studied for relevancy.

3.6. The proposed model for research

The framework of research based around the theoretical model described in Rogan and Grayson (2001) was used to guide the research question. Hence, the constructs investigated was:

- ◆ The extent to which implementation of C2005 is occurring in classrooms. The profile of implementation was used as a basis.

3.7. Concluding remarks

No single source has a complete advantage over the others; rather, they might be complimentary and could be used in tandem. In this chapter a variety of sources for collecting information were used. The study collected few documents to add to the database. The validity of the documents was carefully reviewed to avoid incorrect data evidence gathered from other sources. One of the most important uses of documents was to corroborate evidence gathered from other sources. In the next chapters, an analysis of the data collected will be discussed.

CHAPTER 4

ANALYSIS OF SCHOOL A

4.1. Introduction

The following chapter looks at the analyses of school A. The analysis was based on the following activities carried at school:

- An interview with the principal
- An interview with one science teacher
- Two focus groups with learners and
- Observation of two lessons captured in the videotape.

4.2 Factors that influence the implementation of C2005

4.2.1 The school context

Situated in the rural area in the center of the former KwaNdebele homeland (Mpumalanga Province) lies school A with a unique name. It is because in the rural areas most school names were derived from the king's or local village's name. The principal expressed his view during interview about the school as follows:

P: We are told it emanated from the word, the name of Joseph ... the father to Jesus, it's what we were told, yes. As the origin of the name ... yes ...

R: And how old has the school been running?

P: The school has been running, I think since 1981.

R: 1981?

P: Yes.

Some small-scale farming land surrounded the school. The school looked isolated from villages as no houses were constructed around the school. At the gate, a vendor with walkers was seen. Most of the people living around the school were reported to be working in Pretoria. A deeper look into the school structure showed the school having various centers that included laboratory, library, and computer laboratory, workshop centers and typing room. All classes observed had doors and windows still in good condition. In all five classes of grade nines, tables and chairs were pushed together to accommodate group work. The school had arranged the blocks into OBE and old system learners. The noise made by grade eight and nine learners doing OBE was the reason for this arrangement. This came from the technology teacher. The ceiling in some classes had holes. In most classes, the floor was without tiles. The school had electricity at center but nothing in some classes.

In the library some old books (filled with dust) and new OBE materials were displayed. The librarian role was rotated amongst teachers. In the science laboratory, dust was observed all over the tables and shelves. In the cupboards some chemicals were fuming

and spilling out of their bottles. Some test tubes and beakers, which were used, were still dirty but displayed in the cupboards. The laboratory in general had all basic equipments and chemicals that a school could use for performing all science experiments for grade eight up to twelve. A visit in the computer center revealed six computers, which were used mostly by science and math teachers. The principal narrated a sad scenario about the computer lab. The following extract gives his story better:

R: Vandalism, theft and violence at your school, is that a problem?

P: That is a very serious problem. I must be... I must say this that eeh ... you have touched one issue that has taken us several steps backwards in the sense that we have had a fully-fledged computer lab eeh... with about 36 computers. Now this computer lab was wiped off in one single day on the 9th of ... no, no, no ... that was on the 8 May eeh ... 2001 where all those computers were stolen on one day. And I must say that that was a great loss not only to the school but to the community, to the students, to the parents in the sense that we have connected this computer lab with eeh ... UNISA to an extend where UNISA was saying to us it is ready to maintain the lab provided we are going to make use of it to the benefit of the community.

We have had teachers enrolling eeh ... quite a number of professionals even in the area including all our students, they were taking courses in the computer lab, now what has happened on the 8 May, last year, when they broke into the lab and stole

all the staff, there were teachers and learners ...and some of the community members, who have enrolled with UNISA and they were to be given a certificate by UNISA. They had to ... you know ... they were doing these courses through UNISA but at our institution. Now, they had to find themselves having a burden to continue settling the fees with UNISA whilst the courses no longer continue because we have ... we had a tutor who was granted to the school by UNISA to assist the community members here. But without the hardware the computers, the whole project had to come to a standstill.

However, all teachers were still using computers that remained for their administration work. The school surrounding was clean because the whole schoolyard was fenced with gates that remained locked during learning periods.

In the staff room, each teacher had his/her table, chair and cupboard in which they could keep their portfolios. Toilet facilities were shared between staff and learners. The school enjoyed clean, running tap water, which was also used for watering school garden. Moving closer to the secretary's room the researcher recorded a brand new photocopier, a fax machine, a scanner and computer. The burglar doors secured these items with the keys held by the secretary. In the principal's office a personal computer was also seen. Remarking about the new photocopier the principal had this to say:

But when it comes to learner material to this day I must be honest Mpumalanga Department of Education is doing its almost in terms of service delivery. We've

just received a brand new photocopy which is now grouped for clusters and in terms of material they are delivering and it's up to us and these learners now to prove of what material are we made of.

4.2.2 Classroom interaction

According to the timetable the researcher was given, the classes to be observed were busy with lessons human system during the week of 12-16 August 2002. The work covered in five classes over a period of one week was observed in detail. Two of the lessons were captured on videotape. In particular, the following content was covered during this period.

- The heart and its parts (grade 8 science)
- Blood circulation (grade 9 science)
- Respiratory system (grade 9 science) and class work, learner presentation and corrections.
- Movements and the body parts (grade 8)

Teachers reported that they found OBE to be very interesting and freeing them from many preparations. The natural science teacher remarked with joy that most of the work was done by learners. Group work was mentioned as the sole method used during their classroom presentation. Asking further about group usage, the following came from the teacher: -

R: So, in terms of your own view, you think groups ... if you might use it in your teaching they do help?

T: Eeh... it helps some of them but not all ... because other still rely on someone whom they know he can answer that. So when you have to distribute the ... in an assessment of the group eeh... other get eeh ... the marks that they don't deserve. So is then that we ... I normally take eeh... individual marks in that group or test one group for that period.

The learners were arranged in groups and the teacher felt that group arrangement promoted learning but in the above response he indicated that groups were destroying other members of the group. Learners who could not do their work depended on others. The teacher was skeptical that some got marks that they did not deserve. When asked further about the group system, he said the following: -

R: Let's compare the groups and previous way of sitting of learners. Do you think the one that make learners to learn more is the one of sitting, facing the teacher or maybe the group themselves makes some difference in terms of learning?

T: It depends on the task that you give them because if you give them a group work you must know what you are going to encounter at the end. But since we've got a variation of eeh ... strategies of eeh ... eeh ... class management. So you have to... it depends on the task, you can... they can

face in front in eeh ... of the in front to look at the teacher whilst you are presenting something especially for something that is new.

However, as he was presenting a new lesson, learners were still seating in groups. It appeared that the teacher took the group arrangement as a normal sitting without any purpose.

To summarize the entire teaching was no different from the old way of teaching. The teacher delivered pure content with questions posed; answers given and too much writing on the board. The policy documents called on specific outcome and assessment criteria to be followed, none of them was seen in the presentation.

4.2.3 Science practical work

Practical work was not done in all lessons observed. The teacher was engaged in biology part of the natural science. A demonstration was done showing how the diaphragm worked. This demonstration came accidentally in the lesson because the teacher stopped teaching and rushed to the staff room to collect the model. On coming back, and after demonstration, he gave it to the learners to try the process of inhalation and exhalation. One learner blew into the balloon shunning the instruction of the teacher of pulling the bottom part of the model.

On interacting with the teacher about the importance of practical work in science, the teacher seemed to confuse practical experience and practical work. The concept practical work refers to experiments in science. The practical experience was what the teacher emphasized in his teaching. When learners saw the importance of lessons such as those that were based on diseases (HIV/AIDS) on the media that was what the teacher saw as practical work. The same confusion was also found in learners when asked whether they did practical work or not. One learner said that they were doing a lot of practical work but failed to name one. She referred to writing and drawing on the board by the teacher as doing practical work.

Looking into all specific outcomes (SO) practical work feature prominently but in this school nothing was done about it. Talking and writing on the board instead of doing contradict the spirit of OBE. Learners through talking only cannot experience the natural science. “Experimental work is a defining characteristic of science and should feature prominently in science Learning Programmes.” This is according to the policy document (DOE, 1997a, p.5), which put emphasis on practical work and the reduction of an overload of content.

4.2.4 Science and society

The importance of relating science and the societal needs and wants was especially in the lesson about the diseases that are affecting human lives. Although learners indicated that they were not involved in any project in their communities, some awareness was seen

developing in their minds on issues relating to HIV/AIDS. In grade 8 class, learners did not get a chance to relate what they learned in class with their day to day experiences. They kept on drawing the structure of the heart but never thought of bringing a heart or model of a heart into the class.

The investigative nature of science should be mirrored in education (DOE, 1997). Learners should be active participants in the learning process in order to build meaningful understanding of concepts that they can apply in their lives. Without relating the science to the societal needs, it will be impossible to realize the impact of science in our lives.

4.2.5 Assessment

The school subject policy called for a minimum of three class work and homework per 8-day cycle. Although this policy referred to grade 10 – 12, for grades 8 and 9 the same requirement was expected from science teachers. In grade 8 class assessments was carried out when learners were answering questions from the textbooks. This included drawing in the class workbooks. Homework was given extensively to learners for the entire week. Learners during interviews also confirmed that the school was giving them lot of work. However, the school seemed to be lacking on other forms of assessment like projects, translation tasks and investigations. There was great emphasis on tests and examination. Little was done on other forms of assessment like self, peer and group assessment.

4.2.6 Capacity to innovate

4.2.6.1 School Ethos and Management

First impressions last longer and for this school that was also true for the researcher. At the gate learners who were late were locked outside. Some of them were seen returning home because of closed gates. This was a sign of strict discipline. Teachers signed in the time register (Z8) which indicate their presence for duty. The principal was seen holding a stick but never seen punishing any learner. The school started at assembly and after announcement learners walked to their classes.

On the first day of arrival the head teacher (sciences) introduced the researcher at assembly at 7H30 and informed them that he was to stay for the entire week but will only be visiting natural science grade 9 classes. Other teachers were seen standing at the back of the learners and the entire week the principal never appeared at assembly. The school had a timetable that directs every teacher to the class. The principal when asked if the school had a timetable, his comment was best expressed as follows: -

Attendance timetable ... definitely, the timetable has been drafted by the timetable committee. Teachers were requested to make inputs, changes, where there were to be effected as per the request of teachers were effected and to this days, eeh ... we definitely don't have a problem, in terms of the period to be

attended, etc. And where a teacher might need something extra... for a teacher who has ... you know... we have this arrangement that if a teacher is absent obviously the teacher will request a day before to say there is this commitment and we make the periods of that teacher available for any teacher who is free to utilize that time. So that is why most of the time, I think you spend most of the time here this week you have seen how the order is in terms of ... you know control... you can hardly detect that there is a teacher who is absent because those teachers will come and assist.

The school used an eight-day cycle for its routine. The school had a policy document, which included vision, mission, departmental goals and policies on issues such as admission, school fees, the curriculum and other routine. The school had a strong school management team (SMT) that supervised the work and records of the school very effectively. In his remarks, the principal praised the duty done by the SMT. This is what he said: -

Definitely, we have a well coordinated committee ...committees at our school headed by head of departments, now these committees for what ever problems that they have, they meet on regular basis and sort out anything that may come up as a... you know problems or huddle that needs to be crossed and regularly reports are forwarded to the office.

In summary, the ethos and management of the school, and the way it supported the

implementation of C2005 was applauded. When asked if the C2005 were to be made voluntary and whether he will opt for it or not, the principal indicated the following position: -

At this stage, I think if that choice could be made it would be a bit detrimental because you know the students that we have in bulk within the system are familiar now with this OBE. Now if you are to make a sudden turn to say you have to change to the old system it would be very detrimental for the country, the economy and for the resources that were used in implementing this curriculum 2005. So we would obviously be taken aback and very sad if it could be changed. So hence the feeling to say all that it needs it has a lot of work, a lot of paper material that you have to utilize. We are happy the machine is here that if all that goes with OBE could be supplied. Every body will be comfortable. You see with OBE what makes people to have some ill feelings is when they don't have resources. You can't definitely succeed in pushing OBE. Because there is a lot projects that you must give to students.

A lot of paperwork in the process. Now you need those papers. You need the machine to duplicate that. It's a lot of tasks because it involves ... more work is done by the child and more recording and facilitating is done by the educator. Now without resources OBE obviously is a non-starter. Now ... I am looking at the rural place like these where resources are so scarce that you can understand why people are frustrated not that OBE is difficult but means of vehicles to drive

this OBE is not there. I must say that with the limited resources that we have at least we are managing thou ... now you wonder how will others without these minimal resources cope because it has a lot of paper work. The previous one compared to this one, you didn't need much of this, you see, because it would be tests, class work, you know on occasional basis.

4.2.6.2 Teacher factor

The teachers were qualified to teach natural science being in possession of teaching diplomas. However, the nature of natural science learning area with its emphasis on four themes namely, life and living (biology), matter and material (chemistry), energy and change (physics) and earth and beyond (geography) put pressure on the teachers because they were trained in general sciences. Earth science was new for the teachers. The two teachers had been teaching general science for more than three years. The grade nine teachers wished to study further in further education and training band (FET).

The teachers were showing a strong desire to learn, both in professional and academic circles. This is a positive move towards life-long learning required by the nation and international market. They invited the researcher to present a small workshop on the implementation of C2005 in general. Learners regarded teachers at this school as source of security, information and knowledge.

Teacher moral at this school was good. They cooperated in many aspects. During that

week learners in grade nine had a problem concerning additional language, which they said it was not compulsory in OBE and they wanted to drop it. The entire teaching force (all 8 learning area teachers) converged into that class to address the learners and showed them how important the additional languages was in the South African context. This was a positive move towards addressing learners' problem. This spirit of cooperation was seen even after some had attended workshop, they came back and shared their ideas. In the words of the principal applauding the working together among the teachers, he said: -

... Because you know at times you get very excellent view from our own educators. So that interaction in the process is helping a greater deal and whatever policy that we develop it becomes easy to manage it and to stick to it because we developed it jointly.

Supported by one teacher, this is what he said: -

... Because OBE is new. You take almost one week or two weeks per year. So that sometimes gives a problem because there are new things that they come that we never understood before. But when you keep on reminding - because OBE needs some cooperation, eeh ... cooperative planning with other teachers. That's where we are able to share ideas timeously, ... what have you discovered about this and that. That's where it's becomes a little bit easier to adapt to that situation of OBE.

This collaboration occurred in all the learning areas. Teachers went to the extent of not closing during winter holidays so that they could help learners to pass their examinations. The general feeling among the teachers was that INSET was not effective from the side of the department of education. Some indicated that they never had a visit from the curriculum implementers. They saw them entering the office but ended talking to the principal without coming to them for assistance. The science teacher had this to say when asked about the visit from the district curriculum implementers: -

They call upon the HOD's to give a feedback of what have been done by the teachers. As such, because if we go one by one to the inspectors I think it becomes the waste of time. In Natural Science ... is the first time that we have the CI.

The teacher confused the CI with inspectors. The curriculum implementer (CI) in this response was the researcher. The curriculum implementers in this area had never visited the school. Because of this lack of visits, teachers were experiencing problems in the implementation. The principal's response on the visit was somehow different from the teachers' opinion. He indicated that anytime they needed the curriculum implementers, he would just call them and get the assistance immediately.

In general, the school was receiving support in their efforts to implement C2005 effectively. The teachers' dedication and motivation appeared to be strong because they were attending their classes and some were seen marking and recording learners' marks.

Attitudes towards the implementation of C2005 were somehow mixed. They had struggled with the implementation but felt that the OBE system was the only way for changing the country's education problems. In the words of the teacher when asked if he would leave the curriculum 2005 if it was made optional, he responded in the following manner: -

I will still implement it. Why? It's because is the thing which I have already started with it. I cannot go back.

Going back was referring to the old system. However, the observed manner of teaching was still loaded with the old system but painted with the new term of the new system. They saw C2005 as making their work easier.

In summary, the school had the capacity to innovate in terms of the capacity of the teachers. The teachers' potential looked strong and encouraging toward the implementation of C2005.

4.2.6.3 Learner factor

In general terms one could say that learners in this school were motivated, disciplined and dedicated towards their schoolwork. Learners indicated that they had a lot of work at school but were able to cope with it. They responded and obeyed school rules especially when the bell rang for change of periods. They felt bad when locked outside the gates

because they indicated that they missed lessons.

Language proficiency was a problem among the learners. The teacher had this remark about the language proficiency at his school: -

When they are speaking, they speak OK. When it comes to writing that's where you find this problem of not constructing the correct sentences in their books.

Other language supported English so that they could understand during teaching and learning. The school used Sotho and Zulu to clarify English concepts for understanding purposes. Learners attended school on regular basis and absenteeism was not a major problem. They reported if unable to come to school. Late coming rather was eminent as some of them had to walk up to 10 kilometers to school. Although some of the learners stayed without their parents, they showed commitment of coming to school. Remarking about what made learners to come to school regularly, the teachers said: -

So my learners ... they normally eeh ... come regularly because they got this motivation, without motivation they can dodge classes. They can be absent from school just like that but if got motivation there is no problem with that.

It was impossible for the learners not to carry other duties at home. Staying alone forced them to cook, fetch water, clean and even wash clothes for their younger and older parents. However, they indicated that schoolwork was done effectively. School served as

the only motivational force for them to continue attending school and doing schoolwork. At home they used any room for studying. Their home environment had no library where they could go and read. Some reported not to be having their own materials to use at home for writing and reading. Home environment differed drastically with school environment although both had to supplement each other for lifelong learning notion to be sustained.

Some learners opted to remain at school after normal teaching time to read and complete their homework. The principal reported that for grade 10 to 12 it was compulsory for them to remain and do afternoon activities.

Most of the learners did not get enough food at home and the school did not have a feeding scheme. Those who could afford bought food at the vendors alongside the gate.

The school was a safe place for learners. One learner indicated that she could visit any corner of the school without fear. However, the holes in the fence were threats to some of the learners.

In summary, the learners showed eagerness for learning. Asked why they liked school, most answered that the school was providing them with learning opportunity and challenges to continue doing good. They obeyed the school rules and carried out all work required by the teachers. Even though, language was a problem they were striving to do good in improving their language. They participated in debates where their language

proficiency was improved. The pace at which they are learning however was disturbing because their level after their learning experience (grade 12) would be that of grade 9 learners.

4.2.6.4 Physical resources

As indicated earlier on, there was no doubt that school facilities were of good condition. Although there were some burglaries over the past years, the school had eight computers and other machine, which could support learning. Classrooms were enough and other centers like library; laboratory, typing centers and workshop made the school to be a center of excellent for learning. There was a staff room, principal and HOD's offices together with secretary office for administration. In all classes, furniture and tables were enough for all learners. Few books seen in the library helped teachers to inculcate a spirit of reading among learners. The few types of equipments in the laboratory could be utilized effectively in the implementation of C2005. Enough textbooks supplied by department and other resources made the school better than other schools within the same locality.

Running water and toilet facilities put the school at an advantage especially that the school was in the deep rural area.

The security system installed and the fence protected the school better than before. Even if the school suffered a great loss of computers a year ago, the strong doors installed were

assuring that the equipments were safe.

In short, the school was far better than other schools situated in the same circuit. The school had adequate resources implementing C2005.

4.2.7 Support from outside sources

4.2.7.1 Provision of resources

The department had been mentioned as the sole supporter of the school. The school attempted many times to get donations but failed. The principal indicated that he had even failed to secure assistance of a signpost that indicated the name of the school alongside the road. Because of this failure, the school decided not to trouble any person for donations. The little resource the school had they were coping with it. There was a supply of photocopier machines, textbooks and some printed material for use by learners. The school needed supplies for science equipment and more books in the library.

The computer center, which was serving the community, needed to be revived by donating more computers so that the connection with UNISA could start again. This was the main vision of the principal. There seemed to be enough furniture and chairs for the learners.

Workshops were conducted for science teachers. The department and MSSSI provided these workshops during holidays. The workshops as they indicated lasted for a week and others were done in the afternoons. Teachers complained that the afternoon workshops were tiresome because they had to attend whilst thinking of the transport (public) back home, as they had no alternative transport. They complained of the lack of clear understanding on the side of workshop providers

Lack of clear planning and the use of planning format from service providers side were linked to no centralized planning for the school and no syllabus followed. School-based training was not seen but they hoped to introduce it as the only platform for personal development.

4.2.7.2 Direct support to learners

Learners at this school were not supported at all. The school had no extra classes and no feeding scheme for them. Many of them stayed alone at home. They seemed to be supporting their homes in many in-house activities, which included looking after their younger siblings. The school did not have bursary or any other agent that supported them on financial needs. However, the principal indicated that some of the learners were exempted from paying school fees. In summary, there seemed to be no support from any outside agency for learners.

4.2.7.3 Change forces, accountability and monitoring

The school seemed to be in control of its own changes and some developments. The initiative of the principal to install the computer center came from the school's own initiative. The teachers regarded him as a strong pioneer especially on matters relating to the working of teachers under free and fair conditions. The implementation of curriculum 2005 was fully supported at school and the school invited other people to boost the new system and its improvements. Teachers in general had the desire to implement C2005 and only if they were given strong support from outside they could take the implementation higher than it was. They all had the feeling that C2005 was the only means of bringing change in the lives of the young ones. Complaints of not being trained and supported continuously appeared ineffective as they were making means of meeting regularly to assist one another.

The introduction of C2005 from top to teachers on the ground seemed to be disturbing especially that it was fast and had many aspects that were coming at a faster rate. They were required by policy to use five different forms of assessment. These included five assignments, three investigations, four tests and one examination, three translation tasks and presentation with performances. These tasks needed to be recorded in the learners' portfolios. Apart from recording they needed to transform raw marks into rating scale – a task teachers hate. These entire top-down directives made teachers to feel stressed but still accepted them as important for the success of C2005.

Other directives from policy makers were that schools should complete all specific outcomes in a year in a learning area. In natural science nine specific outcomes were to be completed but the pace at which the school was operating not even three of the specific outcome would be completed by the end of the year. In fact the school had purposely ignored this directive and followed a textbook for teaching. In short the school had taken its own pace for implementing the C2005.

School monitoring by the Department had not been effective for teachers. The curriculum implementers were reported to be coming only to the principal's office for seeking information about the teachers' work. It would appear that the monitoring of progress in the implementation of C2005 was weak and sporadic. The school had no monitoring plan and the curriculum implementers came to school unexpected. A developmental plan for the school appeared to be missing.

As a researcher, there were no obstacle except the absence and reluctance of one teacher to be interviewed. The school had a warm welcome for the researcher and they asked him to explain the planning of activities, which was done.

4.3 Conclusion

Has implementation happened in this school? Answering this question is difficult but not impossible. Continuing gathering information and looking at the second school will give a clue towards answering the question. It seems that although there is an eagerness to

implement C2005 the old way of teaching prevailed due to a lack of understanding concepts such as practical work and group work.

In the next chapter an analysis of the school B will be done and a cross comparison done for the implementation of C2005.

CHAPTER 5

ANALYSIS OF SCHOOL B

5.1 Introduction

The following chapter looked at the analyses of school B. The analysis was based on the following activities carried at school:

- An interview with the principal
- An interview with two science teachers
- Two focus group with learners and
- Observation of two lessons captured in the videotape.

5.2 Factors that influence the implementation of C2005

5.2.1 The school context

The school is situated in the vicinity next to the main road of Pretoria and western Mpumalanga. The school was named after the local king. Officially the school had not been opened but it started operating in September 2001. Staff members composed of 25 permanent teachers and 4 volunteers. The school accommodated grade 8 and 9 learners making an enrolment of about 1050. The school was still new with buildings for

laboratories, library and good administration block. However, these centers were still empty and used as ordinary classes for learning. The administration block had offices for the principal, deputy principal and secretary. Within the block stood the staff room with only a few tables and chairs for teachers but no cupboards or shelves in which portfolios could be kept. Toilets for teachers and learners were separated. Clean, running water was used for toilets and some taps outside for learners.

The school had no electricity but wiring had been done to all classes. In classes desks were pushed together to accommodate group work. This arrangement was reported to be a permanent arrangement because it was reducing chaos. The ceiling was still in good condition and the entire school floor had tiles. Bulletin boards at the back of each class were seen but empty in terms of picture displays. The school had a fence with a gate for controlling outsiders to enter. The schoolyard was without trees and no grass or flowers around. There was no sign of a playground even for soccer playing.

5.2.2 Classroom interaction

According to the timetable the researcher was given, the classes observed were busy with pressure and HIV/AIDS topics during the week of 19-23 August 2002. The work covered in five classes over a period of one week was observed in detail. Two of the lessons were captured live in the videotape. In particular, the following content was covered during period.

- The Virus (grade 8)
- HIV/AIDS infections (grade 8 sciences)
- Diseases (grade 8 sciences)
- Air pressure (grade 9 science)
- Altitude and class work on pressure (grade 9)

Teachers reported that OBE was new and almost half of the staff members had not received training. Working with learners in groups was the most interesting encounter for them. The natural science teacher enjoyed the role played by learners especially during presentations. Learners would engage in debates, which were making them to be critical thinkers. Group work was mentioned as the sole method used during their classroom activities. Remarking on groups when asked whether they were using them and how they were arranged, the teacher said: -

Definitely, I use them. ... we decided here at school that now we will use the same group. Although ... we knew that you can form them at randomly, the way you want them to form them... but the group ... they way we packed them; we decided ukuthi ... no because of ukuhlangahlangana (mixed up) let them, let us use the same group at time so we used same groups the way we packed them at the beginning of the year.

The following indicated the response of the teacher when asked about the lesson format.

She said: -

I would say, I do... but I don't have it with me because I was trying to catch-up for these days, so I left it at home.

In both classes grade 8 and 9, the teacher was not using the format of lesson plan for her teaching. The textbook was directing her teaching hence she said catching up was taking place. The other classes seemed to have completed more pages than her class. Her aim was to bring them up to par in terms of the amount of work required by the textbook.

5.2.3 Science practical work

Practical work was not done in all lessons observed. The school lacked apparatus and the laboratory as indicated by the teacher was actually used as a class for the learners. There was a clear understanding in the minds of teachers about what the practical work implies although they were not conducting experiments. The teacher in grade 8 taught biology because she has been teaching it for many years. The teacher in grade nine was handling physical science because she had been teaching it for many years. As mentioned in chapter four, a skewed learning culture that prevailed in the past where teachers were ignoring certain topics and emphasizing some sections, which they were most comfortable with was also seen in this school. The new teaching style was somehow adopted but the actual content of the lesson remained old.

5.2.4 Science and society

During the lesson of HIV/AIDS, much was said about the infection processes. The lesson touched lives of learners directly. One could agree that the lesson somehow was related to society especially on health awareness. Learners however, indicated that they were not involved in any community project, which was related to their learning area. As quoted earlier in policy document (1997), the investigative nature of science should be mirrored in education. Learners should be active participants in the learning process in order to build meaningful understanding of concepts, which they can apply in their lives. Without relating the science to the societal needs, it will be impossible to realize the impact of science in our lives.

5.2.5 Assessment

The school had not drawn major policies that affect assessment. For that matter, any type of assessment was dependent on the teacher's discretion. Nevertheless, from the classroom observation, learners were engaged in presentation and marks were awarded according to groups. Class work was observed as another type of assessment. In their focus group learners indicated that they had written a test sometime in March but up to August they had not yet received feedback from the teacher. The teacher responded by agreeing that she was slow in marking because of the big number of learners. As indicated before, this school also seemed to be lacking on other forms of assessment like projects, translation tasks and investigations. There was great emphasis on tests and

examination. Little was done on other forms of assessment like self, peer and group assessment.

5.2.6 Capacity to innovate

5.2.6.1 School Ethos and Management

It is difficult for a leader to carry more duties but not being paid accordingly. The scenario of this school where the principal was earning the same as entire staff was discouraging the management of the school. All teachers were however seen coming earlier to school but the enthusiasm was somehow minimal. Learners at this school came late and nothing in the form of punishment was done to them. The principal even acceded to the problem of discipline and gave the following statement about them when asked if they were motivated and dedicated to schoolwork: -

Well, to start, to a certain extent yes, but we usually have some problems with other learners' behaviors. ... Eeh ... absenteeism, fighting and of course, I think, most of these problems are caused by learners who stay alone at home. You know, most of the parents around here are working far away from home; they only come home month ends or weekends.

Teachers however, arrived early and showed their presence by signing a time register (Z8). At assembly teachers on duty attended and gave necessary announcements. The

school had a timetable that directed daily activities. A remark made by the principal about the timetable when asked if they followed it strictly, she said: -

Well, we follow the timetable but here and there you find that there are some exchanges of the periods for maybe the purpose of writing some tests.

The school used an eight-day cycle for their teaching routine. Some policies were said to be present but the researcher failed to get some of them because the principal indicated that all policies were still in draft form and some were still developed. Even the mission statement was under construction. There was however, some routine timetables displayed on the notice board in the staff room especially for conducting and supervising the assembly. The school had a code of conduct for learners. The principal responded in the following manner when asked if learners were following the code of conduct: -

No. As I've said, we usually have some problems with other learners who violate the code of conduct.

Commenting about school development plans, the principal said the plan was there and they were following it. No further details could be found on the plan, as it could not be given to the researcher. Some teachers were not even aware of the plan.

The school had just established a school management team (SMT) that intended to supervise the work and records of the teachers. A policy on how the SMT was going to

operate was still under construction. Remarking about the power of the SMT the principal said the following:-

Yes, we have SMT but in fact all of us here are still acting, we are all acting, the principal is acting, the deputy is acting and all the HOD's are acting.

Acting as mentioned in this school context represented lack of authority. Therefore, the school could be classified as not having an SMT at all. The school had managed to establish a school governing body (SGB). The principal and the teachers also questioned the role of SGB. The SGB members appeared weak in the eyes of the principal because she complained about their functioning when asked if they were helping the school or not, she said: -

Eeh ... is helping us but I always have a problem of our SGB. They are sometimes afraid to take decisions because if sometimes you have to do something here at school and then you refer the matter to the SGB, they always have - want to go and get permission first from the parent as a whole ... the parent body as a whole. ...Yes, the parent give them the power to give the decision, but they always say as far as they know the people of M... here they will always have some blames that why did you do this. So they always prefer to go back to them before they can do and this thing ... it delays the progress of the school because if maybe you want to buy something here and now, if you have to wait for the parents meeting it delays the progress of the school.

In the eyes of the teacher component, however the SGB had many faces. Some say they helped the school especially on allowing the fence to be erected whilst it was not budgeted together with the construction of the whole building. Another teacher saw the role of SGB as follows: -

The school governing body, no ... we are getting ... we are not getting much from them, because the problem is the school is still new. It has been erected last year July 2001. So they are still busy with ... they discuss things of cleaning, building, furniture they haven't dwell much on the management and discipline of teachers and learners.

The SGB seemed to lack some autonomy and the power to apply its own policies. The school community actually appeared to be the governing body of the school. The elected members were acting as messengers of the community. Lack of enough funds was also a problem for this school to function. No tentative fundraising committee was established. The only fundraising activity the school did was to allow learners to wear anything and pay a fine of 50 cents.

In summary, the ethos and management of the school seemed weak and there was no strong support for the implementation of C2005. When asked if the C2005 were to be made voluntary and whether she will opt for it or not, the principal indicated the following position: -

No, I personally would not implement it. Maybe, I don't know, maybe is because I never attended a workshop, I don't have a picture, a clear picture of how it works but up to now I wouldn't have it. ...Yes, I always prefer the old system.

Implementation of C2005 at this school seemed to have come before other things could have been done. The teacher who indicated the following comment when asked about its status at school expressed the following sentiments: -

I may say, we even said, we even said to ourselves we will start implementing it next year. Why? Because I said sixty percent of the staff, they can't tell what is a learning area. They don't know the terms. We don't have a grid. They don't know what is it that needs to be included in the grid. So we said maybe if we can get somebody to come and help us then next year we are really prepared to implement it fully.

It is somehow confusing to find the school management not in support of the policies of C2005 and yet implementing the system.

5.2.6.2 Teacher factor

The teachers were qualified to teach natural science being. As indicated previously, they

lacked competency in other themes of natural science. The grade 8 teacher was teaching much of biology because of her experience in the subject for twelve years. The physical science teacher was also engaged in the high conceptual discussion about pressure with grade nines because she has been teaching this subject for almost fourteen years. Earth science was new for the teachers and was ignored.

The entire staff was showing a strong desire to learn both in professional and academic circles. Most of them were improving other field rather than pursue their own learning area at higher level. They were engaged in management and human resource courses. In general, the entire staff was moving with times by developing their knowledge, a good spirit for life-long learning among professionals.

Teacher morale at this school was somehow minimal. Giving comments about their morale and motivation the principal said the following: -

Eeh... the teachers themselves they are well motivated but they are only sometimes discouraged by the fact that ... lack of material in classes, no books, no ...

Asked whether they were dedicated to their work, the principal continued to say the following without hesitation: -

Not exactly, but I think they are trying their level best. I just wanted to say because of the fact that ... to ... for one to be motivated you must have ... I think enough material that you can use and the children must also be cooperative. So, in some cases some children are not so cooperative.

Attendance as mentioned by the principal was 'rife' among teachers but not during month ends. Teachers had attended some INSET on OBE and C2005 implementation. The principal reported that she in person had never attended any OBE workshop. Commenting about the period INSET lasted she said it was not enough because most of the teachers lacked some understanding on basic requirements to implement C2005. The general feeling among the teachers was that INSET was not effective from the side of the department of education.

The curriculum implementers in this area had never visited the school. Because of this teachers were experiencing problems in the implementation. In general, the school was not receiving support in their efforts to implement C2005 effectively.

Attitudes towards the implementation of C2005 were somehow mixed between the principal and the teachers. The science teachers felt strong about the implementation although one of them recommended that it would be fully implemented the following year. One commented as follows when asked about C2005, and said

... the old system deprived learners eeh ... for them to say something. But now

we have seen through curriculum 2005 that ... now you can get information from learners. And is not important, is not necessary to go deep in some of the topics because learners have some information. Giving information on top of information is boring. That is why in the old system they felt asleep and so on and learners were not that actively involved but getting them involved, I see its very interesting.

With great belief into the C2005 implementation, the second science teachers said the following on the same question relating to it as a voluntary entity: -

It's more practical. It makes learners to acquire the different skills they would need in future, and it makes them to go out there and see the outer world than only the school because that is what we got when we were at school.

In summary, the school had little capacity to innovate. The teachers' potential looked weaker toward the implementation of C2005.

5.2.6.3 Learner factor

In general terms one could say that learners in this school were not motivated towards their schoolwork. They came to school irregularly. Some stayed away from school without valid reasons. When asked why they were not coming to school regularly, some of them just kept quiet even to their principal. A shocking remark was even mentioned by

the principal when she said they even violated the code of conduct and school rules. Fighting was also reported as happening within the school premises. Playing truant without punishment was also taking place.

Language proficiency was a problem among the learners. They were reported as having bad spelling and not having good communication skills. In the interviews, they were even biting their tongue when they attempted to answer their questions. They resorted to mother tongue for answering the questions.

As indicated in school A, it was impossible for the learners not to carry other duties at home. Staying alone forced them to cook, fetch water, clean and even wash clothes for their younger siblings and grandparents. However, they indicated that schoolwork was done effectively. School served as the only motivational force learners to continue attending. Their home environment had no library where they can go and read. None of the learners opted to remain at school after normal teaching time to read and complete their homework.

Because of fighting reported by the principal, the school was seen as unsafe by some learners. Learners reported that there were some bullfighters within the school premises.

In summary, the learners showed some little eagerness for learning.

5.2.6.4 Physical resources

As indicated earlier on, the school had no proper facilities for supporting learning. The laboratory and the library are seen as necessities for any learning to take place. The school had more learners than the building could accommodate. In all classes, furniture was not enough for all learners. Less supply of textbooks by department and other resources disadvantaged learners.

Running water and toilet facilities put the school at an advantage especially that the school was in the deep rural area. There was no security system installed.

In short, the school was lacking in physical resources compared to other schools within the same circuit. They were also inadequate for even supporting the implementation of C2005.

5.2.7 Support from outside sources

5.2.7.1 Provision of resources

The department had been mentioned as the sole supporter of the school. The school had not yet embarked on serious fundraising campaign. Teachers had tried to approach other agencies for support. One teacher mentioned that ABSA bank was approached for donation and five computers were pledged to the school. The school was in dire need of

ten classes, basic apparatus for the laboratory and books for the library.

There was a need for computers, photocopier and a fax supply. Furniture that includes cupboards and chairs for the learners and teachers was also needed.

5.2.7.2 Teacher professional development

Workshops had been conducted for some teachers. Those who could not attend the OBE workshop were from the nearby school and deployed to this school. The department was mentioned as the sole INSET provider for the school. The workshop as they indicated lasted for a week and other took some few hours in the afternoons. School based INSET was lacking and little was done on sharing ideas among teachers. Staff development plans were missing and the school management team was still new without plans for development.

5.2.7.3 Direct support to learners

Learners at this school were not supported at all. The school had no extra classes and no feeding scheme for them. Many of them stayed alone at home. They were supporting their homes in many in-house activities, which included looking after their younger siblings. The school did not have a bursary system or any other agent that supported them on financial needs. In summary, the school had no support from outside agencies of any sort.

5.2.7.4 Change forces, accountability and monitoring

The school lacked some control on many aspects. The SGB and the SMT were ineffective. The principal and other senior teachers were not appointed into their post, which was making it difficult for them to discharge their function with more power. Lack of visits from the curriculum implementers was even making the school weaker in terms of gaining more power to implement changes relating to C2005. The principal lacked some knowledge on the changes that were brought by the C2005 and was seen as an obstacle in development of the school culture.

Learners at this school were not contributing positively to the development of their school especially that they were violating school code of conduct. They seemed not to be accountable to the school authority and the community. The school seem to be controlled from outside by the departmental official, the circuit manager whom the principal referred as coming regularly to school. There was a strong desire from the principal and the two science teachers that inspection for monitoring school development was needed. The following responses indicated their feelings when asked whether the department should return to school inspection or not, they said: -

Ya. School inspections are sometimes necessary. Because, teachers sometimes need a follow-up, eeh ... that old system of daily preparation, even thou we are doing daily preparation now but not as strictly as previously so I think and I wish it can be brought back. (Principal)

Yes. Because now, some of the educators tend to relax too much with this OBE. But now ... and it is why it is not fully implemented because there is no inspection but now if there is inspection, the teachers will do their work very thoroughly. (Teacher)

Ya, it should. It could be helpful. Eehmm ... at time we ... there is a tendency of relaxing. I think if inspections could come, we will always ... especially with our personal work as educators ... there will be an encouragement in that point. (Teacher).

Teachers in general had the desire to implement C2005 only if they were given strong support from outside. They all have the feeling that C2005 was the only means of bringing change in the lives of the learners.

As mentioned previously, the introduction of C2005 from top to bottom on the ground seemed disturbing especially that it was fast and had many aspects that were coming at a faster rate. Like in school A, school monitoring by the Department had not been effective for teachers. It would appear that the monitoring of progress in the implementation of C2005 was not coordinated.

The researcher could not experience any obstacles. Classes were observed and video camera was used for capturing two lessons. There was only one problem relating to the

collection of documents. The school was not ready to provide the researcher with some of their documents. The school had a warm welcome for the researcher and they asked him for assistance.

5.3 Conclusion

Within the OBE framework, there is a need to emphasize the quality of the teaching and learning processes. The critical and specific outcomes indicate that these teaching and learning processes are not only content driven, but also involve a wide range of different teaching and learning activities and processes. For example, the critical outcomes indicate that learners should be able to work in teams, think critically and creatively, make responsible decisions, develop entrepreneurial skills, communicate in different way, solve problems, and participate in their local, national and global societies. Some of the outcomes require learners to be able to make judgment, address issues, make and negotiate meaning, demonstrate respect for others and apply creative processes. This indicates that opportunity should be created for learners to learn how to do these different things. Only teachers, learners and the school community can create these opportunities. It therefore becomes imperative that the implementation of C2005 should follow a logic and systemic plan, which consider the capacity of the school and be supported fully by the outside agency.

In the next chapter the findings and the implications will be discussed further. Some recommendations will also be indicated.

CHAPTER 6

HAS IT HAPPENED IN MPUMALANGA? AN EVALUATION OF THE IMPLEMENTATION OF C2005?

6.1 Introduction

A key to successful development of school-based learning programme is a good understanding of the structure of outcomes-based curriculum framework. Equally important is a consideration of the quality of the teaching and learning process (Lotz, Tselane and Wagiet, 1998). Major aspects need to be considered within OBE and the implementation of C2005. Specific outcomes from the natural science learning area serves as important starting point to give guidance for activities development and assessment. In the past years and even now a coherent progressive policy framework has also been established which indicate full description of the major aspects relating to curriculum implementation.

Teachers are however cautioned not to be bound by prescriptive aspect, but should also be open to address learners' needs as they arise. Quality of the teaching and learning should also not be compromised in the process of curriculum implementation. This study brings the final evaluation of the two schools, which had been studied extensively. In doing so, the study indicate the evaluation of different aspect which are related to curriculum implementation. A brief look into classroom observation is indicated as the

focus of the case study.

6.2 Evaluation of implementation of C2005

6.2.1 Profile of implementation

The following summary indicates the cross comparison profile of implementation of the two schools.

FACTOR	SCHOOL A	SCHOOL B
Classroom interaction	Present content in a well-organized, correct and well-sequenced manner, based on designed lesson plan. Provide adequate notes. Use textbook effectively with questions.	Present content in a well-organized, correct and well-sequenced manner, based on designed lesson plan. Provide adequate notes. Use textbook effectively with questions.
Science practical work	Teacher uses classroom demonstrations. No practical work was carried.	Teacher uses classroom demonstrations. No practical work was carried.
Science and society	Teacher uses examples and application from everyday life to illustrate scientific	Teacher bases a lesson on a specific problem or issue faced by the local

	concepts	community. E.g. HIV/AIDS
Assessment	Written tests are given that cover the topic adequately. While most questions are recall type, some require higher order thinking. Tests are marked and returned promptly	Written tests are given that cover the topic adequately. While most questions are recall type, some require higher order thinking. Tests are marked and returned promptly

The case study indicated a profile of two schools being the same against the model presented by Rogan and Grayson (2001) in chapter two. The schools under discussion indicated that the implementation of curriculum 2005 was at level one. The interaction between learners and teachers in both schools indicated teachers taking level one with direct content-based type of teaching. None of the schools had troubled itself to conduct a single science experiment and both use demonstration that put them on level one. School A taught learners pure facts (level one) with no reference to outside life whilst school B has tried to capture an aspect that troubled the entire nation, HIV/AIDS and was rated at level two. Assessment for both schools followed old traditional testing and both schools rated level one.

6.2.2 Profile of capacity to support innovations

The following summary indicated the profile of two schools under the capacity of the school to support innovation.

FACTORS	SCHOOL A	SCHOOLB
Physical resources	Excellent buildings One or more well equipped science laboratory Library or resource center Adequate curriculum materials other than textbooks Good teaching and learning resources (e.g. computers, models) Attractive grounds Good copying facilities	Basic building-classroom and one office, but in poor condition. Toilets available Some textbook-not enough for all
Teacher factor	Teacher has the minimum qualification for position. Teacher attends school/classes regularly. Teacher is motivated and	Teacher has the minimum qualification for position. Teacher attends school/classes regularly. Teacher is motivated and

	<p>diligent. Enjoys his/her work.</p> <p>Teacher participates in professional development activities.</p> <p>Teachers have a good relationship with and treatment of learners.</p>	<p>diligent. Enjoys his/her work.</p> <p>Teacher participates in professional development activities.</p> <p>Teachers have a good relationship with and treatment of learners.</p>
Learner factor	<p>Learners are reasonably proficient in language of instruction.</p> <p>Learners attend school on a regular basis.</p> <p>Learners are well nourished.</p> <p>Learners are given adequate time away from home responsibilities to do school work</p>	<p>Learners have some proficiency in language of instruction, but several grades below grade level</p>
School ecology and management	<p>Management: Principal takes strong leadership role, is very visible during school hours</p>	<p>Management: a timetable, class list and other routine are in evidence.</p> <p>The presence of the</p>

	<p>Teachers and learners play an active role in school management</p> <p>Ecology: everyone in the school is committed to making it work</p> <p>Parents play active role in School Governing Bodies and in supporting the school in general</p>	<p>principal is felt in the school at least half the time, and staff meetings are held at times. Ecology: school functions i.e. teaching and learning occur most of the time, albeit erratically.</p> <p>School is secure and access is denied to unauthorized personnel.</p>
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The case study indicated the two schools having some differences in factors under the capacity to support the innovation. In the physical resources as a factor school A had a level four and school B a level one rating. In the teacher factor both schools rated teachers at level two. For the learner factor, school A rated its learners at level two and school B at level one. The fourth rating under school ecology and management school A showed a rating to be at level three and the school B had a rating at level one.

6.2.3 Profile of outside support

The following summary indicated the profile of support from outside agencies school A and B received. The case study had revealed the following picture about the schools.

FACTOR	SCHOOL A	SCHOOL B
Physical resources	Provision completely covers what is required to effect the intended change in three categories, or covers categories and is partly sufficient in all four categories	Provision supplements what exists but not enough to support the intended changes. Provision is in one category only.
Professional development	Example of ‘new’ practices is suggested by the policies, are presented to school based personnel, who are given an opportunity to engage in these practices in a stimulated situation. Typical mode is a series of short workshop lasting for one year.	Information on policy and expected changes are presented to school based personnel. Typical mode is short, one short workshop
Direct support to learners	Provision of basic needs, such as lessons and places to study	Provision of basic needs, such as lessons and places to study
Dominant change forces	Learning Communities	Bureaucratic.

	Developing communities that develop shared values and goals regarding educational practice and a commitment to put these into practice bring about change	Change is brought about by top down directives to bring about change
Monitoring mechanism and accountability	School-based personnel monitor own progress, but report to authorities	Inspections by authorities are undertaken

The case study revealed the two schools to be having differences under the factor for the support of outside agencies. School A had a rating of level four and school B had a rating of level one under physical resources. Regarding the design of professional development, school A indicated a rating of level two and school B on level one. Direct support for learners was rated at level one for both schools. The dominant change force for evoking changes was rated at level four for school A and level one for school B. Finally for the monitoring mechanism and accountability, school A rated level three and school B at level one.

In short, the profile of the two schools could be given as follows in terms of levels: -

Profiles	Factor	School A	School B
		Level	Level
Implementation of C2005	Classroom interaction	1	1
	Science practical	1	1
	Science and society	1	2
	Assessment	1	1
Capacity to support innovation	Physical resources	4	1
	Teacher factor	2	2
	Learner factor	2	1
	School management and ecology	3	1
Support from outside	Physical resources	4	1
	Professional development	2	1
	Direct support to learners	1	1
	Dominant change force	4	1
	Monitoring and accountability	3	1

6.2.4 Evaluation of schools

At micro-level the following points emerged:

Implementation of C2005 at micro-level was related to the management styles of the schools. The presence and role of SMT had an impact on the implementation process.

- Both schools have shown a very weak implementation of C2005.
- In both schools, there was a strong interplay between the capacity to support innovation and the support given to school by outside agencies.
- Surprisingly, in school A, the implementation of C2005 was not affected by the capacity of school to innovate. There was also no effect between implementation and the support the school received from outside.
- In school A, the implementation seemed to be affected by the capacity of school to innovate. Again, the implementation appeared to be affected by the support the school received from outside agencies.
- The successful implementation of C2005 at micro-level was therefore linked to a willingness to change, take risks and accept new responsibilities. Without changing the mindset about the implementation, results would not be observed. The schools did not realize change and new responsibilities called for by the C2005. Although the schools were positive about the OBE as a new system, the implementation process was missing or was not properly calculated.

6.2.5 Evaluation of natural science teachers

An English proverb that says ‘from frying pan into fire’ was used to analyze the implementation of C2005 at these two schools. Four teachers were observed in the classroom teaching and three agreed to be interviewed. All teachers agreed that the old system was not good for the learners and for the country. Therefore, the old system is related to frying pan. Ironically, the case study had revealed that each of these teachers had actually moved from frying pan into other platforms. The following analogy indicates how each teacher moved. The four teachers will be given numbers 1 – 4 for identification.

From frying pan into fire ...

The teacher who could not be interviewed had been teaching for almost seventeen years and had qualified in 1982 as a teacher. Although she was troubled by the old system that needed daily preparations and monthly tests, she had been put into more difficult situation. Not knowing how to prepare the learning programme and lacking the proper skills to present C2005, she found herself frustrated in grade 8 classes. Entering the OBE class not knowing how to present activities had caused her to get into the class, take a textbook, read questions and carry on corrections with learners. The position she found herself in had also caused her to sign all books one by one for almost thirty minutes. At the last minute of the period she used three minutes to look at the next set of questions and asked learners to work on them. Such a practice looked distressing and when

compared to best practice of C2005, the teacher had not even followed any of the specific outcomes. This kind of implementing C2005 had put more fear in this teacher to a level where she refused to be interviewed on her teaching practice. She was actually moving from frying pan into a fire. Otherwise she could remain in frying pan and continue with the old system of teaching and collecting books for signing after hours.

From frying pan into frying pan ...

The teacher who falls in this category taught for almost fourteen years. In her experience notes and extensive use of textbook was part of the old system. Although she indicated that C2005 was giving learners more opportunities of getting more knowledge and exposure, her teaching was contrary to this aspiration. In teaching grade nine about pressure, learners failed to provide her with answers and she referred them to her notes. Reading notes and memorizing them was a painful exercise in the past system. The same mode of teaching was still haunting her even in the C2005 era. There was no difference in what she did and the teaching she conducted at school.

The second teacher who fell in this category taught grade nine also but was presenting breathing system. He used fifty minutes talking to learners asking them questions and writing their responses on the board. In his lesson, learners would raise up their hands and only correct answers were accepted. Wrong answers were rejected and teacher reprimanded them saying they have not read notes and classwork given. As in the old system, the same approach was used which made no difference in terms of movement.

These teachers moved from the frying pan and fell again on the same pan. If they were stressed by the previous system, their experience had taught them coping strategies hence their insistence in the traditional way of teaching.

From frying pan on to the table ...

Looking at the fourth teacher, some attempts were done to allow learners to talk and relate the lesson with the current national priorities. The teacher could be related as moving from frying pan on the table. She indicated that the old system was undermining learners' previous knowledge. In her teaching, she engaged learners in free debates on HIV/AIDS and health. She was indeed exposing learners to real issues, which included safe sex practices, and allowing learners to debates among themselves on HIV/AIDS issues. She did not just listen to learners talking only but presented a full brief on new concepts.

In short, the three categories discussed above indicate the real needs of teachers in relation to C2005 implementation. Unless the teachers begin to move from the frying pan into a better place by themselves and not forced by outside pressure the implementation will remain at level one.

6.3 Summary

As indicated in earlier, the main assumption underlying this study was adapted from

Rogan and Grayson (2001) namely; there is a zone of feasible innovation. Innovation in the two schools had taken place just ahead of what the teachers' practices were before the implementing C2005. Their teaching experiences had mostly been influenced by traditional transmission instruction which was based on theory of learning that suggests that students will learn facts, concepts and understandings by absorbing the content of their teacher's explanations or by reading from a text and answering related questions. It therefore becomes imperative that any change from these practices should consider this level of teachers and be assisted to shift from it in a manageable way.

Planning of the delivery of OBE curriculum require a process where the specific outcomes are interpreted and linked with teaching strategies. This is only possible if the teachers have a thorough understanding of specific outcomes, assessment criteria and performance indicators for the different learning areas. In the area of curriculum development, teachers observed lacked the knowledge base of interpreting the broad guidelines of C2005 especially specific outcomes. These outcomes are related to teaching and learning. Again teaching, learning and assessment are closely associated. If teachers lack knowledge of specific outcomes, they will lack knowledge on how to teach and ultimately lack implementation strategies.

The teaching and learning of science involve the development of a range of process skills that may be used in everyday life, in the community and in the workplace. Science and technology have made a major impact, both positive and negative, in our world. It is therefore important that scientific content and teaching strategies be carefully selected to

promote science as human activity. If teachers lack this competency, then training should start with all these ideas before implementing the C2005.

6.4 Limitations of this study

The following are regarded as the limitations to this study:

- The visit was only done once for a school. The schools were told in advance for the visit as such teachers could prepare lessons for the researcher.
- The researcher is the employer of the Mpumalanga Department of Education and the curriculum implementer. It was not possible for him to remain anonymous. The two schools were too open and expected the researcher to provide help immediately in their implementation. The lessons and interviews responses were done to show the researcher how needy and desperate schools were in terms of C2005 implementation
- The study has only looked into one learning area and therefore it might not be an effective evaluation for the whole C2005.

6.5 Contribution made by this study

The following are regarded as contributions of this study:

- To the best knowledge of the researcher, this is the first study undertaken by a

curriculum implementer in Mpumalanga province to understand the implementation in schools

- The province needs to understand the impact of its training and this study had shared some light on the role of INSET to assist in developing teacher's understanding of C2005.
- The impact of implementation as school depends on many factors. The study had managed to highlight the factors that may inhibit or promote the implementation of C2005. These factors are seen in the model used by Rogan and Grayson, 2001
- The study had managed to highlight the point that schools in South Africa are different and they may not implement the same innovation following the same timetable.

6.6 Recommendations

It is recommended that:

- A needs analysis be done prior to training to identify priority training needs and to adopt the training programme accordingly
- Consideration be given to the possibility of offering training courses after school hours.

- Schools design a time schedule for school-based INSET and invite curriculum implementers.
- Curriculum implementers of all eight learning areas spend an entire week at school to observe the problems or successes teachers experience in implementing C2005.

6.7 Recommendations for further research

The study has only looked into an aspect of curriculum implementation but never investigated the role of beliefs in teaching and learning. It is therefore recommended that:

- The role of belief be studied in South African context together with their impact on changing teaching styles of teaching
- A study be carried to investigate why teachers use and rely on textbooks
- A study be carried to investigate the role and use of mother tongue instruction in teaching and learning.

6.8 Conclusion

This study in its small-scale nature had reviewed three important constructs related to curriculum implementation. It has attempted to bring an understanding on factors that can hinder or promote the implementation of C2005. Although one learning area namely natural science had been extensively studied, some major indicators emerged which can be used to evaluate the implementation of curriculum as a whole.

Curriculum has been introduced in the country and every teacher is talking about OBE. The immediate priority must be to get implementation process back on track. The study had made some recommendations, which could be used in the improvement of curriculum delivery. The recommendation might be applied immediately but others may be considered for the long-term measures for development.

In the final analysis and the research question this study had, the researcher can say with confidence that no - the implementation in these two schools in Mpumalanga province has not taken place.

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APPENDICES

- APPENDIX A: PROFILE OF IMPLEMENTATION
- APPENDIX B: PROFILE OF THE CAPACITY TO SUPPORT
IMPLEMENTATION
- APPENDIX C: PROFILE OF OUTSIDE SUPPORT
- APPENDIX D: INTERVIEW SCHEDULES (QUESTIONNAIRES)
- APPENDIX E: COLLECTED DOCUMENTS
- APPENDIX F: EXTRACT OF INTERVIEW RESPONSES

APPENDIX A

Table 1: Profile of Implementation conceptualized for the

Natural Science Learning area of Curriculum 2005 -

Adapted from Rogan and Grayson, 2001

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Table 1: Profile of Implementation conceptualized for the Natural Science Learning area of Curriculum 2005 - Adapted from Rogan and Grayson, 2001

<i>Level</i>	Classroom interaction	Science Practical Work	Science in Society	Assessment
1	<p>Teacher: Presents content in a well-organized, correct and well-sequenced manner, based on a designed lesson plan. Provides adequate notes. Uses textbook effectively. Engages learners with questions</p> <p>Learners: Stay attentive and engaged. Respond to and initiate questions</p>	<p>Teacher uses classroom demonstration to help develop concepts.</p> <p>Teacher uses specimens found in the local environment to illustrate lessons.</p>	<p>Teacher uses examples and applications from everyday life to illustrate scientific concepts.</p> <p>Learners ask questions about science in the context of everyday life.</p>	<p>Written tests are given that cover the topic adequately. While most questions are of recall type, some require higher order thinking. Tests are marked and returned promptly</p>
2	<p>Teacher: Textbooks are used along with other resources. Engages learners with question that encourage in- depth thinking. Learners: Use additional (to textbooks) sources of information in compiling notes. Engages in meaningful group work. On own initiative, offer a contribution to the lesson.</p>	<p>Teacher uses demonstrations to promote a limited form of inquiry. Some learners assist in planning and performing the demonstrations.</p> <p>Learners participate in closed (cookbook) practical work. Learners communicate data using graphs and tables.</p>	<p>Teacher bases a lesson (or lessons) on a specific problem or issue faced by the local community.</p> <p>Teacher assists learners to explore the explanations of scientific phenomena by different cultural groups.</p>	<p>Written tests include atleast 50% of the questions that require comprehension, application and analysis. Some of the questions are based on practical work.</p>
3	<p>Teacher: Probes learners' prior knowledge. Structures learning activities along "good practice" lines (knowledge is constructed, is relevant, and is based on problem solving techniques.) Introduces learners to the evolving nature of scientific knowledge.</p> <p>Learners: Engage in minds-on learning activities. Make own notes on the concepts learned from</p>	<p>Teacher designs practical work in such a way as to encourage learner discovery of information.</p> <p>Learners perform 'guided discovery' type of practical work in small groups, engaging in hands-on activities.</p> <p>Learners can write a scientific report, which they can justify, their conclusions in terms of the data collected.</p>	<p>Learners actively investigate the application of science and technology in their own environment, mainly by means of data gathering methods such as surveys. Example here might include an audit of energy use or career opportunities that require a scientific background.</p>	<p>Written tests include questions based on see or unseen 'guided discovery' type activities.</p> <p>Assessment is based on more than written tests. Other forms of assessment might include reports on activities undertaken; creation of charts and improvised apparatus; reports on extra reading assignments.</p>

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	doing these activities.			
4	<p>Learners: Take major responsibility for their own learning; partake in the planning and assessment of their own learning. Undertake long term and community-based investigations project.</p> <p>Teacher: Facilitates learners as they design and undertake long-term investigation and projects. Assists learners to weigh up the merits of different theories that attempt to explain the same phenomena</p>	<p>Learners design and do their own 'open' investigations.</p> <p>They reflect on the quality of design and collected data, and make improvements.</p> <p>Learners can interpret data in support of competing theories or explanations.</p>	<p>Learners actively undertake a project in their local community in which they apply science to tackle a specific need. An example might be on growing a new type of crop to increase the income of the community.</p> <p>Learners explore the long effect of community projects. For example, a project may have a short-term benefit but result in long term detrimental effects.</p>	<p>Performances on open investigations and community-based projects are included in the final assessment.</p> <p>Learners create portfolios to represent their 'best' work.</p>

APPENDIX B

Table 2 : Profile of the Capacity to Support Innovation -

Adapted from Rogan and Grayson, 2001

Table 2 : Profile of the Capacity to Support Innovation - Adapted from Rogan and Grayson, 2001

<i>Level</i>	Physical Resources	Teacher Factor	Learner Factor	School Ecology and Management
<i>1</i>	Basic building-classroom and one office, but in poor condition. Toilets available Some textbook-not enough for all	Teachers is under-qualified for position, but does have a professional qualification	Learners have some proficiency in language of instruction, but several grades below grade level	Management: a timetable, class list and other routine are in evidence. The presence of the principal is felt in the school at least half the time, and staff meetings are held at times. Ecology: school functions i.e. teaching and learning occur most of the time, albeit erratically. School is secure and access is denied to unauthorized personnel.
<i>2</i>	Adequate basic building in good condition. Suitable furniture-adequate and in good condition. Electricity in at least one room. Textbook for all. Some apparatus for science	Teacher has the minimum qualification for position. Teacher attends school/classes regularly. Teacher is motivated and diligent. Enjoys his/her work. Teacher participates in professional development activities. Teachers have a good relationship with and treatment of learners.	Learners are reasonably proficient in language of instruction. Learners attend school on a regular basis. Learners are well nourished. Learners are given adequate time away from home responsibilities to do school work	Management: Principal is present at school most of the time and is in regular contact with his/her staff. Timetable properly implemented Extramural activities are organized in such a way that they rarely interfere with scheduled classes. Teachers/learners who shirk their duties or display deviant behavior are held accountable. Ecology: responsibility for making the school function is shared by management, teachers and learners to a limited extent. A School Governing Body is in existence. School functions all the time i.e. learning and teaching always take place as scheduled.
<i>3</i>	Good buildings, with enough classrooms and a science room. Electricity in all room. Running water. Textbooks for all pupils and teachers. Sufficient science apparatus. Secure premises. Well kept grounds	Teacher is qualified for position and has a sound understanding of subject matter. Teacher is an active participant in professional development activities. Conscientious attendance of class by teacher. Teacher makes an extra effort to improve teaching.	Learners are proficient in language of instruction Learners have access to quiet, safe place to study Learners come from supportive home environment Learners can afford textbooks and extra	Management: Principal takes strong leadership role, is very visible during school hours Teachers and learners play an active role in school management Ecology: everyone in the school is committed to making it work Parents play active role in School Governing Bodies and

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			<p>lesson Parents show interest in their children's progress</p>	<p>in supporting the school in general.</p>
4	<p>Excellent buildings One or more well equipped science laboratory Library or resource center Adequate curriculum materials other than textbooks Good teaching and learning resources (e.g. computers, models) Attractive grounds Good copying facilities.</p>	<p>Teachers is over-qualified for position and has an excellent knowledge of content matter Teacher has an extraordinary commitment to teaching Teacher shows willingness to change, improvise and collaborate, and has a vision of innovation Teacher shows local and national leadership in professional development activities</p>	<p>Learners are fluent in the language of instruction Learners take responsibility for their own learning Learners are willing to try new kinds of learning</p>	<p>Ecology: There is a shared vision The school plans for support and monitoring Collaboration of all stakeholders is encouraged and practiced Management: there is a visionary but participatory, leadership at the school.</p>

APPENDIX C

Table 3 : Profile of Outside Support –

Adapted from Rogan and Grayson, 2001

Table 3 : Profile of Outside Support - Adapted from Rogan and Grayson, 2001

Level	Type of encouragement and support			Dominant change force evoked by agency	Monitoring mechanism and accountability
	<i>Physical Resources Categories of resources: Buildings, apparatus, curriculum materials (print and electronic), computer, etc.</i>	<i>Design of Professional Development</i>	<i>Direct support to learners</i>		
1	Provision supplements what exists but not enough to support the intended changes. Provision is in one category only.	Information on policy and expected changes are presented to school based personnel. Typical mode is short, one short workshop	Provision of basic needs, such as lunches and places to study	Bureaucratic. Change is brought about by top down directives to bring about change	Inspections by authorities are undertaken
2	Provision completely covers what is required to effect the intended change in one category, or partly sufficient in two categories.	Example of 'new' practices are suggested by the policies, are presented to school based personnel, who are given an opportunity to engage in these practices in a stimulated situation. Typical mode is a series of short workshop lasting for one year.	Basic academic needs are catered for in the form of extra lessons.	Charismatic Change is brought about by top down inspiration and encouragement	Inspections are undertaken in collaboration with school-based personnel.
3	Provision completely covers what is required to effect the intended change in two categories, or partly sufficient in three categories.	Professional development is designed by school based personnel depending on which new practices they wish to implement, and implemented using both inside and outside support. Typical mode consists of both external and school-based INSET for two to three years.	Enriched academic needs are catered for in the form of field trips and other enrichment type activities.	Professional Change is brought about by encouraging role players to embrace codes of conduct and standards of teaching and learning.	School-based personnel monitor own progress, but report to authorities.
4	Provision completely covers what is required to effect the intended change in three categories, or covers categories and is partly sufficient in all four categories.	Communities of practice take full responsibility for their own continued professional growth, and for school governance and curriculum implementation, calling on outside support as appropriate. Typical mode consists of ongoing school-based and directed professional INSET.	Complete academic and personal support is provided, usually in the form of bursaries.	Learning Communities Developing communities that develop shared values and goals regarding educational practice and a commitment to put these into practice bring about change.	School-based personnel undertake all monitoring.

APPENDIX D

INTERVIEW QUESTIONNAIRES

(not available)

APPENDIX E

SAMPLE OF SCHOOL DOCUMENTS COLLECTED

(not available)

APPENDIX F

EXTRACTS OF INTERVIEW RESPONSES

(not available)