

**AN EVALUATION OF THE
LIFE SCIENCE CURRICULUM IN NAMIBIA
AND ITS DEVELOPMENT THROUGH
STAKEHOLDERS' PERCEPTIONS OF
"LEARNER CENTRED EDUCATION"**

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Abstract

Following Independence in 1991 Namibia embarked on a major reform of the entire education system. The reform was perceived as a way of redressing the apartheid legacy and bringing about a democratic learner centred education for all. At the same time the reform was also seen as a prime vehicle to bring about sustainable development through incorporating relevant environmental education into various carrier subjects. One such carrier has been the subject Life Science, which is compulsory from Grade 8 to Grade 10.

The Life Science Project was a joint venture between the Ministry of Education and Ibis, a Danish Development NGO, established to develop and support the implementation of Life Science in junior secondary schools.

This half-thesis is an evaluation of the Life Science Project through an analysis of the central assumptions on which the Life Science curriculum is based and by investigating different stakeholders' perceptions and understanding of the learner centred approach adopted by the curriculum.

Three questions have guided this research:

1. Are there curriculum models that are more conducive for reform and change than others?
2. Do stakeholders and curriculum developers in Namibia understand the theory of social constructivism, and the systemic implications such an approach has for the education system?
3. Which approach to environmental education complements a transformative curriculum and the changes outlined in policy?

From the research carried out in this half-thesis, it would appear that the Namibian education system and the Life Science curriculum suffers from what could be termed "ideological confusion". Confusion in the sense that there are marked inconsistencies between policy and praxis, between the stated goals and aims of the reform and the curriculum designed to achieve these. This confusion is further exacerbated by various stakeholders' different

interpretations of both policy and the systemic implications the reform policy has on education.

In this half-thesis I argue that embarking on an objectives driven model of curriculum cannot bring about change and transformation of the Namibian education system. I further argue that, by not having considered and implemented the necessary systemic changes to the education system, Namibia has, in fact, developed a child centred education system which is fundamentally different from a learner centred education system. Finally, I argue that environmental education, through the subject Life Science, set within an objectives driven, Child Centred Education system is inappropriate for and unable to address the need for developing an environmentally literate citizenry who are able to take informed decisions in order to address the environmental crisis and bring forth a more sustainable future.

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Acronyms and abbreviations:

AIDS	Acquired Immune Deficiency Syndrome
AT	Advisory Teacher
CCC	Curriculum Co-ordinating Committee
CIPP	Evaluation model developed by Stufflebeam
CM	Concept Map
DANIDA	Danish International Development Assistance
DTA	Democratic Turnhalle Alliance
EE	Environmental Education
EU	European Union
FGE	Fourth Generation Evaluation
LS	Life Science
MBEC	Ministry of Basic Education and Culture
MEC	Ministry of Education and Culture
NGO	Non-Governmental Organisation
NIED	National Institute for Educational Development
NORAD	Norwegian International Development Assistance
SIDA	Swedish International Development Assistance
STD’s	Sexually Transmitted Diseases
SWAPO	South West Africa Peoples Organisation
UN	United Nations
UNDP	United Nations Development Programme
UNESCO	United Nations Educational and Scientific Organisation
UNTAG	United Nations Transitional Assistance Group
USAID	United States International Development Aid
WUS	World University Service

1. INTRODUCTION

1.1 NAMIBIAN EDUCATION REFORM AND THE LIFE SCIENCE PROJECT

When Namibia emerged as an independent nation in 1990, educational reform as a priority was emphasised by the Hon. President Dr. Sam Nujoma:

The only way we can redress the apartheid legacy is by a massive education and training program for our people.

(MEC, 1993a:ii).

The primary goals for this reform were identified as access, equity, quality, and democracy in education.

Education in *Towards Education for All* (MEC, 1993a) is described as an investment in Namibia's development. Education is seen as both an investment contributing to economic growth as well as a means of improving people's quality of life (MEC, 1993a).

The educational reform in Namibia is also seen as a prime vehicle to bring about sustainable development. "Namibia's Green Plan" states that: "Sustainable development in Namibia... will only occur once a significant proportion of the people become aware of their role in maintaining the environment which sustains them." further "Namibia's goal is to develop an environmentally literate society in which citizens have the knowledge, skills and values necessary for appropriate action." (Ministry of Wildlife, Conservation and Tourism, 1992: 6).

The educational reform process is envisaged as able to support this goal by providing Basic Education that will include:

"Development of environmental awareness

- To develop a holistic understanding of the dynamic interdependence of all living things and their environment

- To develop a sense of responsibility toward restoring and maintaining ecological balances through the sustainable management of natural resources, and
- To promote involvement in practical activities to preserve and sustain the natural environment.

(MEC, 1993a: 58)

After Independence the previous 11 educational administrations, one for each "racial group" in Namibia, were merged into one Ministry of Education and Culture. A new Broad Curriculum was drafted and new syllabuses were developed and implemented starting with Grade 8 in 1991.

The Ministry of Education in its policy statement writes:

Learners will find the curriculum relevant only if the knowledge, skills and values to be acquired are meaningful to them...

Curriculum must be relevant both to the needs of learners and to society.

(MEC, 1993a: 59).

Not only the curriculum was to be changed, but also the teaching/learning process. The approach to teaching and learning that was identified as an appropriate means to bring about the desired changes is that of Learner Centred Education, which is seen to equip learners with the skills and competencies that will enable them to play an active role in the transformation of the Namibian society.

To guide the educational reform, the Ministry of Education and Culture adopted the principles stated in the "World Declaration on Education for All and a Framework for Action" at Jomtien, Thailand 1990 (cited in MEC, 1993a).

An educational reform of this magnitude is an expensive exercise, so to help fund it and involve "expertise", various donors and institutions, the UN, EU, SIDA, DANIDA, NORAD, Ibis -a Danish non -governmental organisation (NGO) and others, were approached to assist the Ministry in the process.

The history of the Life Science Project as well as Ibis' support to education in Namibia started in the early 1980s. The liberation movement South West Africa Peoples Organisation (SWAPO) approached WUS Denmark, now Ibis, for financial and other support to establish a Secondary School for Namibian learners in exile. During 1984/85 the Namibian Secondary Technical School in Loudima, Congo was planned and initiated. The educational development work, which had started at Loudima, was incorporated into the Namibian educational reform process in 1991.

In May 1991 a proposal for a project to assist with the introduction of Life Science in Junior Secondary schools, and to support the National Institute for Educational Development (NIED), was submitted to DANIDA (Danish Agency for International Development Aid) by the MEC and Ibis.

The project proposal with a pilot period of two years and an implementation period of five years was accepted by DANIDA. The Life Science Project from the outset was designed to promote educational reform, not only through adopting the principles of Learner Centred Education, but also through providing learning opportunities that have relevance to the daily lives of Namibians.

The Project was designed to target three areas necessary for the implementation and development of Life Science;

- Curriculum development
- Materials development and support
- In-service training of teachers.

Now eight years later the Project has, together with officials from the ministry and teachers developed and de facto implemented the subject Life Science nationally on behalf of the MBEC.

The subject Life Science is divided into three main themes: Plant production and the environment in Grade 8, Animal production and the environment in Grade 9 and Human biology and the environment in Grade 10. Through these themes Life Science and thus the Life Science Project addresses a wide variety of environmental issues including soil degradation, deforestation, desertification, pollution, sustainable use of natural resources, health and sex education and population issues. The rationale being that to educate people is to enable them to take more informed decisions about the above issues.

At the first sub-regional conference on curriculum development in southern Africa, held at NIED in January 1997, the following concerns pertaining to curriculum development in African were raised:

African curriculum developers must not only consider how education can free itself from the colonial inheritance in more ways than above, be an equal partner in modern world society, and still retain cultural identity. They must also consider that even though many sub-Saharan countries have Africanized curriculum content, the very epistemology underlying the curriculum is non-African in origin. In addition, educational systems in many countries have not de-colonised their structure, retaining the model of linking curricula to examinations boards: a mirror image of the colonial structure imposed upon African nations...

Another structure prolonging neo-colonialism is that of donor organisations and agencies. They have their own agendas and demands. Owing to the lack of resources for formal education in most

sub-Saharan countries, what gets promoted or added to the curriculum is very largely what the donors support or want.

(Avenstrup, 1997: 2-3).

The Life Science Project, as mentioned above, has been one such donor-funded project aimed at not only supporting, but also spearheading the educational reform process in Namibia. The Life Science project is identified in this research as a case study in order to highlight aspects of the curriculum reform in Namibia.

1.2 RESEARCH CONTEXT

This thesis is an attempt to evaluate parts of the Namibian education reform process nine years after it was initiated. It is an in-depth look at whether the curriculum reform in general and the Life Science curriculum in particular has supported changes as they were envisaged in policy documents written during and after Independence.

There have for me been two major reasons for undertaking this research. One is born out of personal frustration experienced during working with the Namibian reform process for eight years. The two first years as a Junior Secondary teacher at a former “disadvantaged” (read Black) school in the deep South of Namibia, and the last six years as part of the Life Science Project with different portfolios of teacher trainer, In-service training Co-ordinator and Project Manager. These eight years have led to an increased involvement in the reform process. Initially as an implementer, later as a “technocrat” supporting and developing policy enabling initiatives and eventually as a participant in policy formulation and interpretation.

The frustration experienced during these eight years has first and foremost to do with, what I perceive as, the lack of “real changes” taking place throughout the entire education system, from the classroom to the different

Directorates within the Ministry of Basic Education and the inconsistencies, as I see them, between policy and praxis. Thus this research is my attempt to gain a personal insight into structures and processes that either foster or retard change and transformation and why this is so.

The frustrations listed above have led me to the formulation of some key questions:

1. Are there curriculum models that are more conducive for reform and change than others?
2. Do stakeholders and curriculum developers in Namibia understand the theory of social constructivism, and the systemic implications such an approach has for the education system?
3. Which approach to environmental education complements a transformative curriculum and the changes outlined in policy?

It is well beyond the scope of a half thesis to seek answers to these questions, but they will none the less be used to focus my thinking in doing this research and it is hoped that this thesis will provide some insight into these questions.

I could have done this research as a desk study analysing ministerial documents and literature. However in order to make this research a learning experience for myself and others, I have designed it as a participatory evaluation using aspects and principles from Fourth Generation Evaluation. Thus the second reason for doing this research is that it will hopefully inform the participants in the research as well as any other educationists, who take the time to read it and as such, in a small way, may contribute to the ongoing reform, curriculum development and environmental education in Namibia.

There have been several reasons for identifying the Life Science Project as a case study for this research. First of all the Life Science Project was introduced just after Independence as a practical example of a subject which from the

outset incorporated and was based on a learner centred approach to education. Secondly Life Science as a carrier subject for environmental education was supposed to help enable the vision described above in the Namibian Green Plan of educating an environmentally literate society through formal education. Thirdly much of my personal frustration with regard to lack of change was experienced through the development and implementation of Life Science. Thus it made sense to use the Life Science Project as a case study in order to illuminate the role of environmental education set within a learner centred approach as a guiding principle for change.

1.3 RESEARCH GOAL

The goal of this research is to evaluate the Life Science Project:

- Through an analysis of the central assumptions on which the curriculum is based, and;
- By investigating stakeholders' perceptions and understanding of the learner centred approach adopted by the curriculum.

The evaluation is intended to inform the ongoing revision and development of the Life Science Curriculum.

1.4 THESIS OUTLINE

When venturing into unknown territory, it might be helpful to have a route map. Although the notion of a route map might prove to be one of the obstacles for discovering and experiencing "new territory" or change later on in the thesis, I here provide some beacons by which to steer through the chapters.

Chapter two in many ways sets the scene and provides a platform from which to view the entire thesis. As mentioned change, transformation and curriculum reform are central to this thesis. Chapter two therefore explores

the notion of reform, change and transformation, how they differ and why real change is so difficult. This is set against the intended change as outlined in Namibian policy on curriculum development and education.

Not all curriculum models are meant to foster change, some are meant to reproduce that which is, so in order to understand aspects of the curriculum that either foster or retard change, chapter two analyses three different curriculum models; the objectives model, the process model and a post-modern model of curriculum. Having identified one model as being more conducive to change and transformation than others, chapter two goes on to investigate which learning theory would be appropriate within a transformative curriculum.

Finally chapter two synthesises all of the above and locates it in an appropriate model for environmental education that would complement the Namibian education reform as it is formulated in policy. Thus chapter two is a document analysis of policy and literature where a number of assumptions are explored, assumptions about what constitute “real change”, what curriculum model and learning theory accommodates “real change”, and assumptions about what EE model or approach would fit into a transformative curriculum and at the same time be true to the corresponding learning theory. Assumptions, developed by me and open to debate, about how “it ought to be”.

The platform developed in chapter two will form the basis for the analysis of policy and praxis later in the thesis.

Chapter three is a more conventional methodology chapter, where the methodology of the research is developed and described. As this research is an evaluation, chapter three begins with a review of different evaluation models, their strengths and limitations in general and for the purpose of this

research. Having done this, chapter three identifies and justifies Fourth Generation Evaluation as an appropriate model to achieve the goals of this research as described above. The choice of evaluation model necessitates a choice of research paradigm. Chapter three therefore also presents an argument for why it is logical that this research is located within an interpretative paradigm.

From the participative “research toolbox” chapter three identifies workshopping and informal interviews as appropriate tools to employ both in light of the evaluation model and the paradigm chosen.

In what I believe is a novel approach, concept mapping is one of the activities undertaken during workshops with stakeholders in order to elicit, share and negotiate the stakeholders’ propositional knowledge of Learner Centred Education. Finally chapter three reflects the general strength and weaknesses of the developed evaluation model and research.

Chapter four critically examines the context of the Namibian educational reform process and is an in -depth look at, and analysis of, the policy behind the reform and of the enabling documents that has guided the actual reform process. Chapter four also provides an introduction to and description of the Life Science Project and the syllabi development process.

Chapter five is the traditional data analysis chapter. I have chosen to first give an account of the findings and interpretations for each stakeholder group in order to let a coherent view emerge and then draw trends, similarities and differences between the groups in their understanding of Learner Centred Education, their view of the aims or purpose of education, their evaluation of the life science syllabi and their perceptions of curriculum development.

The research data and my interpretation and understanding of these, are used in chapter six to revisit the research questions and the assumptions developed in chapter two: Has the Namibian curriculum reform been conducive to and

resulted in real changes? How do stakeholders perceive Learner Centred Education and is this understanding in line with the assumptions hereof described in chapter two? How has the Life Science Project influenced and affected this understanding? Therefore, is the environmental education, of which the Life Science syllabi are carriers, in reality the EE model or approach needed in Namibia to support the envisaged changes and transformation? This thesis paints a partial and incomplete picture of both the Namibian reform and the Life Science Project and curriculum, hence chapter six concludes by acknowledging that further research is both needed and necessary to gain a more comprehensive picture and understanding of the issues involved. Research which could be undertaken as part of a summative evaluation of the Life Science Project, which is envisaged to be done late in the year 2000.

Finally a word on the language and terms I have used in this thesis. At Independence Namibia emerged from a past of colonialism and apartheid. A past in which racism and racial segregation played detrimental and dehumanising roles. Many of these wounds are not yet healed and probably never will.

In this thesis I use the terms Black, Coloured and White to describe different groups of human beings. I acknowledge that it is apartheid terminology and wish we had an alternative that did not either bring confusion and misunderstanding to the text or is patronising towards the oppressed under apartheid policy. I trust the reader will realise that it is exactly in the hope of contributing to redress this past, that I have written this thesis.

2. CURRICULUM REFORM AND ENVIRONMENTAL EDUCATION.

This chapter does not attempt to give an exhaustive analysis of the theory or praxis behind curriculum development, but rather focuses on aspects in different curriculum models that either foster or retard change.

The Namibian education reform was a call for change. A change of the curriculum, a change of learning theory and a change of the educational system.

Changing from one system to another is not an easy task and reform and change are not necessarily synonymous. In order to clarify change and reform, which are so central to this thesis, this chapter highlights the differences between the two and gives suggestions as to why change is difficult and often does not materialise or is diluted.

Some curriculum models have been shown to be better at bringing about change than others (Stenhouse, 1975; Doll, 1993). In this chapter I highlight three different models and explore their assumptions and suitability for supporting change. In order to do so, I give a brief account of the origin of “curriculum” as a management tool within education.

African curriculum development in general and South African curriculum development during the apartheid years in particular, is described through the literature by other scholars as a means to better understand the reform process embarked upon by Namibian education.

Curriculum models and learning theories are two sides of the same coin, or at least they ought to be. If one has embarked on a specific curriculum model, it makes sense to explore which learning theory would be most appropriate within this model and its underlying assumptions and values. Conversely, if

one is more sympathetic towards one learning theory above others, one must analyse which curriculum model would be appropriate as a frame for this learning theory. Thus this chapter goes on to explore Learner Centred Education, which has become the focus of the Namibian reform, its origin and its location in theory. I argue that Learner Centred Education is situated within a theory of Social Constructivism and that this theory is a suitable theory within which to locate a transformative curriculum.

Finally this chapter synthesises a transformative curriculum and social constructivism with an environmental education model, which emphasises development for sustainability and education of a critical, creative citizenry, who can make and take decisions about and for the environment that will address the need for sustainability.

2.1 ORIGINS OF "CURRICULUM"

It is generally accepted that curriculum development as a discipline emerged in the United States in the early twentieth century (Conrad, 1993). It was developed as an administrative category within education (Aoki, 1988). The curriculum was seen as a management tool and took on an instrumentalist ends-means ethos (Aoki, 1988). Much of these efforts originated from a "desire" to make education more "scientific".

Franklin Bobitt's book "How to make a curriculum" published in 1924, was an attempt to do just that. In his book Bobitt argues that one must be able to rationally justify the curriculum and the planning of one's teaching. In order to do this the aims and objectives of the curriculum should be clear and concise. Outcomes, which were not possible to describe in these terms, one could not and should not pursue. Bobitt proceeded to describe "life functions" as one example of a curriculum area, which he subdivided into 10 areas of activity. One of these the "inter-human relations" Bobitt divided into 821 goals which again could be subdivided!

Bobitt used a behaviourist (Van Harmelen, 1995) approach to curriculum design. The behaviourist view of education which had become prominent in the late 1800s was influenced by key thinkers in psychology like Pavlov (1849-1936) and Watson (1878 -1958) who believed that human behaviour is determined by rules which govern our interaction with the environment and which advocated a deterministic and reductionist world view (Conrad, 1993; Doll, 1989; Stenhouse, 1975). Since Bobitt the notion of curriculum and its development has undergone several and significant changes, some of which are highlighted in this chapter.

2.2 THE ENVISAGED NAMIBIAN CURRICULUM REFORM

In order to understand where Namibia comes from in terms of its curriculum, it is useful to take a general look at African curriculum development and more specifically South African curriculum development during the apartheid years, which influenced the Namibian curriculum inherited at Independence.

It is accepted that the educational systems in many less developed countries in Africa are trapped and inhibited in their development by the legacies of the past (Ball, 1984). The Honourable Minister of Basic Education and Culture, Mr. John Mutorwa, in his opening address to the first sub-regional conference on curriculum development in Southern Africa held at NIED elaborated this concern, thus:

The European education has brought benefits with it – there is no doubt about that. But we will always be wondering what we might have had if the line from the wisdom of ancient Egypt and the old universities had meet the wisdom of other parts of Africa and created an unbroken continuity into modern age.

(cited in Avenstrup, 1997: 10)

It is also commonly accepted that these legacies stem directly from the impositions of forms of western academic schooling by the colonial powers. Ball (1984) in tracing the colonial curriculum in Africa identifies three types of curriculum, the Evangelical curriculum, the “adapted curriculum” and the academic curriculum.

The evangelical curricula were to be found in the schools run by American and European missionaries throughout the nineteenth century. The primary goal of these schools was not to educate Africans, but to convert them to Christianity (Ball, 1984).

Many of the missionaries had rejected the dawning materialism of the industrial revolution and were thus reluctant to teach the skills needed for an industrialised society. Pressure from the Africans, who in many cases sent their children to school in the hope that they would acquire these skills and thereby become “employable” within the newly developed cash economies, lead to mission and government schools becoming vocational schools, which offered an “adapted curriculum”. The materialistic superiority of the missionaries over the Africans certainly provided an image of wealth and power that the Africans sought to emulate.

Thus the missionaries inadvertently became the carriers of a capitalist ideology (Ball, 1984).

Rooke (1984) in Goodson & Ball (1984) argues that the Africans were not merely recipients of white middle class values, they reacted and modified such values in a sociological dynamic, which in many ways helped create their own history.

The academic curriculum was to a large extent a demand from Africans. The adapted curriculum with its emphasis on vocational skills was seen as inferior. It didn't take long for the Africans to realise that schooling within the adapted curriculum only led to inferior vocational jobs, so that rough

representation, political action and by simply devoting energy only to academic subjects, a demand for an academic curriculum was created (Ball 1984). John Mutorwa echo's this when he states:

We have taken them [the educational systems from western countries] and adapted them to our new circumstances as country after country has gained its independence...

(cited in Avenstrup, 1997: 10)

Ball (1984) writes from the perspectives of East African countries. The history in Namibia differs from this in that the previous educational system prior independence in 1990 was derived and developed from a philosophy of Apartheid developed in South Africa. A system in which:

Behaviourist theories with their associated objectives -driven curriculum models and transmission teaching models were adopted and supported by the Christian National Education (the educational ideology of the apartheid government) which supported the themes of adult guidance and control (authoritarianism). This influenced the careful selection of the curriculum content in schools and the textbook driven models in which teachers primarily taught content...

(Rhodes University Certificate, 1995: 5).

In order to legitimise the ideology of the Christian National Education, the educational "science" of *fundamental pedagogic* was developed. Fundamental pedagogics is purported to be an educational "science", which was used by the apartheid government to explain the structures and characteristics of educational processes (for example their view of the learner and the role of the teacher). This educational "science" tended to demonstrate a strongly religious, conservative and nationalistic bias (Ashley in Rhodes University Certificate, 1995)

With the introduction of the Bantu Education Act, no. 47 of 1953, each ethnic group in Namibia was considered a separate nation. The community schools under Bantu education created strong racial, ethnic and tribal identities. The syllabuses of different racial groups differed considerably and illiteracy among the black population remained high. The blacks were to be trained for unskilled manual labour and the whites for high managerial posts. For schools under the control of the Department of National Education either the secretary of National Education or the Minister issued regulations about the medium of instruction, religious education, school committees, courses and admission requirements in government schools. Extensive regulations were also issued on the composition and duties of school committees, control of school funds, conditions of service and expulsion of teachers.

2.3 NAMIBIAN CURRICULUM DEVELOPMENT AFTER INDEPENDENCE.

After Independence the Ministry of Education and Culture was faced with a daunting task as Angula & Grant Lewis (1997) describe:

The undoing of apartheid requires changing the purpose of schooling from that of selection and the education of an elite to that of education for all. It involves replacing the philosophy and practices of education in the past with a new philosophy and practices appropriate to educating all citizens, a rethinking of 'what we do in schools and how we do it. (p. 237)

The Namibian educational reform is guided first and foremost by the policy statements in *Toward Education for All* (MEC, 1993a). According to this document the previous educational system in Namibia, was about educating an elite in a positivistic system that was based on apartheid and racism. *Toward Education for All* (EFA) as a policy statement, advocates a paradigm shift to education for all.

The new educational system, as described by EFA, is built on Learner Centred Education and is aimed at harnessing curiosity and excitement, and promoting democracy and responsibility in lifelong learning. The stated intents of this system are to employ a holistic view of learning, valuing life experiences and to assist learners in integrating school and life outside school. The document identifies learning as an active process with participation from the learners in developing, organising, implementing and managing learning (MEC, 1993a).

The Honourable Nahas Angula, former Minister of Education, now minister of Higher Education, Vocational Training, Science and Technology, describes how he envisages that curriculum development and decision making ideally should take place in Namibia:

Curriculum decision making should be a co -joint responsibility between various providers of education and training services. The government will play the multiple roles of leadership, co -ordination, catalyst and partner. Other stakeholders like learners, teachers, the community, business, the private and public sector will be expected to give their input.

(Angula, 1997: 21).

The Namibian educational reform was and is, according to the above statements, both a change of curriculum development processes as well as products, but more than that, a transition from one system of education to another (MEC, 1993a).

Change and transformation are never simple or easy as Popkewitz (1988) writes:

We know very little about change... Despite all the well-intentioned efforts to improve our social world, there are no examples where the efforts of men and women have not been transformed as our ideas are moved into the everyday politics of practice. (p. 92)

Popkewitz (1988) argues that in order to reform and change, we must question our underlying assumptions about society, culture, history, economics and politics. Failure to do so, Popkewitz argues, will result at best in only window-dressing. Rhetoric and rituals around reform, without questioning our underlying assumptions, serve to perpetuate our general myths of schooling as the major institution by which to improve society and the illusion we hold about reform as a way of progressing.

Schools as the major institutions by which to improve society are viewed as a myth, because although the school at certain periods in history can help produce conditions that have the potential for social transformation, they at the same time serve to reproduce existing relations in society. They do this partly by the selection, organisation and evaluation of knowledge, which gives value only to certain types of knowledge. Knowledge taught in schools is always bound to interests in society, mostly interests of power, and society does not provide all people with the same access to knowledge or power. As such, discourse on reform may function to legitimate the ongoing power relations of schools in a manner that makes those relations seem to benefit all rather than a few (Popkewitz, 1988).

Our attempts to reform and our conversations about reform exist in a horizon that contains structured boundaries and without paying attention to these social, cultural and political horizons, we make the immediate and transitory a substitute for long-term change and systemic concerns (Popkewitz, 1988).

Although I concur with much of Popkewitz' sobering writings on reform and change, he gives us little help and direction, except to say that we must continue "to seek ways to improve our human condition" by being sceptical and critical in our endeavours.

William E. Doll in his writings (1989; 1993) presents us with an alternative with which to counter some of the problems mentioned by Popkewitz around reform and change. Later in this chapter I shall take a more in -depth look at Doll's suggestions for a "Post -modern Perspective on Curriculum" as a way of overcoming the inherent problems with change and reform. Central to Doll's argument is his belief that change in education is not possible within the value frame of modernity.

It is time to do more than just re-form our methods and practices. It is time to question the modernist assumptions on which these methods and practices are based and to develop a new perspective that simultaneously rejects, transforms and preserves that which has been.

(Doll, 1993: 11).

Doll tries to overcome the "change" stalemate by applying a "systems" view to curriculum development and reform. He argues that Modernity by its Newtonian world-view essentially is a closed system in which transformation is impossible (Doll, 1989). Change, he argues, in the modern closed system is fundamentally different to change in a post -modern open system. In the modern closed system stability and not change was the desired goal. Change existed [in the modern system] but in incremental terms and directed and aimed towards something already known and defined, change is thus means to an end.

Within a post-modernity change is seen as totally different. Change is seen in transformative, not incremental terms, and errors are seen as necessary actions in the process of development. Transformative change is a change in

view, in perspective, in methodology (Doll, 1989). Doll argues that by employing a post-modern open systems view to curriculum development and education, we can, in fact, literally build in factors that not only allow for change and transformation, but encourage these to occur.

In order to explore what kind of curriculum model would best complement and support the Namibian educational reform as described in the policy statements, I highlight and analyse three different models. I am not sure that any of them “as is”, “fit” the Namibian situation, but there are certainly aspects in the three that either foster or retard change and transformation and as such can provide guidance and inspiration for the ongoing educational reform.

The analysis of the three models equally provides a frame and a set of lenses for looking at the Namibian curriculum as it has developed during the reform process after Independence.

2.4 CURRICULUM MODELS THAT FOSTER OR RETARD CHANGE

2.4.1 The “Objectives Model” of curriculum development.

Ralph Tyler in his book *Basic Principles of Curriculum and Instruction* published in 1949 took the ends-means ethos in curriculum development, first suggested by Bobbitt, further. He formulated four key questions, which are now commonly referred to as the “Tyler Rationale” (Husen & Pastlethwaite, 1985):

- What educational purposes should the school attain?
- How can learning experiences be selected which are likely to be useful in attaining these objectives?
- How can learning experiences be organised for effective instruction?
- How can the effectiveness of learning experiences be evaluated?

In other words what Tyler was saying was: First set goals and objectives, then determine and arrange learning experiences so that learners can attain these,

and evaluate the effectiveness of these learning experiences in terms of the goals and objectives initially set. This has been described as a “Linear ends - means, instrumentalist rationality” (Aoki, 1988).

Stenhouse (1975) describes this curricular approach as “ Linear programming and teaching by objectives”. From his point of view this approach provides a route from entry point to completion point, where the route is broken down into a series of small steps. It involves little critical thinking on the part of the learner and restricted opportunities for transfer of learning in that everything has to be predetermined.

The power of the “objectives model” of curriculum development as described by Tyler, in Stenhouse’s (1975) view, is that, besides an appeal to common sense as described by Aoki, it also has its origin in the applied tradition of educational studies and behavioural science. It provides a “systematic focus” for the various branches of the study of education, integrating contributions from learning theory, systematic pedagogic and social psychology. It is a means of translating the study of education into a practice of education (Stenhouse, 1975).

The emphasis on objectives and aims within the “objectives model” of curriculum gave rise to much further study into analysis of educational objectives. One influential person in this regard is Benjamin Bloom who is seen as the “father” of “taxonomies of objectives”. The taxonomy of educational objectives arose from an informal meeting at the American Psychological Association Convention in 1948.

“... this taxonomy is designed to be a classification of the student behaviours which represents the intended outcomes of the educational processes...” ...”What we are classifying is the intended behaviour of students- the ways in which individuals are to act, think or feel as the

result of the participating in some unit of instruction.” (Bloom, 1956 cited in Stenhouse, 1975: 57).

The above claims leave little doubt of the behaviourist origin and influence on Blooms’ taxonomy. Bloom took the taxonomy further and had great influence in developing the concept of Mastery Learning. Mastery learning is a “systematic attempt to follow through the implications of the objectives model” (Stenhouse, 1975: 64). Mastery learning considers the aptitude of students as predictive of how fast they learn rather than an indication of their possible level of achievement. Mastery learning essentially argues that all learners can achieve mastery given adequate time and exposure to a variety of different teaching methods.

Over the years much criticism has been levelled at the “objectives model” of curriculum development. Much of this criticism takes its point of departure in the underlying behaviourist approach to education and the mechanistic, reductionist view of humans and the world within the objectives model. The belief that behaviour can be measured in objective terms in Stake’s point of view implies a mechanistic dehumanising view (Stake cited in Stenhouse, 1975). It has been said that trivial learning behaviours are the most easy to operationalize, hence the really important outcomes of education tend to be under emphasised (Stenhouse, 1975). The pivotal point of measurability in the objectives model implies accountability, so teachers are judged on their ability to bring about desired (as outlined in the curriculum) changes in learners. Stenhouse, from a moral point of view, sees this as bordering on brainwashing or at least indoctrination.

The deterministic nature of the objectives model of curriculum has raised the question; what are we educating for?

Either a teaching activity serves to integrate children into the current social order or it provides children with the knowledge, attitudes and

skills to deal critically and creatively with the reality in order to improve it.

(Grant & Zeichner as cited in Fien, 1993: 15)

In other words are we educating for the mastery of already available cultural tools or making possible creative responses, which go beyond what is available and helps to develop it and individualise it? (Stenhouse, 1975). With its determinacy and pre-specified goals and objectives, the objectives model is seen as unable to address these concerns. Stenhouse (1975), Grant and Zeichner, cited in Fien (1993), see education as a means to make us freer and more creative. In Stenhouse's words:

Education enhances the freedom of man (sic) by inducting him into the knowledge of his culture as a thinking system. The most important characteristic of the knowledge mode is that one can think with it. This is the nature of knowledge - as distinct from information - that it is a structure to sustain creative thought and provide frameworks for judgement. *Education as induction into knowledge is successful to the extent that it makes the behavioural outcomes of the students unpredictable.*

(Stenhouse, 1975: 82).

The objectives model has also been described as a "Systems Theory".

Kast and Rosenzweig (1970) cited in Stenhouse (1975), describe a system as "An assemblage or combination of things or parts forming a complex or unitary whole" (p. 67). They argue that a systems approach rests on the formulation of objectives, but does not provide a method of defining the objectives, it is concerned with the identification of problems, with decision making and with the monitoring of solutions.

Doll in Pinar (1988) describes the objectives model of curriculum as a "stable state curriculum". It is a curriculum, which is informed by a technical rationality that builds on four central assumptions:

- It is possible to establish what is happening in a situation,
- Understanding can be diagnosed in terms of cause and effect terms,
- A data gathering experiment can be designed to test this diagnosis and
- The result of this experiment can be evaluated meaningfully and generalised to other situations.

Technical rationality in Doll's (1989) terms means the transmission of a generalised and systematic body of knowledge to students. Doll points us to the fact that these four points also are the central tenets on which the scientific method builds and further argues that these assumptions have not held up well nor have they led to successful endeavours in the social sciences. The technical rationality approach within the objectives model of curriculum fails in Doll's point of view because, as Piaget (quoted in Doll, 1989) has suggested, knowledge is not a copy of reality, it is a personal and active construction of reality.

The "objectives model" of curriculum is located within what Kemmis, Cole and Suggett cited in Fien (1993) term the vocational/neo-classical orientation to education. This orientation has been described as

"...an education which accepts technocratic and managerial values and insofar as it uncritically accepts existing social structures and hierarchies, may perpetuate elitism, injustice, class and gender inequalities..." (Fien, 1993: 19).

Kemmis, Cole and Suggett suggests that the major characteristics of a vocational/neo-classical orientation to education can be listed as follows:

Perspective on	Vocational/Neo-classical orientation
Social role of the school	School prepares and selects students for participation in society; school has a role in maintaining, reproducing and legitimating social, economic and political structures and divisions by preparing students to compete successfully for job opportunities
Desired student outcomes	Finding ones place in society; having the skills to fulfil work roles
Broad Curriculum organisation	Rigid subject framing and time tabling; selection of students based on performance criteria
Teacher's role	An authority, transmitting knowledge, structuring and sequencing what is known to allow the students to achieve mastery
Student learning role	A receiver of transmitted knowledge, more or less prepared or motivated to achieve within the framework of what is taught
Teacher-student relationship	Teacher is an authority, uses directive pedagogy; controls progress; a hierarchical relationship imposing learning; based on one-to many relationship of teachers to students
Knowledge	Objective; a public matter; exists in books; mostly described as skills and information, (facts, concepts) which have their meaning and significance in occupational and disciplinary contexts; special concern for the technical/rational/scientific/managerial interest of knowledge (knowledge for control); strong split between 'mental' and 'manual' (skills) aspects of knowledge
Learning theory	Behaviourism; deficit models of the learner; 'transmission' theories of learning

Table 1. Vocational/ Neo-classical orientation to education.
(Adapted after Kemmis, Cole and Suggett cited in Fien, 1993).

The Objectives model of curriculum within a vocational/neo-classical orientation to education falls short on accommodating change and transformation. With its primary aim of preparing and selecting learners to find their roles within the existing society, with its view of knowledge, teaching and learning, it negates the aim of

“... developing an education system that will play a central role in transforming our society” as stated in the Namibian policy document *Towards Education for All* (MEC, 1993a: 67).

2.4.2 A “Process model” for curriculum development.

Stenhouse (1975) in his *An introduction to curriculum research and development* having listed the shortcomings of the objectives model of curriculum, goes on to suggest what he terms a Process model of curriculum development.

Built on his central argument that the objectives model of curriculum mistakes the nature of knowledge, he suggests that knowledge involves procedures, concepts and criteria which are foci for speculation and by;

The filtering of knowledge through an analysis of objectives gives the school an authority and power over its students by setting arbitrary limits to speculation and by defining arbitrary solutions to unresolved problems of knowledge. This translates the teacher from the role of student of a complex field of knowledge to the role of the master of the school's agreed version of that field.

(Stenhouse, 1975: 86).

The process model of curriculum development can be seen as an early model allowing for change and transformation within education in that it advocates that knowledge must be speculative and as such the curriculum must be indeterminate as to student outcomes if it is to be worthwhile.

In a curriculum where knowledge is dynamic and a focus for speculation, the teacher by nature cannot be an expert, but must position him/herself as a co-learner. This however is not without problems, in that the teacher must also take responsibility for the learning of his/her fellow learners. Stenhouse argues that being a “senior” learner entails that the teacher must besides having skills in finding things out, also have “...some hold on- and continual refinement of, a philosophical understanding of the subject he (sic) is teaching and learning, of its deep structures and their rationale.” (p. 91). As such the process model of curriculum development's main strength as well as its major weakness, as Stenhouse points out, is the quality of the teachers involved. The

notion of professional development for which teachers should be given time and opportunity is thus central to this curriculum development model.

Stenhouse suggests that some learning areas or subjects are more suitable for the process model than others. These include literature and the arts, whereas subjects primarily built on mechanical skills e.g. woodwork or physical education are more suited to an objectives model of curriculum.

If one agrees with Stenhouse that knowledge is a focus for debate and discussion and as such not a given entity, the process model clearly presents an advantage to the objectives model of curriculum with its ends -means approach and pre-specification of student achievement and behaviour.

In a Namibian context it is however difficult to see the process model of curriculum in practice; first a process model would, in my interpretation, require access to many and varied teaching/learning materials of a very high quality in order to acquire information with which to discuss and reflect. Given the inequality within the school system before Independence, very few schools (primarily former "white" schools) have access to this kind of materials and information. Secondly, as Stenhouse points out, the quality of the teachers is the pivotal point within the process model. Again, because of the previous system, approximately 14000 teachers out of a total of 17000 are un- or underqualified to teach their respective grades and subjects in Namibia today. One could argue that this was all the more reason for adopting a process model and supporting the professional development of teachers through this model, but reality is that these teachers barely have the "survival skills" needed to implement some kind of teaching/learning.

2.4.3 A Post Modern perspective on curriculum

Transformative change is a change in view, in perspective, in methodology.

(Doll, 1989: 249).

Doll argues that the objectives model we have looked at in detail in this chapter is essentially a “closed system”, where ends are pre-set, objectives are developed in line with those ends and closure is a return to those ends and objectives to see if they have been carried out.

With its feedback loop this is a systems view of curriculum, but not a living open-systems view.

(Doll, 1989: 246).

Doll argues that “we need new tools of thought” if we are to overcome the inherent problems in the objectives model of curriculum. These new tools of thought could come from Post-modernism and “Open systems theory” as described by Doll (1989; 1993), Capra (1996), Maturana, Varela, Prigogine (cited in Capra, 1996).

Open systems theory is still very much an emerging theory as described by Capra (1996) in his book *The web of life*.

An open system is described as a system that is autopoietic, that is a network system where the function of each component is to participate in the production or transformation of other components, the system is in other words self-regulatory through feed-back loops. In order to be so, the system needs a constant flow of matter through it. It is a system open to the flow of energy and matter, but organisationally closed or autonomous. An open system does not operate in a state of equilibrium, but in a stable state far from equilibrium (Capra, 1996).

The reason why “open systems theory” is interesting in education and curriculum development is because it allows us to see much of Piaget’s work and subsequent constructivism (see later in this chapter) in a new light. Central to Piaget’s cognitive studies, was his notion of development stages where equilibrium is followed by disequilibrium and subsequent equilibrium at a higher stage. Open systems theory provides us with an explanation of how this takes place through self-regulating and self-amplifying feed-back loops which pushes the system further and further away from equilibrium until it reaches a threshold of stability:

This point is called a “bifurcation point”. It is a point of instability at which new forms of order may spontaneously emerge, resulting in development and evolution.

(Capra, 1996: 167).

Or in Piaget’s words:

It is worthwhile to note that however the nonbalance arises, it produces the driving force of development

(Piaget cited in Doll, 1989: 246).

Hence Doll argues that we need to allow “chaos”, flux, anomalies and errors into the curriculum because “these are the triggers which set off reorganisation.” (Doll, 1989). To this end Doll suggests a “two-tier” approach to curriculum development, where:

The first tier would involve broad general goals, set by the teacher as an expert in the field, or done in collaboration with other experts in the field. The second tier would emerge as the particulars of the curriculum began to take shape. This tier would vary from class to class and would involve the class - teacher and students – working as a group or community.

(Doll, 1989: 251-252).

This second tier would be a negotiation between the parties involved teachers, learners and parents and should build on reflections on the choices made and the reasons for them.

Open systems theory also allows us to understand what happens when we claim that “people through their living in and interacting with their environment create knowledge”, as we do in a social constructivist approach to education (see later in this chapter).

Capra (1996) draws on the “Santiago Theory” developed by Humberto Maturana and Francisco Varela to explain what cognition, the process of knowing is. According to Capra the essence of the Santiago Theory is that the mind is not a thing, but a process, a process identified by life itself.

In the Santiago Theory the brain is seen as a highly co-operative system, where the dense interactions among its components entail that eventually everything that goes on in the brain will be a function of what all the components are doing. Cognition is the activity involved in the self-generation and self-perpetuation of autopoietic (or self-making) networks within a living system. (Maturana cited in Capra, 1996).

We must call into question the idea that the world is pre-given and that cognition is representation. In cognitive science we must call into question the idea that information exists readymade in the world and can be extracted by a cognitive system.

(Varela cited in Capra, 1996: 264).

The Santiago Theory claims that our cognitive process is not based on representation and information, but rather a continuous bringing forth a (not the) world through the process of living. According to Maturana and Varela there are no such things as objectively existing structures; “there is no pre-given territory of which we can make a map – the map-making itself brings forth the features of the territory.” If this is the case, that we all through living

create our own worlds, then why do we not end up with 6 billion different perceptions of “the” world?

Maturana and Varela argue that what we perceive in our environment is largely conditioned by our conceptual framework and cultural context. These “teach” us to be very selective in what we actually allow ourselves to perceive. We are all continuously bombarded with huge amounts of information and stimuli, but we filter them very carefully - subconsciously, in order not to end up in a “stimuli meltdown”. This selection is conceptually, structurally and culturally determined, in other words, we all more or less develop and use the same filters (partly through schooling) hence we bring forth similar worlds. Besides we also share an abstract world of language which also helps us bring forth a shared world together.

A two-tier curriculum model as suggested by Doll, seems to hold more promise than the process model in a Namibian context. The first tier would be spelled out either locally, regionally or nationally as a negotiated process and product between stakeholders in education. This would enable authorities to budget for and plan the distribution of required teaching/learning materials. It would provide teachers (and learners) with a first “fixed-point” around which to plan and develop their teaching/learning. And it would allow for some measure of “shared baggage” in the case of either teacher or learner transfer between schools.

The second tier, which is what makes this model fluid and open-ended, would emerge through the teaching/learning process, based on the shared experiences of the teacher and learners while moving towards the first tier. As such it will be very different from class to class and between schools, but will be based on local needs, experience, knowledge and available information and materials. Most importantly it would encourage a move away from the curriculum and the school as being the only interpreters of worthwhile

knowledge and learning and allow for open-endedness, change and transformation.

If a post-modern two-tier curriculum model as suggested by Doll is conducive to bringing about change and transformation, what learning theory would be most appropriate to adopt within such a model?

2.5 THE TRANSFORMATIVE CURRICULUM AND LEARNER CENTERED EDUCATION

Learner Centred Education features very prominently in the Namibian discourse of education. It has in fact become a “slogan” (Jickling and Spork, 1998) and synonymous with the education reform.

As we make the transition from educating an elite to education for all we are also making another shift, from teacher-centred to learner-centred education.

(MEC, 1993a: 10).

The Namibian policy document *Toward Education for All* describes Learner Centred Education in the following way: “Accordingly our approach to learning and teaching should be learner centred, which means that:

- The starting point is the learners’ existing knowledge, skills, interests and understanding derived from previous experience in and out of school;
- The natural curiosity and eagerness of all young people to learn to investigate and to make sense of a widening world must be nourished and encouraged by challenging and meaningful tasks;
- The learners’ perspective needs to be appreciated and considered in the work of the school;
- Learners should be empowered to think and take responsibility not only for their own, but also for one another’s learning and total development; and

- Learners should be involved as partners in, rather than receivers of, educational growth.”

(MEC, 1993a: 60).

I will deal with the aspect of Learner Centred Education in the Namibian context in more detail in chapter 4. Here I will explore where the notion of Learner Centred Education comes from and look at Learner Centred Education and social constructivism as a learning model that allows for change and transformation.

Some have equated Learner Centred Education with Child Centred Education and for understandable reasons. Implicit in the word learner is the understanding that a learner is a child. We seldom use the term learner about adults, if so we call them adult learners. So, in many people’s vocabulary learner and child are used interchangeably. This however presents the education community with a problem, in that Learner Centred Education and Child Centred Education are two very different things.

Child Centred Education was an attempt to break free from the behaviourist aims and objectives of the education system in Britain in the fifties and sixties. Child Centred Education intended to see childhood as more than simply a biological factor, rather childhood should be seen as having unique social, emotional and spiritual characteristics different from those of adolescence and adulthood (Van Harmelen, 1998).

So the initial focus of Child Centred Education was to find different aims and objectives for primary school learners. To this end much effort was put into developing “integrated studies” as described by Entwistle (1970). Integrated studies were seen as a potential way of “merging” aspects from different subjects or disciplines into a more holistic education that was more relevant to the learners. A way of overcoming the fragmentation of the curriculum into

subjects. But as Van Harmelen (1998) writes, Child Centred Education was trying to break free from the behaviourist system while at the same time building a new system on stage theorists like Erikson and Kohlberg. "It was an attempt to break free without fundamentally questioning the (behaviourist) principles that were underlying education" (Van Harmelen, 1998: 5), in other words reforming the system without questioning the underlying assumptions as described previously by Popkewitz.

Current theories of Learner Centred Education originate in cognitive psychology as opposed to behaviourist psychology and within the study of language acquisition. These challenge the fundamental values that underpin the so-called scientific approach to education (Van Harmelen, 1998). Cognitive psychologists like Piaget, Bruner, Ausubel, Vygotsky see knowledge as constructed in the mind of the learner and the development of language as an enabling mechanism through which we make sense of our world and are able to communicate and discuss this understanding.

This movement in cognitive psychology has been termed constructivism. It is beyond the scope of this thesis to give a complete historical account of the development of constructivism, but it is pertinent to look at two directions within constructivism, radical constructivism and social constructivism in terms of how these two accommodate and view change and transformation. Bodner (1985) traces the theory of radical constructivism to Piaget, although earlier notions of constructivism have been found. Radical constructivism claims that knowledge is constructed in the mind of the learner and is concerned with knowledge as a "fit" rather than a "match" to reality in the key/lock metaphor.

The only thing that matters is whether the knowledge we construct functions satisfactorily in the context in which it arises.

(Bodner, 1985: 874).

Thus the radical constructivist view of knowledge is an instrumentalist view of knowledge, knowledge is good if and when it works, if and when it allows us to achieve our goals (Bodner, 1985). Knowledge in a radical constructivist sense is only viable when it fits reality and as such existing knowledge continuously undergoes a “survival of the fittest” test when confronted with new experiences, where only the most appropriate/ best fitting knowledge is assimilated. As such a radical constructivist view of teaching/learning cannot change, but must merely adapt to reality. This view has given rise to criticisms of radical constructivism as still being entrenched in an empiricist, structuralist meta-narrative (Lerman, 1992) and drawing on a Liberal/Progressivist orientation to education (see table 2) in much the same way as Child Centred Education.

Social constructivism which is a further development of constructivism, while still believing that knowledge is constructed in the minds of the learners, subscribes to a view, where reality is constructed through and by language:

Language is not transparent... it is not expressive and does not label a ‘real’ world. Meanings do not exist prior to their articulation in language and language is not an abstract system, but always socially and historically [and culturally] situated in discourses.

(Weedon (1987) quoted in Lerman, 1992: 5, my insertion)

Or as Lerman quotes Lacan (1966): “It is the world of words that creates the world of things.” (p. 5). Hence the world of things can be changed through the world of words.

Paul Ernest (1993) in turn argues that social constructivism concerned, as it is with conversation emphasises a dialogical basis of knowing, learning, and teaching. This metaphor of conversation also goes well with the notion of

democracy, thus social constructivism would seem to support an emancipatory vision for education, one that embodies egalitarian values of social justice and aims at an empowered and literate citizenry.

If one subscribes to the view of Learner Centred Education and social constructivism as described above, it is clear that this approach to education is incompatible with a behaviourist objectives model of curriculum that prescribes what should be studied and the behavioural outcomes from the learning process.

2.6 ENVIRONMENTAL EDUCATION

Having identified and argued for a transformative curriculum model, located within a social constructivist theory as presenting an appropriate alternative in reforming the Namibian educational system according to the policy guidelines, I will now narrow the focus and seek answers to: What view of and approach to environmental education within the formal education system, will support and complement the educational reform and is appropriate for Namibia being an African country?

In order to answer this question, it might be helpful to take a quick glance at different trends that over the years have appeared in EE and their associated educational ideologies. For this purpose I will describe EE in three different categories, which now seems to be most commonly accepted; EE about, in and for the environment.

EE about the environment.

Environmental education as education about the environment emphasises learners acquiring knowledge about natural systems and processes and the ecological, economical and political factors that influence decisions about how people use the environment (Fien, 1993).

Robottom (1991) describes education about the environment as "...the transmission of propositional knowledge that either explains aspects of the environment, or provides tools for doing so." (p. 24). This knowledge is considered essential for resolving local, national and global environmental issues and for managing the environment responsibly.

The intention of education about the environment is/was first and foremost to change people's behaviour through making them aware of the environment and informing them about the environment and about problems in the bio-physical dimension.

Fien (1993) identifies education about the environment as belonging within a vocational/ neo-classical orientation to education (see table 2).

The vocational/ neo-classical orientation holds an instrumentalist view of the role of schools in society, views knowledge as 'scientifically objective', and has its foundation within a behaviourist learning theory. Critique raised concerning education about the environment includes that its primary focus is on ecological concepts and technical solutions to environmental problems. There is a tendency to overlook the human causes of the problems and the necessary change in social systems for solving them (Fien, 1993).

EE in the environment.

Education in the environment is experiential fieldwork aimed essentially at interpreting and appreciating the environment (Robottom, 1991).

Education in the environment takes on a more Learner Centred approach than that of education about the environment and through this adds reality, relevance and practical experiences to learning (Fien, 1993).

The assumptions behind education in the environment were and are that learners through being better informed and "immersed" in the beauty and wonders of nature, would do something about the problems. This linear causation is however also one of the primary critique points.

Education in the environment is situated within a liberal/ progressive orientation to education (see table 2). Here education is a preparation for life rather than preparation for work. This orientation seeks the development and improvement of society through the education of autonomous individuals in whom schools have developed 'a sense of good, true and beautiful' (Kemmis, Cole and Suggett in Fien, 1993).

Critique of "education in the environment" includes as mentioned the linear causation: experiences + information => action. It has also been critiqued for seldom seeking critical engagement with local issues and sustained problem-solving actions. The emphasis on the individual within the liberal/progressive orientation has been seen as problematic by some. It is the right of the individual to choose to act and respond - or not.

Kemmis in Fien (1993) argues that the liberal/progressive orientation to education tacitly approves the reproduction of the social relations of society and by default, serves conservative interests. It does so by failing to recognise the wider social, economic and political causes of non - or under-achievement amongst learners and thus sustains the 'job -slot expectations' of the vocational/ neo-classical orientation.

EE for the environment.

Contrary to the two environmental education "modes" mentioned above, education for the environment has an overt agenda for values education and social change (Fien, 1993). Robottom (1991) describes education for the environment as community based, action oriented aimed at challenging harmful exploitation of aspects of the environment. Environmental process within education for the environment has been described as interactive challenges of learning and planning together, followed by action-taking to bring about change.

Education for the environment builds on aspects from education about and in the environment, but further aims at engaging students in the exploration and resolution of environmental issues to foster such values that are promoting lifestyles that are compatible with sustainable and equitable use of resources. Education for the environment has been described as 'counter-hegemonic' (Fien, 1993) in that it challenges the way uncritical educational practices accept and reproduce the Dominant Social Paradigm as a taken-for-granted and natural way of interpreting people-environment relationships.

Education for the environment is situated within a socially critical orientation to education (see table 2). This orientation values the personal development and achievement objectives of liberal/progressive education, but believes they are insufficient educational goals in a structurally unjust world (Fien, 1993). The socially critical orientation is:

“ ... committed to active pedagogical initiatives aimed at promoting social justice, equality and democracy through the thoughtful, ethically based, responsible and critical examination of social problems and active participation in developing a continually improving society.”

(Fien, 1993: 22).

As such this orientation sees a reciprocal relationship between school and society, where education is both shaped by and responsive to the needs of society and in turn helps shape society of which schools are part (Fien, 1993). Jickling and Spork (1998) raise a number of problems around the rhetoric and underlying assumptions regarding “Education for the environment” and its offspring “Education for Sustainability”.

They question whether in fact education for sustainability is in everyone's interest or just the interest of some and whether educating **for** something is not closely linked to a programmatic and deterministic approach to education.

With regard to values and ethics, they argue that environmental ethics and value should be a creative, open -ended process and not as advanced by Fien (1997) and UNESCO (1997) more of a defined product.

Our role as educators is to engage students in this process rather than prescribing a particular set of values or visions.

(Jickling and Spork, 1998: 18).

Jickling and Spork go on to ask whether we do not need to build in -
determinacy into our programs and instruction rather than determinacy?
Their argument being that shaping the future involves an in -determinate
process of examining and re-casting society, two aspects central, in their view,
to environmental education.

Table 2. Ideological orientations in education.

Perspective on	Vocational/Neo-classical	Liberal/progressive	Socially critical
Social role of the school	School prepares and selects students for participation in society; school has a role in maintaining, reproducing and legitimating social, economic and political structures and divisions by preparing students to compete successfully for job opportunities	School prepares students to participate in the reform of society, each to a level of his and her abilities; school is seen as civilising for all and as having a role in preparing the best of its students for socially responsible use of their talent and attainment	School and society reflect one another; school may help in overcoming social inequities and prepare students for participation in social, political, economic and environmental activities, with a stress on socially, morally and politically justifiable conflict resolution
Desired student outcomes	Finding ones place in society; having the skills to fulfil workroles	The "Educated person"; one who self-actualising, reflective and potent as a human being, who has learned how to learn and how to pursue own vision of 'The true and the good'	A critical and constructive co - participant in society who sees self - actualisation in social context, who pursues the 'True and the good' in transforming and being transformed by society; not purely individualistically
Broad Curriculum organisation	Rigid subject framing and timetabling; selection of students based on performance criteria	Weak subject framing and timetabling; selection of students on basis of interest and readiness	Differentiation of 'subjects' and use of time based on negotiation between community, teachers and students
Teacher's role	An authority, transmitting knowledge, structuring and sequencing what is known to allow the students to achieve mastery	A 'mentor' or facilitator, organising learning opportunities to allow the students to take advantage of opportunities and achieve autonomy	A project organiser and resource person, organising critical and collaborative projects in negotiation with students and community
Student learning role	A receiver of transmitted knowledge, more or less prepared or motivated to achieve within the framework of what is taught	An active constructor of knowledge through experience and opportunities to discover and enquire; more or less able to take advantage of opportunities in terms of preparation and own experiences	A co-learner, using available knowledge through interaction with others in socially significant tasks of critique or collaborative social action
Teacher-student relationship	Teacher is an authority, uses directive pedagogy; controls progress; a hierarchical relationship imposing learning; based on one -to many relationship of teachers to students	Teacher is a leader with recognised knowledge and concern for student growth; progressively yields control as students are able to exercise self-control, based on ideal of one-to-one relationship of	Teacher is a co -ordinator with emancipatory aims; involves students in negotiation about common tasks and projects; emphasises commonality of concerns and works through conflicts of interest in terms of social justice and ecological sustainability

		teachers to students	
Knowledge	Objective; a public matter; exists in books; mostly described as skills and information, (facts, concepts) which have their meaning and significance in occupational and disciplinary contexts; special concern for the technical/rational/scientific/managerial interest of knowledge (knowledge for control); strong split between 'mental' and 'manual' (skills) aspects of knowledge	Subjective; a 'private' or individual matter; exists in accomplishments or 'in the head' of the individual; mostly described as learning, attitudes and living skills which have meaning and significance in the individual's life context and culture; special concern is for the practical/expressive/cultural interests of knowledge for communication, deliberation and refinement; integration of mental/manual in individual work	Dialectical; an interplay of subjective views of the world and the historical and cultural frameworks in which they are located. Sees knowledge as socially constructed. Thus knowledge is not easily specified: it has its meanings in actions or projects whose significance is in specific contexts. It places a central value on the role of knowledge in social action: the emancipatory interests of knowledge. Mental and manual aspects of knowing are integrated in groupwork.
Learning theory	Behaviourism; deficit models of the learner; 'transmission' theories of learning	Constructivist-interactionist; sees the learner as building cognitive structures through interaction.	Social constructivist-interactionist; sees the learner as reconstructing a social reality that is socially constructed and subject to reconstruction through historical and political processes.

(Adapted after Kemmis, Cole and Suggett cited in Fien, 1993).

When looking at the table above describing three different ideological orientations within education, it becomes clear that the three models of curriculum analysed earlier in this chapter, belong in separate orientations, although there is always a risk of over-simplification when categorising such complex entities as curriculum models into rigid tables.

The objectives model of curriculum with its departure in behaviourist psychology and transmission teaching has a vocational/ neo-classical orientation to education. The process model which was developed as an alternative to the objectives model, is situated within a liberal/ progressive orientation, while Doll's post-modern curriculum with its emphasis on change, transformation and negotiation sits well within a more socially critical orientation to education.

EE that favours education about the environment with a vocational/neo-classical orientation, while conveying important concepts from ecology and information about the environment, in my view, falls well short of supporting the stated intentions of the Namibian educational reform of changing from one education system to another, from one perception of knowledge and teaching/learning to another.

In differentiating between EE in the environment and EE for the environment, two aspects become salient within a Namibian setting. Namibian educational

reform policy very strongly advocates a redressing of the past system. If Kemmis is right in that the liberal/progressive orientation to education 'tacitly approves the reproduction of the social relations of society and, by default, serves conservative interests' by not fundamentally questioning the underlying assumptions, it would seem that EE in the environment is inadequate as a model for transformation. The second point is that of the liberal/progressive orientation being primarily concerned with a radical constructivist learning theory. If one accepts, as I have been arguing above, that Learner Centred Education logically must be situated within a social constructivist learning theory, EE in the environment again falls short of the stated intentions of the Namibian reform of adopting a Learner Centred approach in education.

Thus if one has to highlight one model of environmental education as being better suited to support and complement the Namibian education reform, it would seem that EE situated within a socially critical orientation to education, is the one more appropriate.

Taking heed however of Jickling and Spork's (1998) critique of "Education for the environment" being deterministic by already (implicitly or explicitly) having defined action and values necessary to build a sustainable future, lends a further argument for locating EE within a transformative curriculum as suggested by Doll, where it is only the "first tier", which is in sight and, as such, not restricting the learning process, but keeping it creative and open-ended as suggested by Jickling and Spork.

Although I have identified socially critical environmental education as being an appropriate way of doing EE in a Namibian context, nothing has been said about whether this should be within the formal, non-formal or even in-formal sector of education. I do not see any need for choosing one above the other, they are all important if we are to make changes as to how we live with and in our environment. What I will do here is to make a case for the importance of EE within the formal education system, not at the expense of the non-formal

or in-formal system, but as complementary to these and in the process argue that EE in Namibia needs to be either a separate subject in the curriculum or incorporated into a “carrier-subject”.

The Namibian Constitution states in article 95 that:

The State shall actively promote and maintain the welfare of the people by adopting policies aimed at...The maintenance of ecosystems essential ecological processes and biological diversity of Namibia and the utilisation of living natural resources on a sustainable basis for the benefit of all Namibians, both present and future...

(In Namibian Environmental Education Network, 1998: 2)

This article, together with Namibia being a signatory to various international conventions like the Convention of Climate Change, the Convention to Combat Desertification, the Convention on Conservation of Biological Diversity as well as Agenda 21 that all recognise the importance of environmental education in a move towards sustainable living, justifies the inclusion of EE in the formal, non-formal and in-formal sector of education in Namibia. Or as the Permanent Secretary of Basic Education argues after having listed some of the environmental problems Namibia faces: “Without a population that can take heed of environmental issues and act appropriately on them, the future [for Namibia] looks bleak.” (Katoma, 1995: 5).

EE in formal education.

In making a case for including EE within formal education, we must briefly return to the section in this chapter that described aspects of African curriculum development. The reader will remember that it was argued that the Academic Curriculum to a large extent was a demand from the people through an acknowledgement of the fact that this type of curriculum leads to better jobs.

Vulliamy (1987) takes this argument further in stating that schools and schooling in Third World countries tend to be valued extrinsically for their ability to promote mobility out of the subsistence sector to formal sector jobs via the acquisition of examination certificates, rather than intrinsically for any knowledge or understanding gained within them. The reasons for this, Vulliamy argues, are that the life style differences between the educationally successful and the unsuccessful in third World countries, simply are too great (Vulliamy, 1987). Thus parents in Third World countries are using the school to promote their children out of the community as King (1976) in Vulliamy (1987) suggests.

From the above arguments follow: firstly, including EE in formal curriculum has advantages in Third World countries over merely undertaking EE through non-formal and in-formal structures. This is so because formal education is taken more seriously by learners and parents being a route to what is perceived as a better life. Secondly, EE in the formal curriculum must be given high status in the eyes of teachers, parents and learners through examination and certification which is most practically done through EE being either a separate subject or linked closely to carrier subjects with high status.

These two arguments may not go down well with contemporary interpretations of EE being cross-curricular and having intrinsic value in itself, but as Vulliamy (1987) argues: "Environmental educators should temper some of their more idealistic ambitions with the harsh realities of the practicalities of schooling in the Third World." (p. 18).

Namibia being a Third World country has opted for the carrier subject model of EE. EE in Namibia is integrated into main subjects as follows:

Lower primary level (Grade 1-3): Environmental Studies.

Upper Primary level (Grade 4-7): Natural Science and Health Education and Social Studies.

Junior Secondary level (Grade 8-10): Geography, Life Science and agricultural Production and Farming Technology.

Senior Secondary level (Grade 11-12): Biology, Geography, Natural Economy and Development Studies. (Adapted after Katoma, 1995).

An evaluation of the Life Science curriculum with regard to how and if it has supported the conceptualisation of Learner Centred Education within a social constructivist learning theory among stakeholders involved in education and the process through which the curriculum was developed, will thus at the same time illuminate whether Life Science as a carrier subject of EE has located this EE within a socially critical orientation to education, which as suggested previously is better suited to further the reform ideals described in policy.

2.7 SUMMARY

The key issues of this thesis are, as mentioned in chapter one, to provide evidence as to what extent the Life Science Project has actualised in the mind of stakeholders the central assumption of Learner Centred Education on which the curriculum hinges, and through this to provide an evaluation of part of the Namibian reform process.

In this chapter I have attempted to develop a platform from which to understand and evaluate change and reform.

I have argued that in order to change, we must be willing to question and debate our underlying assumptions about society in general and education in particular. I have further argued that we cannot locate a transformative curriculum, which encourages change, in positivistic, empiricist models of teaching and learning because these were never intended to change anything, but rather to reproduce the existing.

Finally, I have identified Learner Centred Education within social constructivism as an appropriate learning theory in which to locate both a transformative curriculum and an environmental education model which

encourages critical and creative learners to develop the necessary understanding, skills and attitudes for action directed towards a sustainable and better future.

The remaining chapters of this thesis will continuously touch base with the platform developed in this chapter in order to analyse and understand the reform process and praxis.

3. METHODOLOGY.

This chapter identifies, analyses and justifies the research methodology, selected as appropriate to achieve the goal of evaluating the Life Science Project through an analysis of the central assumptions on which the curriculum is based, and by investigating stakeholders perceptions and understanding of the learner-centred approach adopted by the curriculum, as described in chapter 1.

In this chapter I do not attempt to give a definitive and thorough review of the theories and practices within evaluation. This has been done eloquently by several other authors over the years, see for example Nevo (1983), Guba & Lincoln (1989) or Madaus, Stufflebeam, Scriven (1983).

What I will do in this chapter is to give a brief description of and contextualize different evaluation methods/approaches that have informed my choice of evaluation tool for this study, I will describe this evaluation tool in detail as well as other research tools like concept mapping, focus questions and interviews, which form part of this study.

In this chapter I will further argue why, having selected and adapted the particular evaluation model, this research is located within an interpretative paradigm.

3.1 EVALUATION

Different authors (Nevo, 1983) have used different ways of grouping or organising the various evaluation models that have developed over the years. Seeing that this is not an exhaustive account of all models, I have chosen to categorise the evaluation approaches that have informed this study under four headings:

- Scientific-experimental models,
- Management-oriented model,
- Qualitative/ anthropological models and

- Participant-oriented models.

Other authors (Guba & Lincoln, 1989) have chosen to give an account of the different models by linking the models to a particular period of time.

Although this gives a useful idea of the historical context in which the models were developed, it at the same time implicitly creates the impression that evaluation *per se* has moved beyond that specific model to a more recent one.

This is not necessarily the case. As several evaluators observe and even advocate (Nevo 1983, Stake 1973, Frechling et al., unknown), many evaluations are done through combining aspects of different models into an approach that best suits the specific task at hand.

Scientific-experimental models

Scientific-experimental models of evaluation are concerned with testing and measuring outcomes of an intervention or program. It has been argued that these models have been the historically most dominant evaluation models (<http://trochim.human.cornell.edu>, 3-6-98).

A good example of a scientific-experimental approach to evaluation is Tyler's evaluation model, which is derived from his rationale for curriculum development (see chapter two for more details). Tyler regarded evaluation as the process of determining to what extent the educational objectives had actually been realised (Nevo, 1983) or as Bloom (1970) in Stenhouse (1975) puts it: "Evaluation is concerned with securing evidence on the attainment of specific objectives of instruction" (p. 99 -100). This approach to evaluation is essentially one of measurement. In order to secure this evidence a host of testing schemes was and have been developed, mainly in order to test student performance and achievement in relation to the stated objectives. The origin to the well-known "Standardised tests" in education is to be found in this approach to evaluation:

"The centrality of educational objectives [in Tylerian evaluation] has two important implications:

- Evaluation must be based on how well students achieve these objectives, and
- It is necessary to develop systematic evaluation instruments that faithfully reflect the stated objectives”.

(Husen & Pastlethwaite. Eds. , 1985.: 5325)

As with the objectives model of curriculum development, the rational - empirical (Husen & Pastlethwaite, 1985) or scientific -experimental model of evaluation as advocated by Tyler and others, reflect a behavioristic and positivist view, where what is essential is to determine whether the students have achieved the intended outcomes as measured against the defined objectives. This type of evaluation is seen as “value-free” or “scientific” in that it simply “states the facts”.

Critiques of the scientific-experimental or as Parlett and Hamilton (1976) calls it the “Agricultural -botany paradigm” model of evaluation have revolved around the general narrowness of restricting evaluation to achievement of objectives (Husen & Pastlethwaite, 1985). Parlett and Hamilton (1976) list the shortcomings as follows:

- Educational situations are too complex for the evaluator to be able to control all variables,
- Before and after research assumes that innovative programs undergo no changes while being implemented,
- The methods employed pose restrictions on the scope of study,
- Insensitive to local perturbations and unusual effects, and
- They rarely acknowledge the diversity of needs and questions from different stakeholders.

Evaluations in this paradigm are concerned with “proving”, that is if one accepts that there is such a thing as value -free, objective and scientific documentation within evaluation. The approach has thus been criticised for

doing little to improve a program. To a question like: Has the program achieved what it set out to do? The short answer will be either yes or no. There is no room within this approach to ask "why". Hence many people have felt the need to alter or improve on this model. The complete lack of reflection within the above described model and its inability to give guidance to the further continuation and development of a programme or initiative has convinced me that this model would be inappropriate to employ in this evaluation.

Management-oriented models:

Scriven (1967) was the first to use the terms "formative" and "summative" evaluation (as cited in Nevo, 1983). Formative evaluation should serve improvement and development of an ongoing activity and summative evaluation should serve accountability, certification, selection and continuation (Nevo, 1983).

This is a radical departure from the scientific -experimental approach where the emphasis was on "proving". With formative evaluation the emphasis shifted towards improving a program. The need for the evaluator to provide not only accounts of whether the innovation achieved what it set out to do, but also to provide information on how to improve the innovation, was thus formulated.

Stufflebeam has, in his CIPP model for evaluation, provided us with a model, which elegantly addresses the need for information by managers and decision-makers. Stufflebeam (1983) describes the CIPP (where C = context, I = input, P = process and P = product) as "a tool to help make programs better for the people they are supposed to serve and a tool to promote growth and provide leadership with feedback" (p. 118). He argues that context evaluation is needed to guide planning decisions, input evaluation in order to serve structuring decisions, process evaluation to guide implementation decisions and product evaluation to serve recycling purposes.

Scriven's insight to differentiate between formative and summative evaluation, together with Stufflebeam and others' call to not only "prove" but also "improve" through evaluation represents, in my view, a vast step forward within evaluation. At the same time it became clear to evaluators that evaluation could not just be a presentation of measured facts, but that there was also a need for the evaluators to include a judgement of the evaluated. Hence the Joint Committee in 1981 suggested that evaluation be defined as "The systematic investigation of the worth or merit of some object".

Robert Stake was one of the evaluators who argued that it is the business of the evaluator, not merely to accumulate data, but to judge (in Stenhouse, 1975). Stake was developing his "Responsive Evaluation" at the same time as Stufflebeam developed his CIPP model.

Stake felt that there were a number of shortcomings with the CIPP model.

One of his concerns was that the model in his view fell short because managers in general were unwilling or unable to examine their own operations as part of the evaluation. If the CIPP model first and foremost was a tool to inform decision makers, a crucial component was missing if managers were unwilling or unable to take a critical look at their own operations within the evaluation.

Stake's responsive evaluation is geared to serve involved project staff or implementers as opposed to the CIPP model, which is primarily directed towards decision-makers and managers. Stake considers an evaluation to be responsive if it is "oriented towards program activities rather than intents, responds to audience requirements for information, and if the different value perspectives of the people at hand are referred to in reporting the successes and failures of the program" (Stake, 1973: 292). Stake advocates a responsive evaluation in order to move beyond only informing decision-makers, in his view the staff involved and implementers are just as important to an innovation. In responsive evaluation "Portrayal and holistic communication is important, we [as evaluators] are too poor to communicate with our

audiences. We need to portray complexity and reveal the multiple reality of educational experiences.” (Stake, 1973: 299).

Stake’s responsive evaluation might still be considered to be a management - oriented model of evaluation, but he widens the scope of audience considerably to include not only decision -makers but also program implementers and the people the innovation is intended to serve.

I concur with the criticism of the two categories of evaluation models described above as being over -committed to the scientific paradigm and for a tendency towards managerialism (Guba & Lincoln 1989). Over -commitment to the scientific paradigm, which relates especially to the scientific - experimental approach, in the sense that the evaluation is “context -stripping” in an attempt to generalise from the findings. It is not the specific innovation or program that is interesting, but the “generalisable truth” within the specific program. Hence the exercise is to unpack the program for context in order to get to the “core” of the evaluand. Truth in the scientific -experimental approach is seen as non -negotiable and the evaluators as “nature’s lawful messengers” which cannot be questioned because they merely report the truth (Guba & Lincoln, 1989). By measuring or testing achievements against stated objectives, this form of evaluation also rules out alternative ways to think about the evaluand and hence limits the findings of the evaluation. The criticism of the models to harbour a tendency towards managerialism originates in the relationship between the Manager of a program or innovation, who is the one that commissions the evaluation and the evaluator. Guba & Lincoln (1989) and Stake (1973) argue that this relationship is seldom challenged.

The rewards for the evaluator to produce a favourable report by far outweighs the rewards for producing an unfavourable report.

(Stake, 1973: 289).

Guba & Lincoln (1989) argue that the manager, more often than not, is outside the evaluation.

The manager has the power to decide what questions should be pursued, how to collect data and whom to disseminate the findings to. The manager decides if the findings are to be released. The stakeholders are powerless.

(Guba & Lincoln, 1989: 32).

These critiques have led many to believe that the scientific paradigm is fundamentally flawed if one views evaluation as more than measuring achievements or informing decision-making.

Qualitative/ anthropological models:

If one sees the products of an evaluation as understandings and interpretations and not as information *per se*, as Kemmis and Stake (1988) advocate, it might be more appropriate to locate the evaluation in another paradigm, which is what Parlett and Hamilton (1976) have argued. Parlett and Hamilton (1976) see evaluation as “illuminate problems and issues rather than merely adjudicate worth as the evaluator sees it.” (p.140). Because of this they argue that illuminative evaluation belongs to a contrasting anthropological research paradigm. In illuminative evaluation measurement of educational products are abandoned for intensive study of the program as a whole, its rationale, evolution, operations, achievements and difficulties. The innovation is not studied in isolation, but in context or learning milieu. In Parlett and Hamilton’s words, the primary concern of illuminative evaluation is with description and interpretation rather than measurement and prediction. It aims to discover and document what it is like to be participating in the scheme. It seeks to discern and discuss the innovation’s most significant features, recurring concomitants and critical processes (Parlett and Hamilton, 1976). Within illuminative evaluation the evaluator seeks to unravel the

complex scene s/he encounters, isolate its significant features, delineate cycles of cause and effect, comprehend relationships between beliefs and practices and between organisational patterns and the responses of individuals.

The principal purpose of evaluation studies is to contribute to decision making, but the researcher/evaluator does not make decisions, s/he provides information.

(Parlett and Hamilton, 1976: 152).

Considering the length Parlett and Hamilton goes to in order to locate their illuminative evaluation in a different paradigm, the above quote is somewhat “disappointing” and in my view seems to revert to the scientific-experimental paradigm. The quote claims that the researcher/evaluator is neutral by not making decisions. This can hardly be the case seeing that the evaluator constantly throughout the evaluation decides on issues, problems and questions to further pursue and illuminate. The quote also claims that the evaluator only provides information. Above I have argued (together with Kemmis and Stake) that an evaluation does not provide information as such, but interpretations and understandings as perceived by the evaluator. This is an important distinction if evaluation is to serve decision-making.

Guba and Lincoln (1989) have taken illuminative and responsive evaluation further in their Fourth Generation Evaluation (FGE) model. They argue that FGE is a construction that counters imperfections, gaps and the naivety of former models. Besides the already mentioned critique of former evaluation models which in the view of Guba and Lincoln (1989) rely too heavily on the scientific paradigm and a tendency towards managerialism, they raise another concern; the failure of existing models to accommodate value-pluralism. Our society is value-pluralistic and we do not necessarily share values. In an evaluation who's values will dominate and how will differences be negotiated? Other evaluation models fail to address these dilemmas.

FGE is a responsive constructivist evaluation. Responsive because it determines parameters and boundaries of the evaluation through interactive negotiated processes that involves stakeholders (Stake, 1975) and constructivist because FGE ontologically believes that we construct the meaning we make of our world through personal experience and social interaction. Epistemologically FGE denies the dualism between subject/object, the findings in an evaluation exists because of an interaction that creates what emerges.

In a FGE the advanced organisers are not stated objectives or interpretations by the evaluator, but the claims, issues and concerns about the evaluand as identified by the stakeholders (Guba & Lincoln, 1989).

Guba & Lincoln (1989) list a number of arguments for choosing a FGE model:

- Stakeholders are at risk through an evaluation. It is only fair they get a chance to bring forth their concerns, issues etc.
- Stakeholders are open to exploitation and dis-empowerment through an evaluation.
- Stakeholders are users of evaluation information. FGE is a way of overcoming “non-use” of the evaluation.
- Stakeholders are in a position to broaden the inquiry. FGE has in-built open-endedness.
- Claims, concerns and issues arise out of the stakeholders’ particular construction and reflect their particular circumstances, experiences and values.
- Stakeholders are mutually educated by FGE. Through recycling and sharing/negotiation. Along with this comes a better understanding of the stakeholders’ own position.

Roughly one can describe a FGE in five phases.

First phase: Stakeholders are identified and solicited for claims, concerns and issues about the evaluand.

Second phase: Claims, concerns and issues are shared amongst the stakeholders and negotiated. Already here many of these will be resolved.

Third phase: The left over claims, concerns and issues become the advanced organisers for information collection by the evaluator.

Fourth phase: Renewed negotiation led by the evaluator based on information gathered.

Fifth phase: Any non-resolved issues will constitute the core for a following evaluation.

I return to FGE later in this chapter, when I will describe this evaluation in more detail and how and why I have adapted FGE to suit this research.

Participant-oriented models:

The last evaluation category I have chosen to describe is a participatory - oriented one.

One could certainly argue that some of the previously mentioned models also are participant-oriented models of evaluation i.e. Stake' responsive evaluation, Parlett and Hamilton and Guba and Lincoln's FGE.

What makes me describe a participant -oriented model as a distinct category on its own, is because here we find a special focus on "change" and how, through an evaluation, we can actively support and facilitate change.

Stephen Kemmis has for many years been at the forefront of the development of "action research", as a research method, as an evaluation model, as a model for professional development and as praxis. Evaluation is seen as a central concept in action research.

Kemmis argues that for evaluation to contribute to educational change, it is essential that the participants themselves be engaged in the evaluation rather than evaluators as the participants' advocates or proxies (Kemmis, 1993).

Participants should be the prime movers of an evaluation conducted by themselves and for themselves. This view of evaluation is closely linked to, and is essential to, emancipatory action research. Evaluation in this view aims, like research, to help us change the world we live in.

A participatory-oriented model of evaluation recognises that any evaluation is humanly, socially and historically constructed and that evaluation is for information, approval and regulation.

Foucault cited in Kemmis (1993) has argued that the will to truth is intimately linked with the will to power. This notion of course has huge implications if we regard an evaluation as a search for truth. If that is the case, then from a critical perspective it makes good sense through a participant-oriented model for evaluation to empower the participants rather than some outside evaluator. If an evaluation on the other hand is not a search for truth, because there is no “truth”, but only understandings and interpretations according to peoples constructions, is an evaluation then still a will to power? I will argue yes, because our constructions and understandings of the world, are our “truth” at a given place, in a given time and space.

A participant-oriented model of evaluation including action research would, in my view, have been very appropriate for this study. I have, however, not designed the study as such, primarily because action research requires lengthy and close collaboration with the stakeholders, a process I was unable to undertake.

3.2 RESEARCH ORIENTATION

Learner Centred Education is, as described elsewhere in this thesis, central to the education reform in Namibia. I have tried through using principles from a FGE and by way of workshopping, constructing concept maps, having stakeholders answer focus questions and through interviewing stakeholders, to elicit and to let various stakeholders share and construct their understanding of Learner Centred Education. As such this research is not a measurement of the degree to which Learner Centred Education is implemented in Life Science or Namibia today. For this one would have used a scientific/ experimental model of evaluation situated in what Parlett and Hamilton (1976) call an “Agricultural - botany paradigm” or a Vocational/neo-colonial orientation (see chapter two). Nor is this evaluation

designed to inform any management about the achievements of an intervention like the CIPP model of evaluation.

Using principles from a FGE, with the aim of sharing and negotiating stakeholders' understanding of Learner Centred Education and thus using this evaluation as a learning experience, both for the researcher and the stakeholders, necessitates that the research be located in an interpretative paradigm, which among other features accommodates value pluralism, employs a constructivist epistemology and avoids any context stripping.

This research is located within an interpretive tradition of inquiry.

Guba & Lincoln (1988) argue that when deciding on which paradigm to locate a study/research in, the decision revolves on the assessment of fit to the area of study rather than any intrinsic advantages or disadvantages within the different traditions.

Guba & Lincoln (1988) further argue that the interpretive, or as it is called by others the naturalistic, hermeneutic or symbolic paradigm, provides the best fit to most social/ behavioural phenomenon. It does this for several reasons. Interpretavists/ naturalists believe that multiple realities exist which by and large are constructions existing in the minds of people. For the interpretavist it is the meaning/interpretations people make that are interesting. These can only be studied in a holistic and idiosyncratic fashion (Guba & Lincoln, 1988). The aim of interpretive research or inquiry is to create a body of idiosyncratic knowledge. Generalisations are not possible since human behaviour is never time or context free, it may however be possible to transfer working hypotheses from one context to another. The best we can hope for within interpretive research, as Guba & Lincoln (1988) describe it, is to establish plausible patterns of influence.

Popkewitz (1984) describes the purpose of doing interpretive research as a way of developing theories about social affairs. The notion of theories however shifts from a search for law-like regularities as found in empirical - analytical research, to the identification of social rules that underlie and

govern the use of social facts. The symbolic sciences, as Popkewitz calls the interpretive paradigm, regard social life as both rule-making and rule-governing. Interpretive research tries to identify how participants reason about a situation and the language that enables individuals to participate in a world of collective symbols and shared meanings (Popkewitz, 1984).

In the interpretive paradigm language makes knowledge and thought processes available for sharing, introspection and revision.

Although the above description of the interpretive paradigm or research tradition clearly distinguishes it from the empirical-analytical paradigm, the interpretive paradigm maintains fundamental similarities with the empirical-analytical paradigm. Popkewitz (1984: 43-44) describes these similarities as:

- The purpose of interpretive research is still a descriptive “neutral” theory about social affairs. Although it includes communication and negotiation, the value stance is distinguished from the theoretical. Interpretation is to objectify reality through reflection but the reflective act is fundamentally different from acting on the practical matters of changing that reality.
- The interpretive paradigm does not necessarily reject the formal requirements of the scientific/analytical paradigm. However the purpose of a theory is not technical, it is to clarify the conditions for communication and intersubjectivity.
- There is a separation of theory from practical matters. Theory in interpretive research is essentially contemplative and illuminative.
- Formal logic in interpretive research is important in illuminating inconsistencies and fallacies.
- Interpretive inquiry is ahistorical, focusing on what is now not necessarily “why is it” or “what might it be”.

The interpretive paradigm shifts the focus of theory from behaviour to the nature of discourse. “The parts of the whole is to be understood in relation to

the totality of the situation; thus it is not reductive of phenomena.”
(Popkewitz, 1984: 44).

3.3 RESEARCH APPROACH

This research is designed as a case study of the curriculum development of the Life Science Project in Namibia.

“Case studies are “a step to action” – they begin in a world of action and contribute to it. Their insights may be directly interpreted and put to use...”

(Cohen & Manion, 1994: 150)

Stake (1994) describes a case study thus; “A case study is a study of a bounded system, emphasising the unity and wholeness of that system, but confining attention to those aspects that are relevant to the research problem at the time.” (p. 258).

Yin (1989) describes a case study as an empirical inquiry that “investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and multiple sources of evidence are used”. (p. 13).

By employing a case study approach in evaluation, this research thus avoids the context stripping, which has been described as one of the short comings of several other evaluation models and at the same time provides “a step to action” by being a learning experience shared by stakeholders, encountering non-use prevalent in much evaluation.

A long standing argument, which has its roots in a positivistic paradigm about case studies, is the “worth” of basing research on the study of a single or several specific cases- can we generalise from the study of individual cases? Stake (1994) addresses this question eloquently when he writes: “Potential for learning is a different and sometimes superior criterion to representativeness. Often it is better to learn a lot from an atypical case than a little from a

magnificently typical case” and “ Opportunity to learn is of primary importance”. (p. 243-244)

This case study presents an opportunity to learn both for myself as the researcher, the people involved in the evaluation and for the reader.

A case study approach to research also seems to be intimately linked to the interpretative paradigm where it is the meaning/ interpretations people involved construct, which is of interest and where it is acknowledged that human behaviour is never time or context free, aspects which a case study precisely seeks to highlight in order to gain a richer understanding.

The interpretive paradigm as well as case studies have been questioned for validity. “Beauty is in the eye of the beholder” or to rephrase slightly and to draw again on Stake (1994) “validity depends on the use to which the findings are put.” (p.263) and the researcher’s and reader’s point of view.

3.4 RESEARCH PROCEDURES

By using multiple sources of information, research methods and procedures, I have attempted in this research to provide not validity *per se*, but a deeper understanding of the issues involved. Thus triangulation is used, not as a tool for validation, but as an alternative to validation (Denzin & Lincoln, 1994).

The stakeholders identified and selected as research participants for this study were 28 Junior Secondary school principals, 23 Life Science teachers and 13 Life Science/Natural Science and Health Education Advisory Teachers. There are of course other stakeholders like learners, parents, tertiary education personnel etc. whom one could have included to part take in the evaluation, but for practical reasons the number was reduced to the three groups mentioned above. These three groups at the same time represent the partners with whom the Life Science Project has had the closest co-operation over the years during the development and implementation of Life Science.

All three groups of stakeholders have participated in extensive in – service training at numerous workshops, cluster meetings and school visits. The research workshops were planned so that they coincided with previously planned Life Science workshops for the three groups and time was set aside from these to undertake the research. The evaluation was carried out at three successive workshops, one workshop for each group. The duration of the workshops differed slightly, but was between 4 and 5 hours per group.

The research instruments I have identified as being relevant and have employed in this study are document analysis of policy documents and syllabuses, workshops, focus questions and interviews designed according to adapted principles of FGE.

3.4.1 Document analysis

The analysis of relevant documents was based on assumptions and criteria developed in chapter 2 and included both ministerial policy documents notably the overall guiding policy of *Toward Education for All* (MEC, 1993a) but also the *Pilot Curriculum Guide for Formal Basic Education* (MBEC, 1996a), which guides the development of the curriculum and subject syllabuses as well as *Guidelines for Working groups on Subject Curriculum Development* (MEC, 1993b). The Life Science syllabuses, the Project Proposal (MEC/Ibis, 1993) and the *Mid Term review* (MBEC/Ibis, 1997) form the core documents, which have informed the document analysis of the Life Science Project.

3.4.2 Workshops as research instrument

Workshopping as a research tool is located in a participative method of inquiry. Reason in Denzin & Lincoln (1994) highlights some of the commonalities of participative inquiry.

Central to participative inquiry is an ontological position of relativism. As Freire cited in Denzin & Lincoln (1994) explains: "... the concrete reality is more than isolated facts... the concrete reality consists not only of concrete

facts and (physical) things, but also includes the ways in which people involved with these facts perceive them.

With regard to epistemology, participative inquiry employs a social constructivist view of learning and knowing (see chapter two). Thus knowledge arises in and for action.

It has been argued that traditional social science inquiry methods exclude the human subjects from the thinking and decision making that generates, designs, manages and draws conclusions from the research (Reason in Denzin & Lincoln, 1994). By using participative methods of inquiry like workshopping, this is countered through acknowledging that people are to a large degree are, or at least have, the potential to be self-determining and authors of their own actions and by including them in the research process and the knowledge generated, not only the researcher, but also the participants are “empowered”.

This corresponds well with a Fourth Generation Evaluation in an interpretative paradigm, where the emphasis is on eliciting, sharing and learning from stakeholders’ propositional understanding of a particular issue in order to reach a deeper understanding of that issue.

At the workshops I would give an introduction to the research and the methods i.e. FGE, concept mapping and focus questions. At each workshop I would appoint a non-participant observer to record the activities and comment on them (for triangulation purposes).

At the workshop for Principals there were 28 participants, at the workshop for teachers 23 and at the workshop for Advisory Teachers 13.

Participants were asked in groups of 4-5, to concept map the notion of Learner Centred Education. Then they were given copies of extracts from the Life Science syllabuses which included the rationale and aims of Life Science and a section from either the grade 8, 9 or 10 syllabuses, which deals with aspects of environmental education. They were also presented with focus questions, which they were asked to answer together in their groups.

During their group work, I facilitated their work by answering questions or commenting on/ questioning their ideas in an open-ended manner.

This research could have been done in several other ways. I could, as the researcher, have evaluated the syllabuses myself as a desk study or I could have sent the “package” to the participants as individuals and asked them to send it back to me and then analysed it. However I chose to use principles from a FGE in a workshop mode for some of the reasons already mentioned above: stakeholders are at risk in an evaluation and should thus be given an opportunity to voice their concerns, I believe an evaluation should be responsive to the needs of the users, therefore a FGE done in this way presents a learning opportunity for the participants involved and thus can be argued to be empowering.

This research is, as mentioned elsewhere, situated within the interpretive paradigm. As I am a firm believer in a social constructivist approach to education, it therefore made sense to me to design part of the data collection as a concept mapping exercise with the three groups of participants. According to Novak and Gowin (1984) concepts maps are intended to represent meaningful relationships between concepts in the form of propositions. Thus what the concept mapping exercise did during the workshops, was to elicit and negotiate stakeholders’ propositional knowledge of Learner Centred Education based on participants experiential knowledge gained in schools and classrooms through implementing amongst other the Life Science curriculum. A proposition in a concept map is two or more concepts linked by a linking word e.g. *grass is green*, where “grass” and “green” are concepts and “is” a linking word.

Novak and Gowin (1984) argue that only a relatively small number of concepts are learned through discovery learning or experience. The majority of our concepts are learned through language, which help us to increased

meaning and precision. Language translates commonly recognised regularities into code words, which we can use to describe our thoughts, feelings and actions. This view lends support to a social constructivist view of learning with its emphasis on language and dialogue in a social setting.

Concept mapping as described by Novak and Gowin (1984) is a technique to externalise concepts and propositions and a powerful tool to elicit meanings and misconceptions.

At the data collection workshops with the three groups of stakeholders I started by discussing the notion of concept maps and together with the participants, created a concept map on the black board using the concept “school” as an example.

After this I divided the participants into groups of 4-5 and asked them to create a concept map of “Learner Centred Education”.

I could have asked each individual to create their own concept maps, but again it was important for me that it was a shared understanding by the stakeholders of the notion of Learner Centred Education that was created, not many individual understandings. Hence I would as part of the data processing, take the concept maps created by the groups and merge them into one single concept map for that particular group of stakeholders.

As Novak and Gowin (1984) write: “Concept maps are tools for negotiating meaning.” (p.20). Learning cannot be shared- it is an individual responsibility, but meaning can be shared, discussed and negotiated. When we share meaning by for example creating a concept map, we bring our own understanding into the negotiation.

While doing concept maps we may develop new concept relationships as a result of the negotiations, or simply because there are often alternative patterns of meaning available to us when we employ stored concepts to perceived meanings. Thus concept mapping represents an opportunity to learn. To me this was another important reason for employing concept

mapping as a research tool. All too often research is a process of taking information away from the research participants. By making use of FGE and concept mapping this research process became a learning experience not only for me as the researcher, but also for the participants, several of whom approached me later and indicated that they had gained new insights into Learner Centred Education by participating.

Besides the construction of concept maps, participants in the workshops were also asked to answer focus questions pertaining to their perceptions of Learner Centred Education, the Life Science aims, rationale and syllabuses as well as curriculum development in general. For a copy of the focus questions see Annexure (4). Again the groups were asked to produce shared answers as opposed to individual answers.

The questions were formulated in an open-ended manner such as:

“Please elaborate on how your group sees the role of the following stakeholders in relation to the development, implementation and evaluation of the syllabus/curriculum: Parents/ learners, teachers, principals, NIED, other MBEC personnel (specify whom), others (specify)?” Obviously I as the researcher had already made some choices beforehand with regard to whom to include as stakeholders. Apart from that the question is open-ended to the extent that some groups concluded that some of the stakeholders identified by myself had no role in the curriculum development.

Although an opening paragraph on the questionnaire states that these questions are only meant as a help to evaluate the curriculum and that the groups are free to add any comments they choose, no groups went beyond the questions listed.

The purpose of including these focus questions, as part of the research was threefold: They were to guide and facilitate the evaluation of the Life Science curriculum so that the groups could work autonomously with little support from me. They were to act as a possibility for elaborating the participants understanding of the issues of Learner Centred Education and curriculum

development and they were to act as a means of triangulation with the other data in order to reach a richer and deeper understanding of the issues involved in the research.

3.4.3 Interviews

Having merged the concept maps from the three stakeholder groups and written up the answers to the focus questions, I selected three stakeholders - one from each group, to be interviewed through a focused, informal interview.

The interviews were done in order to provide the interviewees with the possibility to comment on the shared concept maps both their own stakeholders groups and also those of the other two groups. The interview was also an opportunity for me as the researcher to probe claims, understandings and meanings held by the interviewees and “unpack” aspects of the concept maps.

The interviews took as their point of departure the shared concept maps.

The selection of the three interviewees was, as mentioned above, done by myself as the researcher. The criteria used for the selection was one of accessibility, the three respondents had to be easily accessible, so two interviews took place at my office at the Life Science project at a time when the interviewees were there and had the necessary time to engage in the interview. The third interview took place at one Principal's office at her school in Windhoek, not far from my office at a time suggested by her.

A second criterion was one of engagement with the issues of the research. The three interviewees were all known to me (and vice versa) from previous Life Science workshops and school visits and all three had been identified by me as being highly engaged and occupied by the education reform and the notion of Learner Centred Education. Hence one could argue that the selection of the interviewees was biased, based on my experiences with, and perceptions of,

the respondents as being reflective individuals who could enrich the interpretation of the data.

A third criterion, of course, was one of willingness by the interviewees to participate in the research. Thus the identification of the interviewees was based on their willingness, their physical location and my assumptions of their ability to contribute to enriching the research.

Very little time was spent during the interviews to actually frame or contextualize the interview. Much of this had already been done through the workshops and although the interviews took place some time after the workshops, all interviewees still had the purpose and context of the research fresh in mind.

Establishing rapport (Fontana & Frey in Denzin & Lincoln, 1994) was not a problem. All three interviewees felt very comfortable discussing the issues and elaborating on the data. Obviously the fact that I was well known to them and vice versa and that we had discussed the issues in detail and in general on several previous occasions, helped the interviews.

This close relationship, however, might also have influenced the research negatively in the sense that the interviews were situated in an already established and ongoing discourse between us and the perceptions held about each other i.e. my perceptions of them as being progressive educationists might (and probably) have guided my questions to them. Equally their perceptions of me as a donor-funded project aimed at supporting the education reform, could in all likelihood have guided their answers and interpretations thus limiting, not the reliability of the data, but maybe the richness.

There are many other aspects of the interview-as-research tool, which brings to bear on the interpretations of the data. Aspects like:

- gender, two interviewees are female, one male,

- socio-economic aspects, one being a Principal and another being an Advisory Teacher, both of whom have a significantly higher salary than the teacher and are “power-wise” situated elsewhere in the education system than the teacher,
- myself as an expatriate, again with a different background, salary and power position and even nationality,
- cultural differences, all four of us involved in the interviews come from four different cultures,
- physical aspects like clothing and body language.

The reader however will have to accept my judgement, that the above will suffice in this thesis.

Cannell and Kahn in Cohen & Manion (1994) define the research interview as a two-person conversation initiated by the interviewer for the specific purpose of obtaining research-relevant information, and focused by him on content specified by research objectives of systematic, description, prediction or explanation.

I chose to do focused interviews (Merlin and Kendall in Cohen & Manion, 1994) together with other research methods in order to follow up results, validate my data and go deeper into the reasons for the constructions in the concept maps.

I could have chosen to do a structured interview where questions were developed in advance, however the open-ended situation of the focused, informal interview in my mind represents a better opportunity for allowing participants to express concern and claims and for me to follow up understandings and probe constructions. The open-endedness of the informal interview has been described by Kerlinger as an interview that supplies a frame of reference for respondents answers, but puts a minimum of restraint on the answers and their expressions (in Cohen & Manion, 1994).

The advantage of using open-ended questions in an interview, according to Cohen & Manion (1994), is that open-ended questions are flexible, they allow

the researcher to probe and go into more depth if s/he chooses, to clear up misunderstandings and to test the limits of the respondent's knowledge. They allow the interviewer to make a truer assessment of what the respondent really believes.

Focused interviews have been described by Merlin and Kendall in Cohen & Manion (1994) as a distinct form of interview in that it is targeted at persons who are known to have been involved in a particular situation, in this case the research workshop. The researcher had already grappled with the data and deemed some more significant than others and developed preliminary hypotheses or interpretations. The interview focused on the subjective experience of the people who have been "exposed" to the situation.

Although focused, informal interviews have the potential of reaching deeper understanding and achieving richer data, it is also a way of interviewing that requires a significant amount of time and dedication by the interviewee primarily and a willingness by the researcher to enter into an "equal partner" conversation about the issues pertinent to the research.

During the interviews, I often found myself deeply engaged in a conversation about the topics rather than performing an interview. As such the focused, informal interview is a dialectic process of sharing interpretations and experience and thus puts a further strain on the researcher in that not only must the researcher engage in meaningful conversation, s/he must keep an overall perspective to ensure that relevant aspects are probed and covered and at the same time either take notes or record the conversation.

Interview as a research method has always struggled with the notion of bias. Bias has been described as a systematic or persistent tendency to make errors in the same direction. One way suggested to overcome this bias is to apply what is known as "convergent validity". Convergent validity is done through comparing the interview with another measure that has already been shown

to be valid. In this study I have sought to apply convergent validity by triangulating the responses in the interviews with the responses in the focus questions and the constructions in the concept maps.

3.5 CRITIQUE OF THE RESEARCH MODEL/ RESEARCH METHOD

The evaluation model as described above, has in my view a number of both strengths as well as weaknesses. Fourth Generation Evaluation is described in detail previously in this chapter, and I will not dwell more on this approach here, but comment exclusively on the “adapted” model, I have developed and embarked upon in this research.

As always, time and logistical constraints have also hampered this piece of research. For these reasons I chose not to invite comments from all participants on their own shared evaluation as well as that of other stakeholder groups. There is no doubt in my mind that adding these inputs to the research would have contributed to a more detailed and richer interpretation of the data. Having gone through this second cycle of the evaluation, would also have contributed significantly to the evaluation being a learning process for the participants, as it was done in this research, it was only during the actual workshop, that participants had the chance to share and negotiate their understanding of the various aspects of the research.

One aspect of the research model, which I have personally found to be of little relevance, was that of the non-participant observer, who at each workshop recorded what happened in the interaction between me as the researcher and the participants and between the participants themselves. These observations did not record any surprising aspects or detail, which I, as the researcher and workshop conductor, was not aware of.

There can be several reasons for this. My instructions to the observers might not have been clear enough. In one case the observer became so involved in the actual teaching/learning process of the workshop, that she engaged

herself in personal meaning making and thinking about Learner Centred Education, and practically forgot to record “objectively” what happened. A third reason, I believe, could be attributed to my experience as a workshop facilitator and conductor.

The focus questions is a two edged sword as a research tool in that it represents an opportunity to focus the participants exactly on aspects which the researcher has already defined as being of significance. On the other hand the focus question used in this research, although explicitly stating that they were just starting points, did not produce any additional comments beyond what was asked. Thus it must be recognised that the focus question also functions to limit the answers and data produced.

In general though, I feel that the evaluation model developed has served the purpose of this piece of research well. It was the aim of the research to have stakeholders evaluate aspects of the Life Science syllabus from their perception of Learner Centred Education as a concept. To this end the combination of developing concept maps and answering focus questions functioned well.

The concept maps produced a very rich and detailed view of participants understanding of a very complex concept in a way that I do not believe a written answer would do. It might have been possible to elicit just as detailed and rich data through interviews, but the construction of concept maps does not have the in-built problems of interviews where the data are created through the interaction between the researcher and the participant. Not that the concept maps are the “objective truth”, but they do represent a shared understanding of a concept, which has emerged through negotiation between stakeholders themselves, without the researcher being involved in more than initiating the process.

The focus questions, although having been formulated by me as the researcher, was an opportunity to have stakeholders elaborate on their

perceptions of education in general and the Life Science syllabuses and curriculum development in particular and juxtapose this understanding with their interpretation of Learner Centred Education. This process further added to the possibility of interpretation of the stakeholders' understanding of Learner Centred Education and their view of education as a way and possibility for change and transformation.

3.6 SUMMARY

In this chapter I have given a selective review of different evaluation models, their context, strengths and limitations. I have done so in order to elicit an evaluation model appropriate for this research and argued that by adopting aspects, as I have done, from a participative, constructivist Fourth Generation Evaluation, it is necessary to locate this research in an interpretative paradigm.

For this evaluation, I have identified various appropriate research instruments like workshopping concept maps and focus questions and eventually follow up these data with focused, informal interviews of selected representatives of the stakeholder groups.

The evaluation model I have developed in this chapter, I believe, constitutes a novel approach to illuminative and responsive evaluation. I have not come across any literature suggesting the incorporation of a concept mapping exercise as a way of eliciting, sharing and negotiating participants and stakeholders' propositional knowledge and values of a particular issue or evaluand.

Thus having developed and described the research approach and tools, the next chapter will contextualize and give a detailed account of the Namibian educational reform and the Life Science project and curriculum development.

4. NAMIBIAN EDUCATION REFORM AND THE LIFE SCIENCE PROJECT

This chapter contextualizes the revision of the Life Science syllabuses within the social and political as well as educational environment in Namibia after Independence.

In this chapter I give a brief historical account of the social and political context before and after Independence, analyse the policy guiding the educational reform process and take a closer look at the translation of this policy into the recommended procedures and practices of curriculum development through the *Broad Curriculum* and *Guidelines for Working Groups*. This chapter also gives an account of the Life Science Project's development and practice, and draws on the *Mid term Evaluation Report* of the Project, in order to highlight some critical aspects around the LS curriculum and development process.

Finally the rationale and aims of Life Science are described together with assessment and examination procedures to provide the reader with adequate background with which to read the evaluation in the next chapter.

Throughout the chapter, but most importantly in the first sections dealing with the Namibian educational policy and curriculum development, reference will be made to the platform developed in chapter two from which to view reform, change, curriculum models and learning theory as it has come into being in Namibia.

4.1 SOCIAL/POLITICAL CONTEXT

Namibia, which gained its Independence on 21 march 1990 after a long struggle against colonial and apartheid oppression, is a sparsely populated country with app. 1,6 million people (1998) across 824000 square kilometres of land. Although its average per capita income in 1997 was close to US\$ 1890 per year, more than 55% of the population has an income of less than US\$ 100 per

year. This skewed income makes Namibia one of the most economically inequitable countries in the world.

Most Namibians live in rural areas under the conditions of subsistence economy and without adequate housing, potable water, sanitation, health services or education (Angula & Grant Lewis, 1997).

Since Independence education has been a priority for the Namibian Government with an allocation of between 25 -31% of the recurrent annual budget.

From 1884 to 1915, Namibia was a German colony. During this period the German administration appropriated the best land for settler use, established reserves, carried out genocide of the Nama and Herero populations during periods of resistance by these groups to the German oppression and instituted a pass system for “natives” (Angula & Grant Lewis, 1997).

In 1915, South Africa, as part of the allied forces during the First World War, conquered the territory and the German forces surrendered. South Africa assumed control over the country under a League of Nations mandate, but violated this mandate and effectively occupied the country.

Very little was done about state schooling for black and coloured people during first the German and later the South African occupation. Although there were quite a number of missionary schools (211 in 1922), these only offered an evangelic or adapted curriculum aimed at basic literacy, numeracy and vocational skills (see chapter two).

Between 1921 and 1940 the South African administration built only two schools for Blacks and these were placed in the central region. Only in 1948 did the first Black student complete 12 years of study (Matric) and it was in 1960 that the first state school was built in the north where the majority (more than 60%) of the population lived and still lives (Angula & Grant Lewis, 1997).

Following the South African National Party victory in 1948 and the Bantu Education act in 1953, “Bantustans” were introduced in Namibia on the

recommendation of the Odendaal Commission in 1964 with the establishment of 11 black ethnic authorities and the forced removals of people to the new “homelands”.

The former Minister of Education in Namibia and now Minister of Higher Education, Vocational Training, Science and Technology Hon. Nahas Angula writes on apartheid education:

“... apartheid education has negated the concept of education...
Apartheid education has been dehumanising, manipulative and
divisive.”

(Angula, 1989: 13).

Angula & Grant Lewis (1997) argue that this was achieved through differential curricula, access to further studies, teacher training opportunities, salary scales, job opportunities within the education sector and per pupil expenditure. At the time of Independence in 1991, per pupil expenditure by the administration for Whites was eight times that of the Owambo administration, the administration serving the largest ethnic group in Namibia (Angula & Grant Lewis, 1997).

Struggle and resistance followed the oppression by the apartheid system. In 1973 the South West Africa People's Organisation, SWAPO was recognised by the United Nations General Assembly as the authentic representative of the Namibian people. During the eighties an armed liberation struggle was undertaken by SWAPO against the South African occupation. Eventually in 1989, the United Nations Transitional Assistance Group (UNTAG), oversaw the first democratically held elections, where SWAPO won 57% of the votes and the DTA (Democratic Turnhalle Alliance), which was in power before the elections, became the official opposition.

Transition to an Independent Namibia within the Ministry of Education was made difficult by the fact that "... much of the rank and file of the former Department of National Education were DTA members." (Angula & Grant Lewis, 1997: 235), and with the Policy of Reconciliation, which SWAPO had embarked upon after Independence, all civil servants in positions before Independence, could not be ousted, but were guaranteed job security. This in fact created a dual administration with "old" employees on the one hand and new appointees through affirmative action on the other. The co-operation between these two groups was not an easy task to initiate. Thus, as Angula & Grant Lewis (1997) state, an aspect that was considered in the democratisation process was "... the role of foreign technical aid workers in building up consensus among competing political interests in policy formulation. Foreign input was needed to serve as a neutral buffer in contentious issues such as language policy formulation, reform of teaching methods, examination procedures, curriculum and instruction." (p. 236).

Callewaert (1999) recalls that the corps of colonial civil servants, who remained in position after Independence, very quickly launched the "unofficial password": Improvement – not change, or to use the rhetoric from chapter two: Reform – not change. In other words, the civil servants who remained in their positions – and some of them held very high ministerial positions – because of their ideas and practices on policy and education, their interests and, to a large extent, their lack of up to date qualifications, were not willing or able to debate or question their underlying assumptions about education. Thus there was a need for foreign aid workers and experts to not only play the role of buffer between these civil servants and the reformist movement, but also to actually support the construction of a new progressive system.

The support to the Namibian reform by different donor projects however did not necessarily all pull in the same direction.

Callevaert (1999) argues that the bilateral support organised through donors from the Nordic countries and Holland supported what he terms “the Namibian progressive political class and expertise”, which sought to develop a progressive educational system, whereas projects and support through donor agencies like USAID, UNDP and UNESCO primarily represented common Trans-national technocratic devices, acceptable to the different conservative fractions of the ruling class exactly under the notion: Improvement, not change (Callevaert, 1999).

Notwithstanding the above dilemma, if the Namibian education system was to be reformed, there was a clear need for new educational policies.

4.2 POLICY ANALYSIS

Toward Education for All – A Development Brief for Education, Culture and Training is a policy document which translates the Namibian philosophy on education into concrete and implementable government policies (MEC, 1993a).

Toward Education for All (EFA) was published in 1993 and consolidates work carried out and published over a long period of time by many people. As such it is a policy document guiding educational reform.

From 1990 to 1993 when it was published, various workshops and papers have informed the drafting of the policy. The policy also draws on papers and documents formulated before Independence in exile (MEC, 1993a).

The previous educational system in Namibia as described in EFA, was about educating an elite in a system that was based on apartheid and racism:

Education in our country used to be enjoyed only by the privileged few, whom apartheid and colonialism considered worthy of it.

(MEC, 1993a: i).

EFA is a policy statement that advocates a shift to education for all.

EFA takes its point of departure in Article 20 of the Namibian Constitution, which states that:

All persons shall have the right to education.

Primary education shall be compulsory and the State shall provide reasonable facilities to render effective this right for every resident within Namibia, by establishing and maintaining State schools at which primary education will be provided free of charge.

(MEC, 1993a: 3).

Besides the Namibian Constitution and the consultative workshops with stakeholders, EFA is influenced by the "World Conference on Education for All" held in Jomtien, Thailand 1990 by the Inter-Agency Commission (UNDP, UNESCO, UNICEF and the World Bank). This Conference adopted a World Declaration on Education for All and a Framework for Action, to which EFA subscribes:

Therefore, we the participants in the World Conference on Education for All, assembled in Jomtien, Thailand from 5-9 March 1990: [recall] that education is a fundamental right for all people, women and men, of all ages, throughout our world... [know] that education is an indispensable key to, though not a sufficient condition for, personal and social improvement... [recognise] that sound basic education is fundamental to ... self-reliant development... (MEC, 1993a: 4).

A closer analysis of "Education for All" reveals a document, which sends mixed signals. On the one hand the overall aims and goals as listed in EFA use a language which is or can be associated with social constructivism located within a critical orientation to education:

- Both education and democracy is constructed by the participants and education is a foundation for democracy. (p 42);
- Education is about making sense. (p.59, 60);

- "The system will be built on Learner Centred Education, it will harness curiosity and excitement, democracy and responsibility, lifelong learning". (p.60);
- "Education will employ a holistic view of learning, valuing life experiences and will assist learners in integrating school and life outside school". (p.80-81);
- "Learning is an active process with participation from the learners in developing, organising, implementing and managing it". (p.121);
- "Students are not empty buckets". (p.121);
- Education is empowerment, (p.15);
- Teachers are agents and facilitators of change. (p. 76 , 81).

On the other hand the document is also clearly informed by a theory of radical constructivism and heavily interspersed with a language influenced by economical terms.

Radical constructivism, as mentioned in chapter two, employs an individualistic view of learning. It is for the individual to make sense of the world around her by comparing and merging previous experiences and concepts with new ones.

The individual constructs knowledge by trying to organise his/her experiences in terms of previous schemes. Knowledge in constructivism is a "fit" and not "match" of "reality", but seeing that it still operates with "reality" it demonstrates its links and origin in Logical empiricism (Matthews, 1992 and chapter two).

EFA as a document also relies heavily on a language that is influenced by economic terms:

- "By expanding access to education we can increase productivity, economic growth, education is investment in human capital, education promotes development". (p. 13, 18);
- Education is a human right, development requires a literate populace, and education leads to social and personal improvement and self-reliant development, (p. 4).
- Education leads to development which leads to sustainable economic growth and eventually results in a better quality of life, (p. 18);
- Rewards work better than punishment, success stimulates learning, (p. 126).

The elaborate use of economic terms is significant. It quite clearly illustrates a worldview guided by capitalistic ideals and devoted to economic growth and development.

There could be many reasons for this use of economic language. As mentioned, participants at numerous workshops informed the document. Many of these participants belong to the international development milieu and many have a very "economic growth" based view of development. SWAPO was regarded as a communist liberation movement during the years of exile and struggle. It could have been in SWAPO's interest, shortly after Independence to send a signal to the international (and national) community of a more pragmatic approach to, and view of, the economy, education and development.

There is however fundamental problems in implementing a paradigm shift of the nature embarked upon in Namibia through a learning theory of radical constructivism.

The shift in the educational system from a positivistic rooted authoritarian and racist based system to a system of liberating, equal education for all based on democratic principles might not best be supported by adopting a radical constructivist theory of learning.

Radical constructivism as is mentioned in chapter two, has problems with solipsism, the importance of language and the lack of dialogue between learners-teachers and learners-learners and last, but not least, the notion of change.

One could argue, as I have done in chapter two, that redressing apartheid and promoting democracy is better done by emphasising the dialogue and negotiation of meaning and sense one finds advocated in a more social constructivist approach to education.

Adopting radical constructivism with its roots deeply in Piaget's model of intellectual development, influenced as it is by a Darwinian notion of the survival of the fittest together with the elaborate use of economic language in "Education for All", paints a picture of education in Namibia based on a competitive conservative "market place" ideology, where the best adapted minds and meanings will steer the development of the country into a more economically prosperous future. This picture precludes a serious questioning of the underlying values of society in order to make change possible as advocated by Popkewitz (1989).

4.3 PILOT CURRICULUM GUIDE FOR FORMAL BASIC EDUCATION

Education for all requires that we develop a new way to think about our system of education and training and how we organise it.

(MEC, 1993a: 4)

Having scrutinised the overall guiding policy for education, I take a look at how this vision is operationalised through the curriculum.

The Pilot Curriculum Guide for Formal Education (in daily terms and in this thesis called the "Broad Curriculum") is a policy - enabling framework guiding Basic Education in Namibia. The present Broad Curriculum guide

was developed by the National Institute for Educational Development (NIED) and issued with effect as from January 1996. The Broad Curriculum had gone through several drafting phases and elaborate negotiations between various stakeholders in education before being adopted (Swarts, 1998).

The curriculum guide is “a statement of the goals and aims of Basic Education, what areas of learning and subjects are to be studied, and how teaching and assessment are to be done” (p. 2), as such “The Broad Curriculum guide provides the framework for devising subject syllabuses and materials to be used in the various subjects of learning so that the goals and aims [of Basic education] will be put into practice in a consistent way.” (MBEC, 1996a: 2).

In order to analyse the Broad Curriculum, I will use the “Map of the curriculum” (see figure 1.) as provided in the Broad curriculum.

A MAP OF THE CURRICULUM

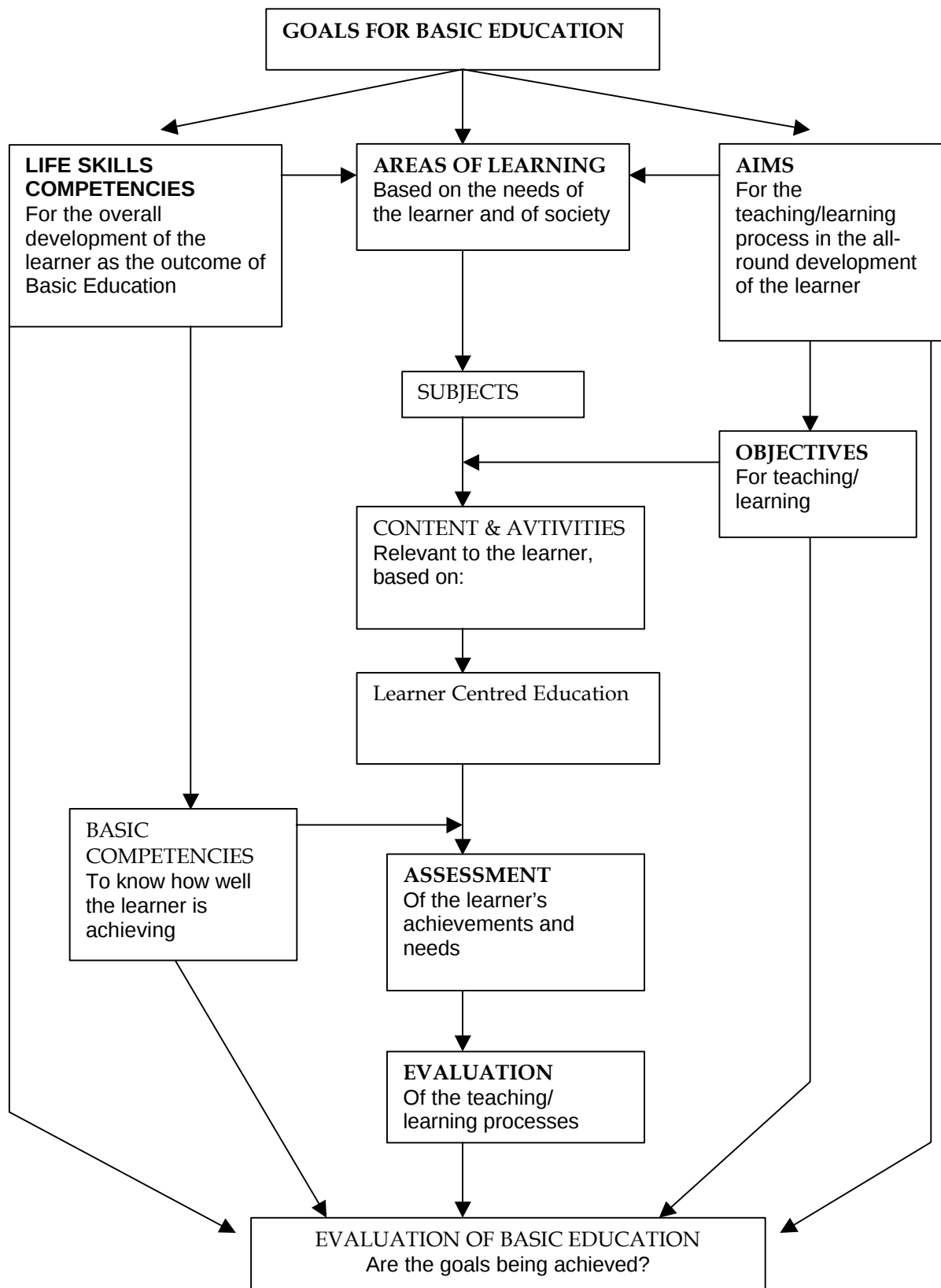


Figure 1. A Map of the Curriculum
(MBEC, 1996a)

The heading “A map of the curriculum” has some interesting epistemological and ontological connotations. The heading implies that we are dealing with an area or reality of which we can make one representation in the form of a map. This notion of “a map” has its roots in logical empiricism, which holds the belief that experience (through our senses) is the only source of knowledge (Aspin, 1995). One makes or draws a map by observing an area. In my view the connotations would have been different had the heading been “A map to the curriculum”. This would have implied that the map and the curriculum are two separate things, that the map is not the curriculum (although it then would have taken on the connotation of being a “recipe” to the curriculum, which is also unfortunate).

Logical empiricism is recognised as the philosophy on which positivism and behaviourism in education rests (Aspin, 1995, Van Harmelen, 1995). In Chapter two some of the problems regarding these two “-isms” in education were highlighted.

A closer look at the “Map of the curriculum” reveals the influence of Ralph Tyler (See Chapter two). Ralph Tyler, as mentioned, formulated four key questions to curriculum development:

1. What educational purposes should the school attain?
2. How can learning experiences be selected which are likely to be useful in attaining these objectives?
3. How can learning experiences be organised for effective instruction?
4. How can the effectiveness of learning experiences be evaluated?

From the “Goals for Basic Education” in the Namibian map “Life Skills Competencies”, “Areas of Learning” and “Aims” are derived. It is interesting to note that all arrows in the map are one-way arrows, hence “Life Skills Competencies” does not inform the “Goals of Education”. Who defines the “Goals of Education” and on what basis?

After the “Areas of Learning”, based on the needs of the learner and of society (as perceived by whom?) are defined, subjects are identified (again by whom?). Objectives derived from the “Aims” are then specified in each subject and determine the “Content and Activities” to be studied. The “Content and Activities” are supposed to be relevant for the learners, but how and who determines the relevance? “Content and Activities” should further be based on “Learner Centred Education”. Since the “Goals”, “Areas of Learning”, “Aims”, “Subjects” and “Objectives” all are pre-given, set and defined by (one must assume politicians and curriculum developers) it is difficult to see how the notion of Learner Centred Education can be other than lip-service or at best reduced to a “method of teaching”.

“Basic Competencies” derived from the “Life Skills Competencies” (and the subject objectives according to page 9 of the Broad Curriculum) guide the “Assessment” of the learner’s achievements and needs. This assessment leads to an “Evaluation” of the teaching/learning processes and feeds into an overall “Evaluation of Basic Education” to determine whether the goals are being achieved.

The Namibian “Map of the curriculum” is a closed systems view of curriculum, where goals and aims are given, learning content is specified through subjects, learners’ achievement is measured against the specified objectives and competencies, and closure is a return to the goals and aims to evaluate whether they have been achieved. It is a static and reproductive view of education as argued in chapter two, and, as such, unable to accommodate change.

Competencies play a central role in the Broad Curriculum.

Competencies describe what a learner should be able to do as the outcome of teaching and learning.

(MBEC, 1996a: 9).

The Broad Curriculum goes on to say that “The outcome of Basic Education as a whole should be that every learner becomes a competent and productive member of society, performing well in all spheres of life; private life, public life, work, and further learning.” (p. 9).

This overall outcome of Basic Education is derived from Liberal Education ideology, where schooling is a matter of preparing and initiating learners for adult life and the knowledge, culture and values that are commonly accepted. The Broad Curriculum operates with two sets of competencies: Life skill competencies and Basic competencies.

Life Skills are described as Investigating, Interpreting, Applying knowledge and skills, Communicating. These are seen as central skills within Basic Education in order to prepare learners for adult life (MBEC, 1996a).

Basic Competencies are described as competencies in the subject syllabuses, which describe what a learner ought to achieve as the outcome of a lesson or sequence of lessons.

Competencies describe the performance of skills, knowledge or attitudes within defined objectives.

In the “Guidelines for working groups on subject curriculum development” (MEC, 1993b), which is a (as it describes itself) “companion” document to the Broad Curriculum to be used by curriculum developers when developing subject syllabuses, we find the following reference to competencies:

“The learning content, specified in terms of objectives, normally includes more competencies than the required minimum. For purposes of teaching, assessment and progression through the school phase s those competencies, which are considered the basic, or minimum should be generally known to teachers, examiners and learners. These basic competencies should, for each topic or theme, be stated in column three [in the subject syllabuses].”

(MEC, 1993b: 5).

The “Guidelines for working groups...” document further states that:

Bloom’s taxonomy (classification) of educational objectives is one of the major achievements of this century in education. It is used as a reference and as a basis for curriculum development and educational research all over the world... Syllabus developers and subject panels [in Namibia] should study the single sheet [with Blooms “Major Categories in the Cognitive Domain of the Taxonomy of Educational Objectives”], paying particular attention to illustrative general instructional objectives and to the illustrative behavioural terms for stating specific learning outcomes. These two columns will provide a source for much of the language (action verbs) to be used in some of the materials to be written in the curriculum writing process.

(Original underlining, MEC, 1993b: 5).

These Guidelines were part of a series of documents including the Broad Curriculum, which were given to all members of syllabus working groups who drafted, revised and developed syllabuses after Independence.

In Chapter two I critically analysed both the objectives driven curriculum as well as the role of Blooms taxonomy within the objectives driven curriculum. What is interesting here is to note that both the Broad Curriculum as well as the “Guidelines” for the development of syllabuses, in spite of being the guiding as well as enabling documents of the educational reform, are still heavily entrenched in a behaviourist philosophy of education. These documents actually advocate an objectives driven curriculum model, which is fundamentally different from a Learner Centred Education model, and in doing so, in my view, negate the intentions and stated policy of the educational reform and Education for All, which is to reform the educational system into a democratic Learner Centred system and redress the legacy of apartheid.

The Broad Curriculum sets out the following criteria in order to determine the scope of Basic Education: Breadth, Depth, Balance, Coherence, Consistency and Relevance. The content is described as the following areas of learning: Aesthetic, Social and Economic, Linguistic and Literacy, Mathematical, Spiritual, Moral and Ethical, Physical, Natural scientific and Technological. The content and scope listed above is an attempt to classify the fundamental knowledge and understanding, skills and competencies, values and attitudes “which are required for modern living, citizenship and self-fulfilment.” (MBEC, 1996a: 12).

Together with the “Map of the curriculum” described earlier, the content and scope presents the Namibian curriculum as “a closed curriculum where ends are pre-set, objectives are developed in line with those ends, and closure is a return to those ends and the objectives to see if they have been carried out” as suggested by Doll (1989: 246) in chapter two.

In order for the curriculum to cover the areas of learning mentioned above, the Broad Curriculum lists the following subjects in the three phases:

Lower Primary: English, Literacy, Other languages, Handwriting, Mathematics, Environmental studies, Natural Science and Health Education, Social studies, Arts, Basic Information Science, Religious studies, Physical Education and Health Awareness, Craft and Technology.

Upper Primary: English, Other languages, Natural Science and Health Education, Mathematics, Social studies, Guidance, Arts, Basic Information Science, Religious Education, Physical Education and Health Awareness, and one subject from Craft and Technology, Home Ecology or Elementary Agriculture.

Junior Secondary: English, Other Languages, Mathematics, Life Science, Physical Science, Geography, History, Religious and Moral Education, Physical Education, Arts in Culture, Life Skills, Basic Information Science and two vocational subjects.

Numerically this gives:

Phases and grades	Number of subjects
Lower Primary (grade 1-3)	9
Lower Primary (grade 4)	10
Upper Primary (grade 5-6)	10
Upper Primary (grade 7)	11
Junior Secondary (grade 8-10)	14

Table 3. Number of subjects per grade.

Time allocation for each lesson is 40 minutes throughout the phases, which gives a range of between 20 – 27 hours of lessons per week from grade 1 to grade 10.

The Broad Curriculum also stipulates a percentage of time allocated to each subject (p. 19).

If one looks at the following groups; “linguistics”, “Mathematics” and “Scientific, social and economical subjects” the distribution is as follows:

Grades	Linguistics	Mathematics	SSE
1	46%	23%	10%
2	52%	22%	8%
3	36%	22%	23%
4	35%	21%	28%
5-7	33%	21%	31%
8-10	23%	13%	51%

Table 4. Time allocation per learning area per grade in %. (Please note that the percentages do not add up to 100, since some learning areas like Aesthetic, spiritual and ethical and physical are left out).

In Chapter two one of the criticisms levelled against the objectives model of curriculum was that it was based on a reductionist worldview. A belief that our world can be divided into small parts or segments, which then can be studied in order to understand the whole. The Broad Curriculum with its prescription of subjects to be studied in the different grades supports this

worldview. Table 3 illustrates this by further subdividing the eight overall learning areas into 9-14 subjects depending on the phase or grade.

Table 4 illustrates the significance the three “main” learning areas is given in the different grades. Linguistics are given clear priority in the two first grades, grades 3 to 7 has a more or less equal priority between the three, while grades 8 to 10 prioritises the scientific, social and economic learning areas. It is unclear where these priorities stem from or what the arguments for them are, as the Broad Curriculum does not elaborate on this.

The final area I will look at in the Broad Curriculum is the notion of Learner Centred Education. As mentioned several times elsewhere in this thesis, the notion of Learner Centred Education is central to the educational reform in Namibia.

The Broad Curriculum devotes 5 pages to Learner Centred Education and explicitly states that Basic Education in Namibia is based on the principles and practice of Learner Centred Education. This has implications for approaches to teaching and learning, for instructional materials and for the way teaching is organised.

According to the Broad Curriculum (p. 23), Learner Centred teaching and learning means:

- The starting point at each stage of a learning process is each learners' existing knowledge, skills, interests and understanding, derived from previous experience in and out of school;
- The natural curiosity and eagerness of all young people to learn to investigate and make sense of a widening world must be catered for by a variety of challenging and meaningful tasks;
- The learners' perspective must be appreciated and taken into consideration in the work of the school;

- Learners should be empowered to think and take responsibility not only for their own, but for each other's learning and development; and
- They should be involved as partners in, rather than receivers of, education.

All these points support a social constructivist view of teaching and learning. The Broad Curriculum goes on to say that:

"The emphasis in delivering the curriculum is on quality and meaningfulness of learning." And further suggests that children learn best when they are actively involved in the learning process, when a variety of teaching techniques are used and when lessons are structured appropriately according to each task. The approaches to teaching and learning should be selected "...depending on which is the most effective in relation to the learning objectives and content of the lesson". (p. 23).

Two things are interesting in the above paragraph. The first being the statement that the curriculum "is delivered", one must assume from the teacher/school to the learner. This is in direct opposition to the statement found in the same section that learners should be involved as partners in, rather than receivers of education. A curriculum that is delivered to a receiver is a metaphor that fits well with a behaviourist belief of the "tabula rasa". The last statement, where it is suggested that the approaches to teaching and learning should be selected "...depending on which is the most effective in relation to the learning objectives and content of the lesson", is a further indication of an objectives-driven model of curriculum. Apparently it is not the need of the learner that should guide the approach to teaching/learning, but what has already been identified by curriculum developers, as the objectives to be reached.

The Broad Curriculum suggests that effective learning and teaching is closely linked to appropriate materials like books, posters, charts, reworked wire and different media.

“These materials can often be prepared together with the learners, following discussion of the learners’ experiences, stories, ideas and reading materials can be developed from the learners’ own creative writing.” (p. 25).

Again however, we find a relapse in this section to behaviourist language and ideas. Such materials “...can all be considered to be vehicles to deliver a specific message.”, and “... are carefully designed for specific learning objectives, to get a message across, to help learners to understand and are easy for the teacher to use.”

The organisation of teaching should be done in such a way that it promotes Learner Centred Education. According to the Broad Curriculum this means ensuring continuity in teacher -learner relationships, utilising the learners’ potential whatever type of class, promoting equity and democracy and strengthening connections between subjects through cross-curricular teaching.

Reading through this section, there are no obvious arguments for how these suggestions to the organisation are derived from or related to Learner Centred Education. It seems to be a matter of “good common sense” which has its roots in the Child Centred Movement as described in chapter two.

The Pilot Curriculum Guide (or Broad Curriculum) for Formal Education is both an important and central document in the Namibian educational reform. It is a document, which, as mentioned in the beginning of this section, is supposed to operationalize and enable the overall policy of reform, as formulated in the Namibian Constitution and the policy document “Towards Education for All”.

It is a central document, not so much because it is widely used by schools and teachers- it is not, but because it guides the development of subject syllabuses, which are widely used by teachers and which set the frame around which teaching materials like textbooks are written and developed. As such it is a very powerful document.

What comes across after close scrutiny of the document, is that although it echoes many of the policy statements pertaining to reform, education for all and Learner Centred Education, the Broad Curriculum as a guide has not shed the “baggage of the past”. The Curriculum Guide has its roots in Logical Empiricism and a Tylerian rationale for curriculum. This has resulted in a reductionist objectives driven model of curriculum, which is further exacerbated by supporting documents to curriculum developers that not only encourages them to use Bloom’s Taxonomy with behavioural outcomes, but prescribes these.

Again as with the policy document “Education for All”, the “Broad Curriculum” appears to be advocating both a radical as well as a social constructivist learning theory. While much of the rhetoric around change and the need for a “new education system” is situated within a progressive and socially critical orientation to education, the guidelines and “nuts and bolts” are still greatly influenced by a Liberal Education Movement, which is primarily concerned with inculcating the new generation into the existing culture and hence concerned with maintaining the status quo.

From the above it seems that the Namibian Broad Curriculum falls short of providing the education system with the necessary frame of reference for reforming and most certainly changing, the elitist, oppressive system inherited after Independence into a democratic, Learner Centred Education system for all.

LIFE SCIENCE PROJECT

A short description of the background to the Life Science Project is given in chapter one.

In February 1997 representatives from MBEC and Ibis carried out a mid-term review of the Life Science Project. Uncharacteristically the donor DANIDA for unknown reasons, had opted not to appoint a member to the review team.

The methodology employed by the review Team was mainly semi-structured interviews, with a broad spectra of stakeholders and other interest groups within formal education in Namibia, document analysis and a number of classroom observations (MBEC/Ibis, 1997).

The Review report in general paints a positive picture of the achievements of the Life Science Project since 1991.

Some general observations made by the Review Mission include:

“In carrying out the review, and interviewing key persons from across a wide range of different sections of education in Namibia, one cannot help but being struck by the generally highly positive reputation that the project has built up... This strong indication of excellent overall achievement is all the more remarkable in that it has been accomplished during a period of massive change and reform occurring within the education system in Namibia.” (p. 14).

The Review Mission then goes on to evaluate the individual development objectives of the Life Science Project as described in the Project Proposal (1993). Of particular interest to this thesis is the Mission’s remarks on development objective no. 3:

To enhance teacher s’ professional self-esteem and their abilities to provide (“learner-Centred”) teaching environments that stimulates co-operation, responsibility and learning by understanding through hands-on activities and problem solving. (p. 21).

Some of the Review Mission’s (1997: 21) observations included:

With respect to the extent and quality of learner-centred teaching occurring in the system, we note several of the key persons interviewed... cited the *Life Science* project as one of the principal vehicles used for promoting the implementation of learner-centred teaching and “learning with understanding” at school level. On the other hand evidence would suggest ... that the degree of true learner-centred teaching actually taking place in the classrooms is much less than might be understood by some observers. In particular, the lack of a single, agreed-upon concept of learner-centred teaching has allowed a range of teaching styles (e.g. activity-based teaching) to be considered sufficient for inclusion as learner-centred even in cases where they remain mainly teacher-centred.

From my point of view it could be argued that the Review Mission’s statement both displays a lack of understanding of Learner Centred Education and adds to the ideological confusion in Namibia surrounding Learner Centred Education.

Firstly “learner centred teaching” cannot be equated with “Learner Centred Education”. The term “learner centred teaching” belongs within a child centred approach to education, where the knowledge, aims and objectives are given and the exercise is about how to best convey or teach these to the learner in a child centred manner. It is a term, which is closely associated with a transmission model of teaching /learning and represents an instrumentalist view of knowledge as we find it in radical constructivism.

Secondly, and in line with the above the last sentence of the Review Mission could be interpreted as relegating Learner Centred Education to a teaching method rather than a learning theory. Within Learner Centred Education it is essentially not interesting who is talking or physically active at any given time in the classroom, what is important is who is thinking, reflecting and making meaning (granted- also through communication and discussion with others) of the issues or matters raised or studied.

It is noteworthy that nowhere in the Review Mission's evaluation is the suitability of an objectives driven model of curriculum questioned as it is found both in the Broad Curriculum and the Life Science syllabuses for Learner Centred Education. This would appear to support the argument above of the Review Mission holding the view that Learner Centred Education is equal to Child Centred Education as described in chapter two.

It is with this understanding of Learner Centred Education, that the Review team found the Life Science Project was well underway to achieving the objectives as set out in the project proposal of 1993.

THE DEVELOPMENT OF THE LIFE SCIENCE SYLLABUSES

In this section, I take a closer look at the "modus operandi" of the MBEC in developing and revising subject syllabuses, the process through which the Life Science syllabuses were developed and, finally, the product, the Life Science syllabuses as they are being implemented in schools today.

NIED as a Directorate is tasked by the MBEC with developing, implementing, monitoring, evaluating and revising the Namibian curriculum and subject syllabuses. To this end a **Curriculum Co-ordinating Committee (CCC)** has been established to assign, oversee and approve curriculum development. The CCC consists of the Director of NIED as chairperson, the two Chief Education Officers for curriculum development and professional development, the Senior Education Officers at NIED who are assigned to specific areas like African Languages, Natural sciences etc., the Directors of National Examinations and assessment, Educational Programme Implementation and Planning. In the past major donor funded projects like the Life Science project and others have also been represented on the CCC as well as other stakeholders in education.

One of the tasks of the CCC is to identify and recommend members for the different **Curriculum Panels**, which are supposed to develop and co-ordinate

a specific curriculum area like the Natural Sciences. Curriculum Panels consists of the respective SEO from NIED as chairperson, Education Officers in NIED from the relevant subjects, representatives from the Exam Directorate as well as selected educationists from within the subject area.

It is the task of the Curriculum Panel to identify and select members for the various **Syllabus Working Groups**, which are tasked with developing and drafting the subject syllabuses for approval by the CCC and Examination Board. Members of the Curriculum Panel with a relevant background are often also members of the Working group in order to ensure coherence and communication. The Working Group may co-opt resource persons from outside to assist in the syllabus development.

The Life Science Project has, as mentioned above, been represented at all levels. The process of developing curriculum has, since 1991, been followed by a Cascade Model of in-service training, where identified subject facilitators have received “training” at national workshops in the new syllabuses and consequently have themselves conducted workshops at regional or local level for fellow teachers in that specific subject. The professional Development Division at NIED has co-ordinated this Cascade process with the Life Science Project implementing the training undertaken in Life Science.

The development of the Life Science syllabuses invites a number of comments and reflections.

When Namibia gained Independence in 1990, the development work, which had started during exile in Congo, was transferred to Namibia. This meant that the pilot syllabuses for Life Science which were used at the Loudima school in Congo, was the curriculum that framed the initial implementation of Life Science in grade 8 in 1991, grade 9 in 1992 and grade 10 in 1993. The revision of these syllabuses was started in 1993 by the Working Group mentioned above (Memo 8/3/30/1, Establishment of a working group for

Life Science grades 8-10, MEC, 1993c). The pilot syllabuses had been developed by the Ibis Technical Advisor to the Loudima School in Congo.

The development of the pilot syllabuses and consequently the revision of these could very well be argued to be Project driven as opposed to driven by Namibian educationists. As mentioned above, the starting point for the revision process was the already in place and piloted syllabuses brought from Congo. It was however part of the agreement between MEC and Ibis, that the Life Science Project should be the driving force behind the development and implementation of the Life Science curriculum (Project proposal, 1993). The Life Science Project had early on (1992) employed the services of two Namibian teachers to work as full-time consultants on the Project. One of these was a member of both the Curriculum Panel and the Syllabus Working Group. As members of the Curriculum Panel, the Project representatives were tasked with identifying suitable candidates for the Syllabus Working Group.

The Syllabus Working Group was constituted 31 March 1993, with 12 members, all identified and selected by the Life Science Project. The group consisted of the Life Science Project Manager, one Senior Advisor from the Life Science project and the Namibian consultant, 7 Namibian Life Science teachers, one principal and one educational planner from the Directorate of Examinations and Assessment (who was a former Life Science teacher). Apart from the Project personnel, the members were selected on the basis of the experience the Project had gained through co-operation with the candidates at workshops, cluster meetings and school visits. All of the candidates who were elected by their peers, were already functioning as facilitators in the subject Life Science.

The primary criteria for selecting these members was level of dedication to teaching the subject and to the educational reform as a whole. Formal qualification within the teaching profession played a minor role (some of the

teachers were in fact under qualified for teaching the subject at Junior Secondary level).

It is clear that this selection process was biased in the sense that the identified members all possessed a positive attitude to the subject, the educational reform as well as the Life Science Project. It is also very likely that the selection process resulted in constituting a working group which to a large extent shared the same ideas and visions for the subject.

The Working Group was constituted during June 1993 and commenced work in earnest in January 1994 (Project documentation, Planning scheme, 1993). Meetings were planned so that a revised draft of the grade 8-10 syllabuses was available and submitted to the CCC in July 1994. Minutes from the first meeting held 24 -25 January 1994 give an outline of the work and process ahead. The introduction to the meeting by the Project Manager states that the LSP considers it important to involve experienced teachers in the revision process (Minutes 1st meeting 24-25 January 1994). He also states that:

- "... awareness of totality of new program [the reform] is crucial."

The mode of operation for the Working Group is suggested as:

- "First identify, discuss current problems in syllabus (8, 9, 10) then look at the different grades in detail [from the following perspectives]
- Is the load of topics OK in each grade?
- Are some topics redundant or repeated in more than one grade?
- What should be the main topics in each grade? List and agree."

(Minutes 1st meeting Jan. 1994).

From January 1994 to July 1994 the Working Group had several meetings/workshops in order to revise the syllabuses.

Before being submitted to the Curriculum Co-ordinating Committee, the draft syllabuses were distributed to Life Science personnel in all regions for

comment. Whenever it was possible the draft syllabuses were discussed with Life Science teachers at workshops, in order for them to comment on the drafts. The Working group then evaluated these comments and changes were made if the group felt comments were valid.

Seen in hindsight one can argue that the identification of Working Group members definitely was selective and probably biased towards members having common ideas and visions. Further the starting point for the revision was the existing syllabuses (which must be the case in a revision) and not a “clean slate”. On the other hand this also allowed the inclusion of experience gained, mainly by the Working Group members during implementation of the pilot syllabuses. Although the process was a centrally co-ordinated effort of curriculum development, one must also acknowledge that the process to a large extent was as participatory as possible with provision made for ordinary teachers and other project personnel to comment on the suggestions.

The Life Science subject as it is being implemented in Namibian schools today, is a subject that integrates aspects from Biology, Agriculture, Ecology, Health and Environmental education. It is a compulsory subject for grades 8, 9, and 10 and is completed with an external examination after grade 10, which counts as part of the Junior Secondary Certificate.

Life Science as a subject, is seen as a major carrier subject of environmental education (EE) in formal education. Besides Life Science, learners at Junior Secondary level are taught Geography and Physical Science as the two other science subjects. Agriculture is offered at most schools as an optional subject. In Lower Primary Schools Environmental Studies are offered in grades 1-3 while Natural Science and Health Education and Social Science is offered from grades 4 to 7 as EE related subjects.

REFLECTIONS ON THE LIFE SCIENCE CURRICULUM PROCESS AND PRODUCT

Although the Life Science Project and its products (syllabuses and textbooks) received a positive evaluation by the Review Mission, the picture becomes a

bit more complicated when one juxtaposes the Life Science syllabus development process and product with the model and arguments developed in chapter two.

Both the Rationale and Aims for the subject Life Science clearly display a liberal orientation towards education as described in Table 2: “Life Science is taught in a learner-centred manner combining theory and practice [from Biology, Ecology, Agriculture and Health education] in order to promote understanding and the acquisition of competencies.” And “Learners will ... be suitably prepared for vocational activities and academic studies beyond Junior Secondary level.” (MBEC, 1995, 1996, 1997).

The Life Science syllabuses are developed according to the “Broad Curriculum” and the “Guidelines for Working Groups” which was analysed earlier in this chapter. Hence the syllabuses conform to the prescribed design of themes, objectives and competencies formulated using Bloom’s Taxonomy. An example:

Theme and Topics	Learning Objectives	Basic Competencies
1.4 Depletion of the ozone layer	• Discuss the role and importance of the ozone layer to living organisms. • Recognise that CFC’s deplete the ozone and identify human activities which releases CFC’s. • Discuss how the use and release of CFC’s can be reduced.	• Describe the ozone layer and explain its importance in protecting organisms. • Explain how CFC’s deplete the ozone layer. • List the most important human activities that release CFC’s. • Give examples of methods to reduce the use and release of CFC’s.

Table 5. Life Science syllabus, Grade 10 p. 4. (MBEC, 1997)

In chapter two it was argued that in order to accommodate change and transformation it was necessary to question our fundamentally held beliefs. Although the Life Science curriculum encourages the "development of a critical and enquiring mind", it is clear that this does not apply to the identified body of knowledge which the syllabuses have identified as worthy of study. Throughout the syllabuses this body of knowledge is well described along with the learning objectives and competencies. In other words also the

Life Science curriculum is an objectives driven model of curriculum as described in chapter two.

I have argued earlier in this chapter that very few systemic changes were made to the Namibian education system after Independence. The Life Science syllabuses, like all other syllabuses in Namibia, were developed according to, and are still situated, within this system. Hence the Life Science curriculum did not support or result in any major systemic changes.

The Life Science syllabus development process was essentially a centrally driven process as described above, although provision was made for input and experiences from outside. Completely missing from this process were the learners. Nowhere in the Life Science curriculum is there an option for learners, together with their teacher, to identify and select themes which they find particularly interesting or relevant to study. Provision has been made though for learners and teachers to plan a given theme according to their local environment and resources. But here again the outcome or competencies to be achieved, have already been identified by the curriculum developers.

In light of the above, and with reference to chapter two, it would appear that the Life Science Project, through its curriculum development and textbooks as well as In-service training, did not fundamentally question the purpose and means of education as outlined in policy, or the systemic set up through which it took place. By developing an objectives driven model of curriculum, where the ends and (most of) the means are well defined, the Life Science Project arguably has opted for and advanced a Liberal, Child Centred orientation towards education, which has its foundation more within a radical constructivist learning theory than a social constructivist theory and following the argument in chapter two, has supported a reform of that which exists rather than a transformation.

Thus one can also argue that the EE model advanced by the Life Science Project has more similarities with environmental education about and in the environment, than an environmental education model for the environment. In chapter two, I argued that EE about and in the environment was inadequate as a response to the environmental crisis and the vision of developing a critical and creative environmentally literate citizenry that is able to make and take decisions about and for the environment that will address the need for sustainability and improve their quality of life.

4.7 SUMMARY

In this chapter I have attempted to give an outline of the social and political context of Namibia before and after Independence. I have described in detail the guiding policy of "Towards Education for All" (MEC, 1993a) which is the policy document that was developed to give direction and reasons for the educational reform initiated after Independence. I have analysed the Broad Curriculum, which translates Government policy into curriculum development guidelines, and I have finally given an account of the process and final product of the revision of the Life Science syllabuses, which was set in this context.

It would appear that the policy guiding the reform process in Namibia after Independence was informed to a large extent by a liberal perception of education, drawing on aspects from a radical constructivist philosophy. When this policy was interpreted into a Broad Curriculum guiding the development of syllabuses, there however seemed to have been a "regression" to a Tylerian Objectives driven model of curriculum, which is heavily influenced by a positivistic, behaviourist philosophy of education. It would also appear that the Life Science Project, through its curriculum development, has taken this route.

The Namibian educational reform is, in fact, a good case in point of Popkewitz' (1988) writings on reform rhetoric and ritual. This can be argued from many angles. Here I draw the reader's attention to one.

The previous educational system in Namibia was seen as preparing a small elite for further academic studies and managerial positions (MEC, 1993a). This was partly done through stringent examinations that favoured a certain kind of academic knowledge and those schools and learners, which had well qualified teachers and adequate resources, i.e. the former "white" schools. The educational reform was meant to change that. Now all learners should succeed. Measures to ensure this was the implementation of a continuous assessment system where learners are continuously assessed not only on their academic understanding, but also other more practical skills, as well as automatic promotion through the grades (MEC, 1993a).

The rhetoric and rituals around the reform gave the impression of Namibia moving away from education as selection.

In reality what has happened in Namibia is that learners today face both the past array of never ending tests and exams - these were never abolished, and the new continuous assessment. And although the learners are now "automatically" promoted through the grades, they still write external examinations after Grade 10, which determine whether they qualify for further studies.

On a more systemic level, the old structure of the Examination Board being the final approving/recommending body for the curriculum, is still in place, so any curriculum reform initiatives which are not in line with the policy of the Examination Board, are likely to (and have been) disapproved.

The Namibian reform has, by not seriously questioning our underlying assumptions about assessment, examination and selection, only supported an illusion of change, and has, in fact, perpetuated the situation by allowing more assessment and selection to take place.

In the following chapter, I will, through principles from Fourth Generation Evaluation, take a closer look at the extent to which the Life Science Project in fact has actualised the concept “Learner Centred Education” in the minds of stakeholders. The following chapter will also elicit these stakeholders understanding of Learner Centred Education, bearing in mind that in chapter two I argued that unless the notion of Learner Centred Education is understood within a social constructivist approach to education and located in a transformative curriculum, it cannot bring about change within the educational system.

5. WORKSHOP AND INTERVIEW RESULTS.

This chapter is an analysis of the research data gathered from the three different groups of stakeholders involved in this evaluation.

Through the policy and document analysis in previous chapters a number of important issues have arisen:

- Central to the reform rhetoric is the notion of change and transformation from one educational system (the previous) to a fundamentally new and different system - a paradigm shift, although this word is not explicitly used. The language used here originates from a progressive socially critical orientation towards education.
- When looked at more carefully it appears that the policy guiding the reform predominantly employs a Radical Constructivist learning theory situated within a liberal orientation towards education.
- In order to operationalize policy, various other ministry documents advocate and even prescribe a Tylerian objectives model of curriculum using behaviourist terminology and together with few systemic changes thus advance a positivistic educational system which seems little different from the previous one. The Life Science curriculum too follows this regression.

Thus this chapter is also an attempt to investigate whether this "trend" of theoretical "confusion" is identifiable among the stakeholders who participated in this research.

The three groups will initially be dealt with separately to allow for a coherent view to emerge. Under 5.2, I will highlight similarities and trends, if any, as well as differences between the three groups in their perception of Learner Centred Education, their evaluation of the Life Science syllabuses and the way they see curriculum development.

The concept mapping exercise was, as the reader will remember from chapter three, done in order to have the groups of stakeholders negotiate and develop a shared understanding of Learner Centred Education and present this in the form of a concept map.

Each group of stakeholders was divided into 3-4 smaller groups of 4-5 persons and each of these smaller groups produced a concept map. As the researcher, I would later merge these concept maps into one single concept map for each stakeholder group. Criteria used during this merging included: When two or more smaller groups had a similar concept, this would constitute a concept in the shared concept map.

If a concept occurred only in one smaller group, this concept would be added as a subheading under an appropriate shared concept. Thus the shared concept maps include concepts, subheadings to these concepts elaborating them and linking words.

The focus questions were designed to again negotiate and elaborate on the stakeholders view of education *per se*, why do we educate our learners and for what? How does the Life Science Rationale and Aims relate to this view of education? Does the LS Rationale and Aims accommodate the stakeholders perception of Learner Centred Education? Does the content sections on EE in the syllabuses accommodate Learner Centred Education? And finally how do the three groups see the roles of other stakeholders in curriculum development.

Follow up interviews were, as described in chapter three, done with selected representatives from the groups in order to elaborate and explore some of the findings or comments given to clear any misunderstandings or wrong interpretations and allow for additional comments. The interviews will not feature as separate entities in this chapter, but have informed my interpretations and the comments I make on the concept maps and later focus questions.

5.1 STAKEHOLDERS' UNDERSTANDING OF LEARNER CENTRED EDUCATION AND EVALUATION OF THE LIFE SCIENCE SYLLABUSES.

In this chapter the extracts and summaries from the concept maps and focus questions are typed in *Italics*, whereas the researcher's comments to these are typed in normal font to distinguish between the data and the interpretations made from these.

Concept map (CM) developed by Life Science teachers (Annex 1, p. 154):

- *Learner Centred Education according to the teachers, involves all senses. Learner Centred Education is practical and takes place in the classroom as well as outside the classroom. Learner Centred Education develops confidence and responsibility and is a way of learning knowledge and skills with understanding.*

There seems to be an understanding by the teachers of the change from transmission teaching, chalk and talk, to a teaching/learning process that involves all senses. It is, however, not clear from the CM why it is necessary to involve all senses in the process. It is noteworthy that the notion of practicals features prominently in the teachers' description of Learner Centred Education, but no reference is made to Learner Centred Education also being theoretical. In-service training after Independence, particularly in Life Science, has stressed the importance of practicals in the subject from the understanding that the previous education system, was to a large extent, exclusively theoretical, partly because it was the *modus operandi* in a transmission teaching model, partly because schools were so poorly equipped with lab material.

The teachers' understanding of Learner Centred Education also seems to be limited to Learner Centred Education being a way of ensuring that previously identified knowledge and skills are learned with, and through understanding, as we find it within radical constructivism (see chapter two). No reference is made to Learner Centred Education being situated within a pedagogy, which

accommodates the actual learning needs of the students, and an approach through which the learners themselves identify learning aims and objectives.

- *Learner Centred Education involves learners and teachers.*

Notably Principals, other school personnel and parents/ communities are absent here. This could indicate a view that Learner Centred Education is limited to the actual teaching/ learning process between the teacher and her/his learners and does not have any implication for the learning environment in a broader perspective. As mentioned elsewhere in this thesis, the Life Science Project as well as other in-service initiatives after Independence, to a large extent exclusively targeted individual teachers at schools, rather than adopting a more holistic approach where the school and community would be involved as a “unit”.

- *Learners use a variety of teaching/learning materials and share information, knowledge and experiences. They learn through their experience and work undertaken includes research, reporting and problem solving. They work in groups or as individuals.*

The teachers seem to have a good grasp of the learners’ roles in Learner Centred Education. Previous and gained experiences and sharing feature prominently in the teachers’ interpretation of Learner Centred Education. There is no explicit mention of a social constructivist approach, but experiences and sharing of these, as described elsewhere, are important aspects of this approach. On the other hand no reasons are given by the teachers why experiences and sharing is important for the learning process.

- *The role of the teacher as a facilitator and demonstrator involves the teacher motivating the learners, giving information [to the learners], explains work, creates learning opportunities and a subject friendly environment. Peer teaching is a possibility.*

The teachers' perception of their role in Learner Centred Education is not as clear and elaborate as that of the learners. Although there seems to be an understanding that the role of the teacher is both one of giving information, demonstrating and explaining work as well as being a facilitator who creates learning opportunities in a subject friendly (not learner friendly!) environment. Notably no reference is made as to how work and tasks are identified and by whom, or that it is the responsibility of the teacher to incorporate learners' previous experiences and knowledge in the teaching/learning process. This could be ascribed to the syllabus development as described in chapter four, where objectives and content in the subjects are already identified on behalf of both the teacher and learner and little room or time is left for the teacher and learner to bring and add to these.

Teachers' answers to focus questions.

- *The teachers indicate that education is about, together with the community, to produce better citizens for society. For learners education is about discipline, a career and academic results. Teachers should be qualified, committed and good role models and society should be financially, morally and educationally supportive in the education process. Education is about uplifting society and becoming worthy citizens. Education is also about building a new nation and to teach learners about their environment, their bodies and social problems.*

The teachers' shared view of education displays a very strong liberal view of education as social mobility (see chapter two). Society is almost reified and schooling is a way of producing worthy members of society. Education is seen as preparation for adult life and participation in an existing society. Learners are adequately prepared if they possess discipline and have obtained good academic results. This view of education is not necessarily contradictory to the teachers concept map of Learner Centred Education, if one views Learner Centred Education as a teaching method within a radical constructivist approach to achieve already identified goals and objectives as spelled out by

“society”. Education by the Life Science teachers is not perceived as a way of enabling learners to change and transform society.

- *The teachers perceive the Life Science rationale and aims as accommodating their view of education through encouraging learners to develop a critical mind and communication skills and by providing them with knowledge and skills for food production, health awareness and family planning and by combining theory and practice.*

One could question the argument that by developing critical minds and communication skills, education is preparing learners for society within a liberal understanding of schooling. Other than that there is in the LS rationale and aims a great emphasis on preparing learners for adult life by equipping them with knowledge and skills as identified in the syllabuses. A feature previously identified as situated within Child Centred Education more than Learner Centred Education.

- *The teachers see the LS rationale and aims as accommodating Learner Centred Education as well. By involving learners' previous knowledge from outside school, by promoting doing, understanding and communication through working together with other learners and members of society, and because LS addresses everyday problems like AIDS, STD's, food production, drug abuse and environmental problems like population growth, deforestation, pollution etc.*

As mentioned before, the teachers have a good understanding of the importance of the learners' previous experiences and knowledge from in and out of school. Obviously they feel the LS rationale and aims incorporate these. Again the teachers' understanding of Learner Centred Education is somewhat limited and set within a liberal notion of education, where education is seen as primarily a preparation for adult life and the maintenance of the status quo. On the other hand the LS syllabuses themselves do not explicitly go beyond this view as described in chapter four.

- *Teachers do not feel that there are areas in the LS rationale and aims, which contradict a learner Centred approach to education, but interestingly mention that it is not possible to always teach in a Learner Centred manner because of time constraints.*

The notion of Learner Centred Education being more time consuming than a teacher Centred approach to education is interesting because it confirms a perception of Learner Centred Education being a teaching method where group work and practicals are important features. This view of Learner Centred Education was also prevalent in other research done by NIED as preparation for the 1998 Educational Conference (see Van Graan in MBEC/NIED, 1999). This view points to Learner Centred Education being perceived by teachers as an addition to and add on to their existing work more than a distinct way of learning.

- *In the sections from the LS syllabuses dealing with EE, chosen by the teachers, the teachers also find a good correlation with Learner Centred Education. The reasons given are that learners are encouraged to propose their own solutions to problems, that learners are involved in the lessons through debate and discussions and because the issues dealt with are issues from everyday life.*

The teachers make no mention of the fact that the issues are already identified and objectives and learning content set in the syllabuses, leaving little room for teachers and learners alike to influence these. This apparent acceptance of a lack of influence on the curriculum is further highlighted in the following.

- *There are divergent views amongst the teachers on the role of parents and learners in curriculum development, implementation and evaluation. Some teachers feel that parents should be involved in the implementation, if they are capable, through showing interest in, and being involved in, their children's education and by motivating the learners. Other teachers feel that parents and learners have no role to play in the development of curriculum because [the parents] will give personal*

preference to ethnic group, religion, language etc. when it comes to developing a curriculum.

Teachers on the other hand should be involved at all levels because they are the implementers of the curriculum.

Principals should be involved if they have the subject knowledge. Other than that they are also responsible for implementation and should release teachers from school duties, to be able to partake in curriculum development.

The teachers feel that Advisory Teachers should be involved, but at the same time spend more time at schools in order to take note of the problems [with regard to the implementation].

Lastly the teachers mention that donor countries like Denmark (Life Science Project) should be involved in curriculum development, implementation and evaluation!

In general the teachers describe the curriculum development process as a process driven by experts, be it teachers with good subject knowledge or principals and advisory teachers. They do mention that it is important to take heed of the actual experiences in the classroom during the implementation.

Parents or the community are not a priority as partners in curriculum development as seen by the teachers.

The above could indicate a “reified” view of the curriculum as being cast in stone according to the nature and content of the different subjects and not as a living thing which is developed and shaped through the life experiences by the participants in the process - a view of the curriculum, which one could argue, is found within a liberal, positivistic view of education.

Concept map developed by Principals (Annex 2, p. 155):

A first glance at the CM made by the Principals reveals more depth and detail than that of the Life Science teachers. The CM developed by the principals incorporates more concepts.

- *According to the Principals Learner Centred Education is relevant and fun. It requires active participation, organisation and creates creativity, self confidence. Learner Centred Education is an approach/method. Learner Centred Education is about understanding and preserving the physical environment, it is directed towards the learning content as specified in the curriculum and subject syllabuses and leads to good citizenship and productivity. It takes place in schools, which are socialising units provided by government, assisted by NGO's.*

The principals do not specify to whom Learner Centred Education is relevant and fun, my interpretation is that they mean for the learners, I have yet to hear a Principal describe his or her job as fun! The statement that Learner Centred Education is an approach/method is unclear. Is it an approach to education or a method of teaching or vice versa? Help for interpretation here can perhaps be found in the statements that Learner Centred Education is directed towards learning content as specified in the curriculum and leads to good citizenship and [one must assume increased] productivity. Like the teachers, the Principals do not question the objectives driven model of curriculum, or use Learner Centred Education to question the underlying principles herein. The Principals are not clear on either how Learner Centred Education supports creativity or self-confidence. The statement that Learner Centred Education is about understanding and preserving the physical environment is, in my view, a result of this data being collected at a Life Science workshop. In that sense it displays an interesting perception by the Principals of the subject Life Science. Interesting because the physical environment is only one component of Life Science, but apparently a component which features strongly in the Principals' understanding of the subject.

- *The learners in Learner Centred Education do a great variety of active and communicative activities. Through this they reach conclusions, assist the community, and produce results. They work in groups and share knowledge and*

understanding, discover resources and report to the teacher. Learner Centred Education and Group work require planning and control.

The Principals apparently have an understanding that Learner Centred Education involves many different kinds of activities. It is however not clear why. Is it just because it is fun for the learners or is it a way of supporting learning? An interview with one Principal suggested an understanding of the latter, that learning is supported by involving all senses. The notion that learners assist the community is interesting, but unfortunately no explanation of how, why and with what was given. That Learner Centred Education and group work require planning and control is not elaborated in the concept map, but during an interview with a Principal, the Principal argued that some teachers at her school, interpreted Learner Centred Education as a *Laissez faire* pedagogy, where the teachers' facilitation consisted primarily of being there in the classroom and allowing the learners to do what "they felt like doing". In her interpretation the planning and control refers to the role of the teachers more than the Principals.

- *The role of the teacher in Learner Centred Education is one of facilitation, planning, control and supervision of the learners. The teacher provides resources to the learners. The teacher guides and assesses the learners.*

Like the teachers, the Principals are not nearly as clear on the role of the teachers in Learner Centred Education as that of the learners. Is it possible that educationists have taken the rhetoric about Learner Centred Education versus teacher Centred education to mean that it is not desirable to focus on the teachers role and function?

It is noteworthy and somewhat striking that nowhere in the Principals' concept map is there any mention of the Principal as the administrative and pedagogical leader of the school. During the follow-up interview the Principal indicated that both Principals and senior personnel at schools have, in her interpretation, to some extent been "left out" during the reform process. These groups have received little in-service training as compared to the

teachers. There can be many reasons for this, financial constraints, other priorities or perhaps an interpretation by officials in the ministry dealing with reform and in-service training that the shift to Learner Centred Education first and foremost is a matter of changing teachers attitudes and teaching skills, that it only requires methodological changes and not systemic changes to the ministry, regional offices, school organisation and structure. The latter argument is supported by the interview with the Principal, when she states that structures within the ministry and education have not changed:

“... the system has not changed, it is still exam driven ... learners must just know what is in the syllabuses.” If there is no expectation in the system of Principals taking on a new role, clearly they will continue to identify themselves with their old and well-known role.

Principals’ answers to focus questions.

- *The Principals argue that education is about equipping learners with knowledge so that they can help themselves and improve their standard of living when they have left school. It is about improvement of academic performance. Education should create a vibrant society and be responsive to the needs of the learners. This is done through creating a conducive environment, teaching the pupil as a whole in all aspects of life, instilling in learners a critical approach and in general provide quality education.*

The principals, when asked to give reasons for why we educate and to what purpose, interestingly display a more progressive view of education than that of the teachers. The view of education as preparation for participation in society “as is” is not nearly as strong as by the teachers. Education by the Principals is seen as enabling learners to “help themselves” and “improve their standard of living”. In other words, education is empowering for the learners. There is also a sense that education can actually influence society. There is, as with the teachers, an emphasis on academic skills, but at the same time education should be responsive to the needs of the learners, focus on the whole child and develop in learners a critical mind or approach. The

Principals see this as quality education. The Principals perception, in my view, displays a more progressive approach (see chapter 2) to education as opposed to the liberal view indicated by the teachers.

- *The Principals indicate that the Life Science Rationale and Aims supports their view of education in that it encourages the learner to develop a critical mind and communication skills, considers the total milieu of the learner, keeps them on track with a changing world, makes links between what the learner already knows and new knowledge and leaves them with certain competencies. Life Science encourages learners to be responsible for their actions and is seen as relevant by the Principals because it addresses sustainability and survival.*

It is interesting that both the teachers and the Principals perceive the Life Science Rationale and Aims as supporting their view of education and society, if these views in fact differ, as argued above. Perhaps this is a result of where one puts the emphasis and what makes most sense to the interpreter.

- *With regard to if and how the Life Science Rationale and aims supports their understanding of Learner Centred Education, the Principals argue that it does by focusing on the learner and by combining theory and practice, by addressing issues the learners can apply in their daily lives, through encouraging critical thinking, sexual responsibility, communication and by being an interdisciplinary subject.*

This statement takes the Principals interpretation of Learner Centred Education a bit further by explicitly including theory as an important part of Learner Centred Education, something which was not mentioned in their concept map.

- *The principals do not feel that there are sections of the rationale and aims, which are contrary to Learner Centred Education.*

- *On the selected section in the Life Science syllabuses which addresses EE, the Principals feel the section encourages Learner Centred Education through encouraging discussions, observations, collecting data for evaluation, reporting experiences and by discovery learning.*

As with the teachers, the Principals do not seem to object to the objectives and issues already having been defined and selected in the syllabuses, but sharing, discussion and experiential learning are seen as important to Learner Centred Education.

- *A suggestion for improvement of the section evaluated included a comment by the Principals to develop visual material such as videos.*
- *The principals see parents' role in curriculum development and implementation as first and foremost as one of support and creation of a conducive environment for learning. How this will take place is not elaborated on. The level of education of the parents themselves is seen as a determining factor of whether they can be involved and if they are willing to become involved.*

Learners are perceived as not being able to part take in curriculum development. Teachers should, according to the Principals, act as facilitators of subject knowledge during the curriculum development process. They should be involved, especially teachers from rural areas.

Principals have to be involved and must stimulate teachers and give credit whilst evaluating.

The main responsibility for curriculum development rests, according to the Principals, with NIED who, in the eyes of the Principals, should also advance the case of the schools with regard to resources and facilitators to other ministry directorates.

The Principals do not mention other MBEC officials as having any role to play in curriculum development and implementation, but donors, voluntary teachers and the Life Science Project are mentioned as partners in this process. Finally the Principals state that the development and implementation of curriculum should be a combined effort towards a common goal.

Like the teachers, the Principals describe curriculum development as a process taking place outside the school and community although stakeholders like parents and teachers and principals should participate in the process. Principals perceive curriculum development as a central process with NIED having the responsibility for driving the process. The principals indicate that stakeholders should only participate if they are knowledgeable [on subject matter] implying, like the teachers, that curriculum development is a matter for experts. Learners have no role to play in the process, implying that learners are receivers of education not active partners in developing education. As with the teachers no mention is made of student organisations, teacher organisations or representatives from business or church organisations etc. as partners in curriculum development. This must indicate a view that curriculum development and implementation is something which should only be undertaken by professional educationists.

The Principals give specific mention of rural teachers participating in the curriculum development process. Although they give no reasons for why these should participate, one could take this as a critique of the existing process, where the majority of syllabus Working Group members are drawn from the central and urban areas for practical and logistical reasons. It is interesting, but unclear why the Principals do not mention any representatives from the regional offices like Inspectors or Advisory Teachers as participants in the curriculum development and implementation process. Follow-up research seems to be needed here.

Concept map developed by Life Science Advisory Teachers (Annex 3, p. 156):

- *According to the concept map developed by the Advisory Teachers (AT) the starting point for Learner Centred Education is the learners' pre-existing knowledge. Learner Centred Education integrates theory and practice, is fun, goes beyond the classroom, is a way of learning with understanding, stimulates critical*

thinking and a good teacher/learner relationship. Learner Centred Education is free of rote learning.

Learner Centred Education develops positive attitudes and responsibility through self-esteem, it motivates learners and instils in the learners respect for others' views. Learner Centred Education in the interpretation of the AT is democratic and takes place in a relaxed atmosphere where there is a free expression of views.

The AT emphasise that Learner Centred Education takes its point of departure in the learners' existing knowledge, more so than the other two groups. They also highlight that Learner Centred Education integrates theory with practice. Learner Centred Education goes beyond the classroom according to the AT, but why and how is not clear. The ATs mention, as the only group, that Learner Centred Education is a democratic way of learning although they do not elaborate on this except that it must take place in a relaxed atmosphere where there is a free expression of and exchange of views [amongst all participants in the teaching/learning process, one must assume]. The above concepts, in my interpretation, display a fairly sophisticated understanding of Learner Centred Education and point to an understanding of Learner Centred Education as resting on aspects of a social constructivist approach to education (see chapter 2).

- *Learners within Learner Centred Education according to the ATs, share knowledge, which the ATs sees as constructed in Learner Centred Education. Learners are creative and learn from the teacher and through active participation in the teaching/learning process. Active participation is discovery using senses and experimentation/ exploration. Active participation also allows for problem solving.*

ATs are the only group who actually use the concept "construction of knowledge", which in my view is significant as opposed to the teachers and Principals, who in their responses both made strong references to Learner Centred Education being directed towards a way of acquiring the learning

content as laid out in the curriculum and subject syllabuses. The active participation by the learners also features strongly in the ATs response.

- *Teachers learn from the learners and are using learners' pre-existing knowledge in the teaching/learning process. The teacher is a facilitator who guides, assesses, monitors and evaluates, is questioning, probing and demonstrating. The teacher uses different teaching methods.*

The ATs have, as the only group, a two-way arrow that indicates that learners learn from the teacher and the teacher learns from the learners. This is significant and could demonstrate a deeper understanding by the ATs of the role of the learners' pre-existing knowledge as an important factor in the learning process and not just jargon. The pattern that seems to have emerged of stakeholders not being as elaborate on the roles of the teacher in Learner Centred Education is also present in the ATs concept map. The facilitation process by the teacher is described in broad general terms.

The ATs are the only ones to bring in the concept of different "teaching methods". This indicates an understanding that Learner Centred Education incorporates a variety of teaching methods and thus an understanding that Learner Centred Education is not a teaching method in itself, again a more sophisticated understanding than indicated by the other two groups of stakeholders.

Absent from the ATs concept map is the ATs themselves as professionals, the school as an institution, Principals and parents/community. One could argue that the lack of these concepts indicates an understanding by the ATs, that Learner Centred Education is limited to the actual teaching/learning process that takes place in the classroom and does not require systemic support or changes.

Advisory Teachers answers to focus questions.

- *The ATs would like to see learners who are able to think critically put into practice in out-of-school life what they learn in school. They envisage teachers to be*

professionals who are empowered to facilitate the learning of the students in order for them to become responsible citizens who possess respect for life and are able to improve their living conditions. If learners are educated for life, eventually society will benefit. Or as one AT put it: "If in education we could have learners who are able to think critically, with supportive, reflective teachers backed up by a concerned community, I would be very happy."

In the ATs answer there is clearly an emphasis on learners being educated for life. Possessing knowledge and skills and a critical mind that will enable them to become responsible citizens and able to improve their living conditions.

Education is in other words seen by the ATs as empowering. Notably, there is an absence of education for academic skills and career. There seems to be a stronger emphasis by the ATs on teachers, learners and education in itself, rather than on society as the final "receiver" of the educated learners.

The statement from the one AT is interesting firstly because it is a very poetic and (in my view) noble vision, but also because it consequently describes the AT's perception of the existing system. If this is his (it was a male) vision, he apparently perceives education today in Namibia to be different from this vision. Education in general does not develop critical learners, teachers are not supportive and reflective and are not backed by a concerned community. Namibia still has some way to go!

- *The ATs state that the Life Science Rationale and Aims supports their view of education in that it addresses everyday problems and challenges that faces society, through encouraging learners to develop a critical mind and communication skills and because the syllabuses provides learners with skills and knowledge through a Learner Centred Education approach, develops an attitude of curiosity and inquiry towards everyday and scientific evidence.*

The ATs highlights concepts like a critical mind, communication skills, curiosity and inquiry as important aspects within education for life.

- *The ATs perceive the Life Science Rationale and Aims as supporting a Learner Centred Education by combining theory and practice, by encouraging learners to communicate and work together in a democratic way, by developing critical learners, promote understanding and the acquisition of skills, attitudes and basic competencies. Strengthening of democracy through debate is, according to the ATs, one feature of Learner Centred Education.*

As with the other two groups of stakeholders, the ATs do not seem to question the underlying assumptions of the Life Science Rationale and Aims. Within the Life Science syllabuses who defines the problems and challenges facing Namibian society today? Who determines the skills and knowledge needed for food production? Who defines sustainable utilisation of natural resources? Why is high population growth a problem and for whom? What is sexual responsibility? Who has laid down the competencies to be acquired and why? etc. All this is not questioned by the ATs. However the perception that Learner Centred Education, through debate, can strengthen democracy, in my view displays a more progressive than liberal view toward education and points to the fact that ATs have a fairly sophisticated understanding of Learner Centred Education as located within a Social Constructivist approach, where language, debate and negotiation are important features.

- *Concerning the question of whether there are points in the Rationale and Aims, which does not support Learner Centred Education, the ATs answers no, because the Rationale and Aims are set up during educational reform to replace the former education system.*

This is an interesting answer, although somewhat unclear. Bearing the above lack of questioning of the underlying assumptions in mind, this answer could be interpreted as a “blind faith” in that which has been developed after Independence and during the reform of the education system. Van Harmelen (1998) writes that it is dangerous to uncritically replace one set of educational “myths” with another without scrutinising where we come from and where

we are going to. By not doing this we are making cosmetic changes and not effecting transformation. Further research is needed to clarify this answer.

- *On the chosen section from the Life Science syllabus es dealing with EE, the ATs state that these incorporate a learner centred approach to education through allowing for practical in - and out -door activities, hypothesising, debating and discussion in a social setting and by learners sharing ideas.*

Again practical activities, debate, discussion and sharing of ideas within a social setting, features prominently as aspects of the ATs' understanding of Learner Centred Education.

- *On the roles of the parents in curriculum development and implementation the ATs note that parents, through their representation on school boards, should be involved in both the development and implementation of the curriculum by giving suggestions as to what they would like to see included or removed from the curriculum. Parents know wh at is good for their children and will be good ambassadors in ensuring proper implementation if links with them [the parents] are kept up.*

Learners indirectly and directly play a very important role in the development and implementation of the curriculum according to the ATs. Indirectly through their response to the curriculum and through their results and what they are able to do in life after their schooling and directly because they are " ... the ones who observe teachers on a daily basis, work through the syllabuses and are surely in a position to give good suggestions on how and what the syllabus may or may not contain." Principals and teachers are seen as equally important in the development, implementation and evaluation of the curriculum. They should pa rticipate in the actual construction of the curriculum and during implementation evaluate the syllabuses and put forward suggestions and changes.

NIED is seen by the ATs as having a leading role in curriculum development and evaluation. NIED must ensure th e engagement of both learners and teachers in this process.

The ATs do not mention any other MBEC personnel as having a role to play in the development of the curriculum except in developing the Broad Curriculum. Finally NGO's and business people should contribute by supporting the process morally and financially.

The group of ATs perception of curriculum development, implementation and evaluation differs markedly from the other two groups of stakeholders. Firstly, the parents are seen by the ATs as having an important role to play through their representation on school boards, the first and only time this "institution" is mentioned in the research data. Parents are seen by ATs as having a more proactive role than merely creating a conducive learning environment in their homes and giving support and encouragement to their children. Actual suggestions for the curriculum are welcomed by the ATs. It is also interesting that the ATs refer to the curriculum as a "construct" and suggest that one can add and remove areas/topics from the curriculum. This could indicate a perception of the curriculum as a "living" thing, which evolves through practice and not a "cast in stone" document derived from the "nature of the subjects".

As opposed to the teachers and Principals, the ATs also regard the learners as having a crucial role to play in curriculum development, implementation and evaluation. The ATs even suggest that learners be formally invited to the process by NIED. The statement that the learners observe the teachers in the implementation of the curriculum on a daily basis, indicates a view of the learners by the ATs as equal stakeholders and partners in education, not merely receivers. The ATs also, in my view, display a longitudinal perception of the curriculum by implying that learners, through their life outside and after their schooling, bear testimony to the quality of the curriculum and that such a long-term perspective must be incorporated into development and revision of the curriculum.

The group of ATs is the only group to mention other stakeholders like business people as participants in curriculum development. At the same time they do not mention themselves as a group. The latter must be from a

perspective that it is “taken for granted”, seeing that many of the ATs actually are members of various Syllabus Working Groups and Curriculum Panels under NIED and several of them have participated in developing the Life Science syllabuses.

In my interpretation the Advisory Teachers display a more organic and progressive view of curriculum development, implementation and evaluation than the other two groups, by referring less to “experts” as developers, seeing the curriculum as a social construct and not dictated by the inherent nature of the subjects and by encouraging parents and learners to participate and regarding them as equal partners in education. Where this “richer” view of curriculum by the ATs comes from is not clear from the research data. One could speculate that the involvement of several ATs in curriculum development has resulted in a gained experience of curriculum development being very much a shared, negotiated social exercise as it is in the Working Groups and Curriculum Panels. Another aspect which could have influenced the ATs view, is their close co-operation with the Life Science Project through several years, where they have been involved in all aspects of the Project’s work from curriculum development over materials development to in-service training of teachers.

5.2 TRENDS, SIMILARITIES AND DIFFERENCES IN THE RESEARCH DATA

The three groups of stakeholders’ perceptions of Learner Centred Education.

The Life Science teachers and the Principals seem to have a fairly similar understanding of Learner Centred Education. To them Learner Centred Education is relevant and fun, requires the active participation of the learners and involves all senses in the learning process. There is an emphasis on Learner Centred Education being practical rather than theoretical and involving the sharing of knowledge and communication. Learner Centred Education results in creativity and self-confidence amongst the learners.

Learner Centred Education is a teaching method that ensures learning with understanding and is directed towards the stated objectives and competencies as described in the curriculum. Schools are seen as socialising units.

Both Principals and Life Science teachers seem to interpret Learner Centred Education as being similar to what was described as Child centred Education in chapter two. An exercise in making the already defined and selected knowledge and outcomes more "palatable" and relevant to the learners through using examples from their every day lives and employing a cross-curricular approach where possible. As argued in chapter two, Child Centred Education draws heavily on a radical constructivist learning theory.

The advisory Teachers have a somewhat more perceptive view on Learner Centred Education. To them Learner Centred Education takes its point of departure in learners' previous knowledge and experiences, is both theoretical and practical and involves teaching/ learning in a democratic environment. It would appear that the AT's interpret Learner Centred Education more from a Social Constructivist learning theory, when one combines their statements with their views on the curriculum and its development.

All three groups seem to locate Learner Centred Education in the interaction between the teacher and learners during the learning process only.

Responses to why we educate and for what purpose.

Here the responses fall in two groups as well. The Life Science teachers argue that education is preparation for adult life and participation in society as worthy members. A view of education which originates from a vocational/ neo-classical orientation to education (see chapter two).

The groups of Principals and ATs see education as being more than that. Education is also empowering, enabling learners to improve their living conditions and through being empowered, positively contributing to shaping society. A more progressive view of education, where education is seen as

being able to change and transform society. Many of the Principals and ATs' arguments and points of view are very similar to those described in the policy guiding the reform.

It is difficult to give reasons for the teachers, in my opinion, somewhat limited ambitions with regard to education. One possible explanation could be that the two other stakeholder groups, because of their positions and job functions, are more likely to read and keep up to date with policy documents circulated to schools and Regional Offices.

Bearing in mind however that it is with the Life Science teachers, that the Life Science Project has had the closest co-operation, the data could be interpreted as the Project through its in-service training has not been very successful in conveying the rationale and aims behind the education reform to the teachers.

Does the Life Science Rationale and Aims accommodate this view of education?

All three groups answered in the affirmative. The Rationale and Aims of Life Science are seen to accommodate their views in that they encourage the development and acquisition of knowledge and skills relevant for daily living, the development of critical thinking and communication skills. It is also seen as positive that Life Science involves the total environment of the learner and is addressing present issues in a changing world.

Do the syllabus sections dealing with EE support Learner Centred Education?

All three groups believe that they do. The reasons given are again that critical thinking and communication are encouraged, there is a strong component of practical work, learners' previous knowledge is incorporated and sharing of knowledge takes place through debate and discussions.

The group of ATs put emphasis on the linkage between theory and practice in the syllabuses and that learning is set in a democratic environment.

If both the Principals and the Life Science teachers interpret Learner Centred Education as being similar to Child Centred Education set within a Radical Constructivist learning theory, this further supports the argument in chapter four, that the Life Science Project in fact seems, through its curriculum and in-service training, to have advanced an EE model as being education about and in the environment as described in chapter two - a model which I, in chapter two, found questionable in a Namibian reform context.

The involvement of other stakeholders in curriculum development, implementation and revision.

The groups of Life Science teachers and Principals display a similar perception. The curriculum development process to them is a central exercise taking place outside schools and driven by educational experts with a high degree of subject knowledge. Subject knowledge becomes the frame around which the curriculum is designed. Teachers mention that it is important to actually take the experiences from implementation into consideration when revising the curriculum. Both groups see no role for learners in this process, implicitly relegating learners to receivers of education rather than partners in development and implementation.

The ATs have a different view of the curriculum. They firstly see the curriculum as a social construct more than a subject -given end in itself. They encourage the inclusion of parents, learners and business into the process and finally argue for a long -term perspective on the curriculum, where learners' lived experience with the curriculum during and after "schooling", is evaluated as part of a revision process.

The responses by Principals and Life Science teachers have implications for the evaluation of the Life Science curriculum development process and product. Obviously the Life Science Project has not succeeded through its own curriculum development process, in changing the perception between these two groups of the curriculum being an external, expert driven process and product. This bears further testimony to the argument in chapter four

that the Life Science project in fact has developed an objectives model of curriculum as a closed system, as opposed to an open system, which leaves room and opportunity for local curriculum development by the people involved, as suggested by Doll in chapter two.

5.3 SUMMARY

In this chapter I have given an account of the research data as gathered through the stakeholder workshops and the follow up interviews. Both the participants' concept maps and their answers to focus questions, as well as my interpretations of these, have been included.

A number of issues have arisen from this research, which in my mind would be interesting to elaborate on during further/other research.

Firstly there seems to be a focus by all the three groups of stakeholders involved in this research of Learner Centred Education being an approach confined to the actual teaching/learning process in and outside of the classroom. Only the group of ATs vaguely suggests that Learner Centred Education has systemic consequences within the education system as well as implications for our understanding of epistemology.

Secondly the notable absence in most of the responses of the role of the regional office with its support system of Advisory Teachers and Inspectors in curriculum reform and implementation is interesting. Previously teachers and Principals perceived this support service as being a controlling mechanism of the quality of their work rather than partners in the education process.

Further research could establish if this is still the prevalent perception.

Thirdly it could be worthwhile to establish to what extent stakeholders have actually questioned the introduction of Learner Centred Education as a way of reforming the education system in Namibia after Independence. Implicit in the response by the ATs is a blind belief in the initiatives undertaken after Independence. To what extent have stakeholders questioned these initiatives and the "baggage" with which they come?

6. CONCLUSION

This final chapter draws together the threads that have been running through this thesis.

Based on the research findings, I provide a snapshot picture of stakeholders' perceptions of education, Learner Centred Education and the curriculum and their evaluation of the Life Science syllabuses. This picture is set against the official goals of the Namibian education reform and the suggested means and ways to achieve these goals as formulated in ministerial documents and guidelines.

The chapter is also a return to the assumptions, I developed in chapter two, from which to understand and view change and transformation.

6.1 FINDINGS FROM THIS RESEARCH

6.1.1 DOCUMENT ANALYSIS

The overall goals of the Namibian educational reform were, as highlighted in chapter four; Access, Equity, Quality and Democracy.

Access in the sense that the previous education system favoured some groups' access to education above others through segregation and the general availability of physical structures and resources. This was to be changed so that basic education was accessible to all, irrespective of their race, gender, beliefs or whether they lived in rural or urban areas.

Equity in education should ensure that the previous practice of discrimination and segregation under Apartheid was redressed by explicitly pursuing policies that would compensate these, in order to achieve an equitable system.

Quality in education was addressed by providing in-service training for the huge number of un- or under qualified teachers, which was a result of the previous system and by initiating a change of system from what in this thesis has been identified as a vocational/neo-classical orientation to education to a Learner Centred Education system for all. Finally, democracy in education was aimed at developing education for democracy, seeing that Namibia had just emerged from a repressive and authoritarian past to a new status as a

country with a democratically elected government and a democratic constitution.

Thus the overall goals of the reform, as they were described in policy, were to change and transform the educational system to a new appropriate system for a democratic, independent society.

The educational system, which was perceived to accommodate such a change, is described in various documents including "Towards Education for All" and the "Broad Curriculum" which have been analysed in this thesis.

"Towards Education for All" (MEC, 1993a) describes such a system as belonging to a liberal/progressivist orientation to education interspersed with concepts and rhetoric from a more socially critical orientation.

The task of civil servants from the Ministry of Education together with technical assistance personnel from various donor projects was to operationalize this vision and overall goals into, amongst other, a curriculum that would allow for and accommodate changes. This was done through the "Broad Curriculum".

The "Broad Curriculum" as described in chapter four, is a document that, although reiterating the vision and goals from policy, is heavily entrenched in a behaviourist vocational/ neo-classical view of education prescribing a reductionist objectives model of curriculum where the learning outcomes are described in pre-set behavioural terms. As I have argued in chapters two and four, such a curriculum cannot lead to or accommodate change or transformation. By its nature it reproduces that which has been and, as such, is detrimental to the Namibian education reform in reinforcing precisely those aspects and values which the reform was to redress.

It would appear that the policy documents guiding the Namibian education reform which have been analysed in this thesis, to a large extent all share a common feature of inconsistency between what they set out to achieve and the means with which to achieve this. In other words the "toolbox" and the

"tools" applied to develop a new education system have been inappropriate in order to "build" the envisaged structure and product.

Earlier in this thesis I have highlighted some of the possible reasons for this inconsistency;

- the new Government's dual need for on the one hand to appear, in the eyes of its constituency, as willing and able to initiate major changes but at the same time securing external funding through international donors, hence the desire not to appear too radical,
- the fact that policy was operationalised by technocrats and civil servants who either did not share in the vision or did not have an appropriate educational and professional foundation through which to implement this.

Another factor compounding the inconsistency could be the haste with which the education reform was initiated and implemented. Namibia became independent in March 1990 and already at the start of the new school year in January 1991, a revised curriculum and teaching materials were introduced in Grade 8 countrywide. Very little time had been allowed for stakeholders and the public to actually debate the strengths and shortcomings in the existing system and the need for change, but perhaps more importantly time to reflect on what kind of changes were necessary and why.

In this thesis I have argued that the Namibian reform has resulted in an educational system which has much in common with a Child Centred Education system, a feature of which is a lack of questioning of the fundamental principles underlying education. Perhaps we never took the time to engage properly in this debate and question and thus have advanced an interpretation of Learner Centred Education being similar to Child Centred Education informed by Radical Constructivism rather than Social Constructivism.

6.1.2 STAKEHOLDER WORKSHOPS

This thesis provides a picture, incomplete as it is, of three groups of stakeholders' understanding of Learner Centred Education in Namibia today.

It is a picture, which reflects much of the inconsistency, found in the policy documents as described above.

Principals and Advisory Teachers display a view of education in line with the progressive overall vision as outlined in policy. They perceive education to be, apart from preparation for adult life, also an empowering factor, enabling learners to improve their lives and, through education, contribute to actually shaping their society.

Life Science teachers do not share this progressive view of education. To them education is more like a “qualifying rite” through which learners must pass in order to be accepted into an existing society. The teachers do not question the values and ways of this existing society.

This view of education is also reflected in the teachers’ view of curriculum development. Curriculum development is a subject -expert-driven process with clearly defined subjects as the frame on which education is attached and learners, parents or others have very little to contribute to this process.

The Principals, despite their more progressive orientation to education, share a similar view of curriculum development with that of the teachers.

The Advisory Teachers, many of whom have actually participated in curriculum development, have a richer view of the process. They describe the curriculum as a social construct which can be altered and revised through the lived experience with the curriculum. Contrary to the other two groups they also see the process as less expert -driven and actually see a role for several others like learners, parents and the community in the process. The Advisory Teachers display an understanding of the curriculum belonging to a more socially critical orientation to education.

All three groups seem to locate Learner Centred Education within the teaching/learning process between the teacher and the learners only.

Although the Advisory Teachers have a somewhat more sophisticated view, all three groups of stakeholders describe Learner Centred Education from

primarily a Radical Constructivist point of view. The primary aim is to build cognitive structures within the individual through social interaction as opposed to a Social Constructivist approach, which, through social interaction, allows learners to reconstruct a reality that is exactly socially constructed.

The Life Science syllabuses are evaluated in positive terms by all three groups as accommodating and encouraging both a learner-centred approach to education and being relevant to the three groups' perception of education. Aspects highlighted by the stakeholders as being important in the syllabuses include that Life Science incorporates knowledge and skills relevant for the learners' daily lives, encourages development of critical thinking as well as communication skills, incorporates learners' previous experiences, and emphasises linkages between theory and practice.

The research undertaken in this thesis has raised a number of issues or questions, some of which I have attempted to answer and others which it is beyond the scope of this study to answer, but which it might be worthwhile to consider and take cognisance of in the further curriculum development and education reform in Namibia.

- How does one ensure that there is consistency between the aims and goals as formulated in policy and the means and ways to implement and achieve these?
- Based on the findings of this research, it would appear that (Life Science) teachers are the stakeholders who display the strongest affiliation with the Vocational/ Neo-classical orientation to education, despite the fact that they have been the focal point for in-service training after Independence. If that is the case, it seems unrealistic to expect real and far-reaching educational changes at classroom level.

- All stakeholders in this research seem to locate and interpret the Namibian education reform primarily from a perspective of Radical Constructivism. Is this because of a lack of time and opportunity to engage in a critical debate and reflection on the rationale behind the reform and the process through which it was operationalised?
- Is a Child Centred Education system based on a Radical Constructivist learning theory able to accommodate the envisaged changes necessary in order to develop a new democratic education system in Namibia?
- Will Environmental Education located within this learning theory be an appropriate vehicle for developing a critical environmentally literate populace able to take and make appropriate decisions about and for the environment and a better way of living?

6.2 ACHIEVEMENTS AND LIMITATIONS OF THIS RESEARCH

Guided by the questions formulated in Chapter one:

1. Are there curriculum models that are more conducive for reform and change than others?
2. Do stakeholders and curriculum developers in Namibia understand the theory of social constructivism, and the systemic implications such an approach has for the education system?
3. Which approach to environmental education complements a transformative curriculum and the changes outlined in policy?

I believe this research to have shown that there are indeed curriculum models, which better accommodate change and transformation than others and that the objectives model embarked upon in Namibia is perhaps the least appropriate in this regard. This research has also highlighted the fact that very few of the participating stakeholders understand the theory of Social Constructivism and thus Learner Centred Education. I have also through this research identified "Education for the Environment" located within a socially

critical orientation to education as an appropriate model of Environmental Education for supporting change and transformation.

At the same time, I also believe this research to have shown that the reform and the Life Science Project in Namibia has in fact facilitated an understanding among some stakeholders of Learner Centred Education as situated within a different learning theory than that of a behaviourist vocational/ neo-classical theory. The Majority of the stakeholders involved in this research display an understanding of Learner Centred Education as being similar or equal to a Child Centred Education as described in chapter two.

This thesis however is a theoretical picture of the "state of affairs" in education in Namibia today because very little has been said about the actual classroom practice. In order to gain a more comprehensive picture and validate some of the arguments and statements developed here, it would be necessary to supplement this research with extensive studies of classroom practice and follow up interviews with former Life Science students and their parents/ community. This could very well be one of the tasks in a formal evaluation of the Life Science Project, which is planned to take place during the year 2000 and thus, together with this study, provide a more comprehensive picture of the education reform and the role of Life Science herein.

6.3 CONCLUSION

Returning to the platform and assumptions developed in chapter two, the question is whether this new Child Centred Education model resting on a liberal/ progressivist orientation is appropriate and adequate for bringing about real changes and transformation to the Namibian education system? The short answer, as I have argued in this thesis, is no. Child Centred Education does not fundamentally question and challenge the underlying assumptions and beliefs on which education rests. Hence a move from an authoritarian transmission model of teaching/ learning to Child Centred

Education is reform rhetoric and ritual, which does not lead to fundamental or systemic changes, but serves to reiterate our general myths about educational innovations as Popkewitz (1988) has pointed out.

The Namibian reform has, like so many others, turned out to be an evolution of that which was, rather than a revolution.

Many people in and outside education are of course pleased about this. They are the people who were in power before Independence and because of the evolution, which did not fundamentally question this, are still in power. They are the "have's", not the "have-not's". They are the ones who define the knowledge to be acquired and they are the ones who decide who are to succeed and who not, based on their criteria. New people have been included in this group after Independence, people who were oppressed during the former system and dispensation, but who now are co-opted as part of the system and development process. For various reasons these "newcomers" have not been able to institute the changes and transformation needed to redress the past.

One could argue that the Namibian education reform and the Life Science Project have not only not redressed the past, but have in fact, through advancing a Child Centred Education employing a Radical Constructivist learning theory, perpetuated the status quo by adhering to and advancing a view of education which incorporates social and economic myths about individualism into institutional and systemic theories of success and social mobility. The same myths, which within environmental education, have been challenged as part of the problem and set in an orientation to education which is inadequate in preparing learners to address the environmental crisis and together bring forth a more sustainable future.

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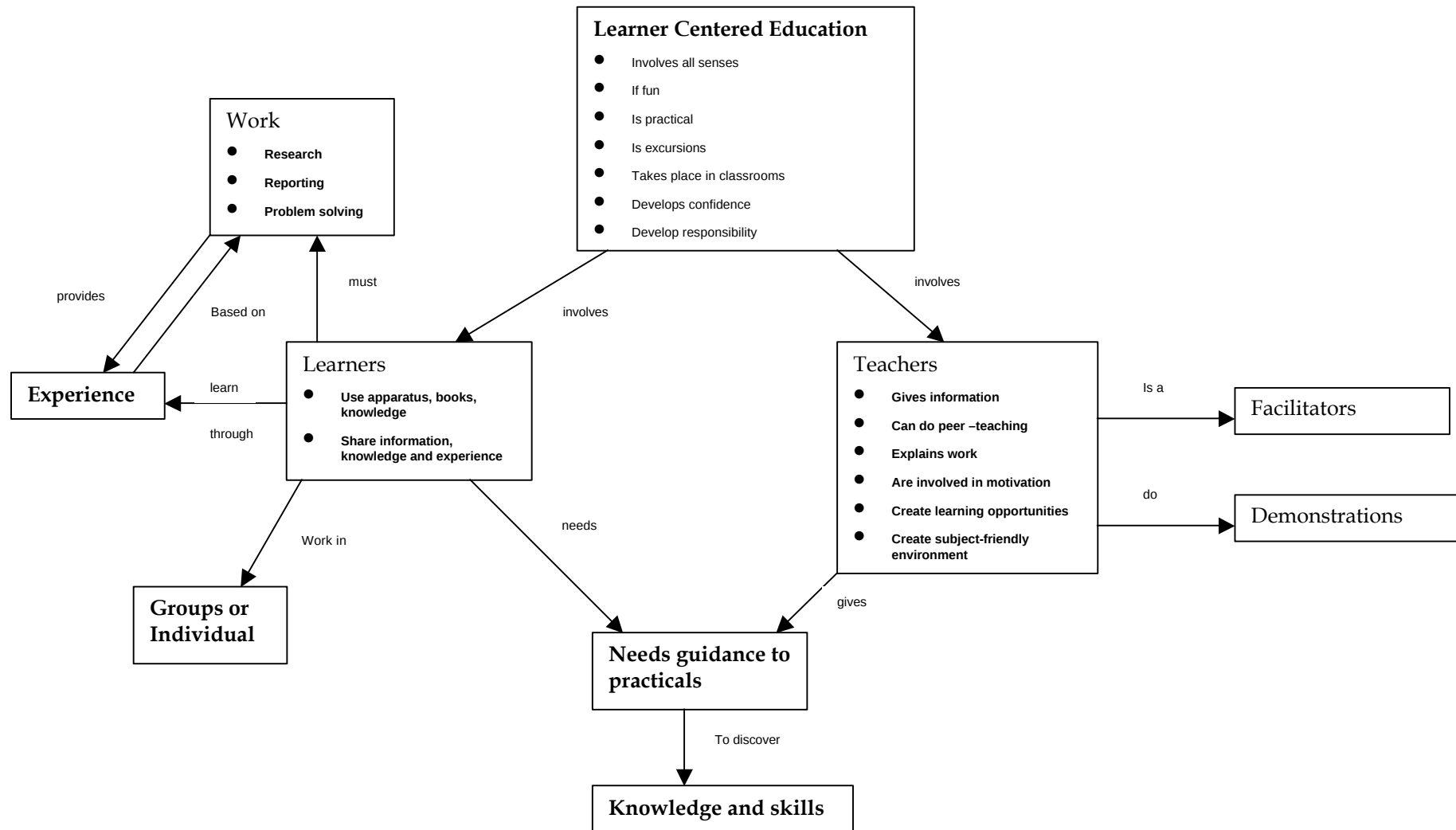
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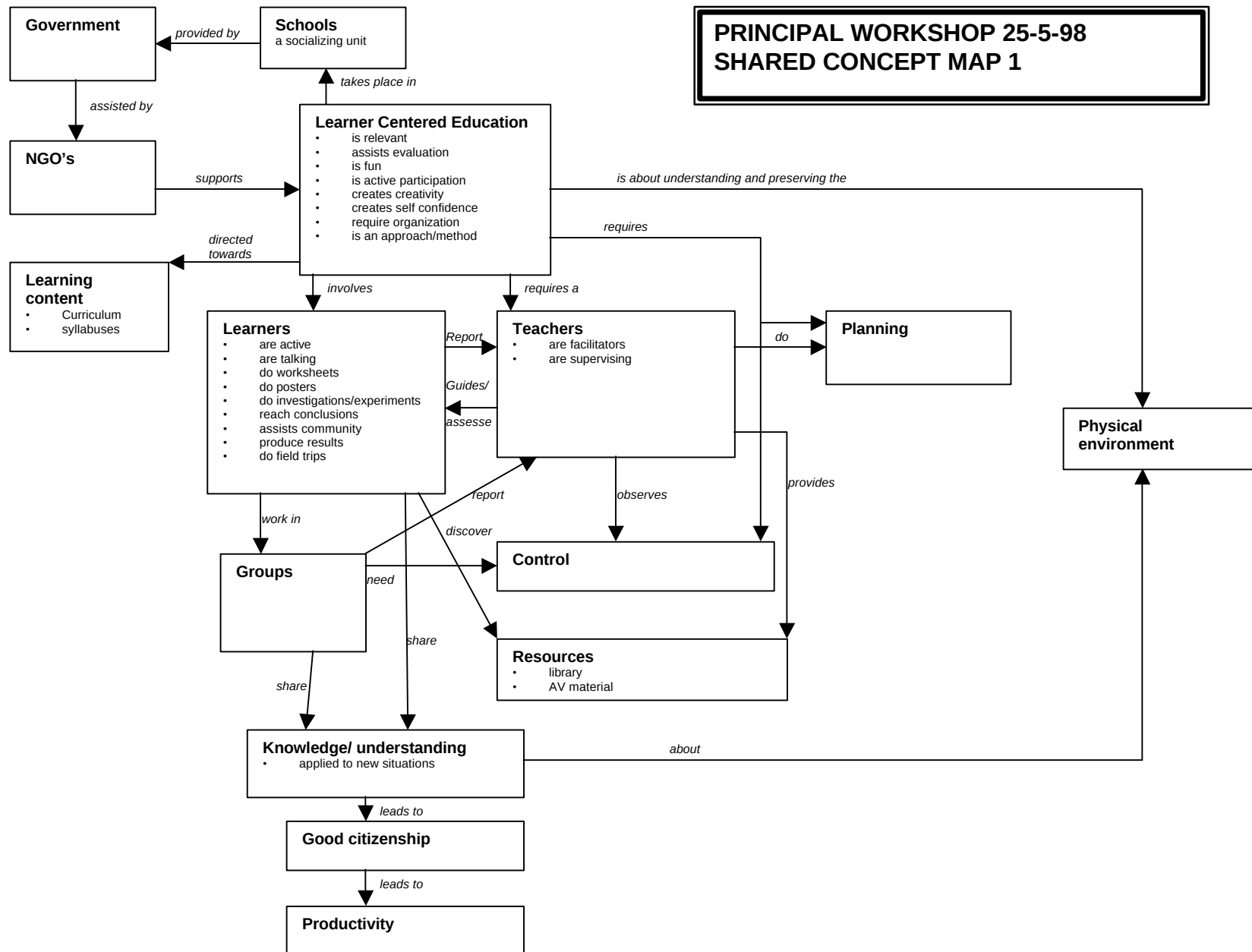
APPENDICES

1. Life Science teachers' shared concept map.
2. Life Science Advisory Teachers' shared concept map.
3. Principals' shared concept map.
4. Focus questions

TEACHER WORKSHOP 3-6-98

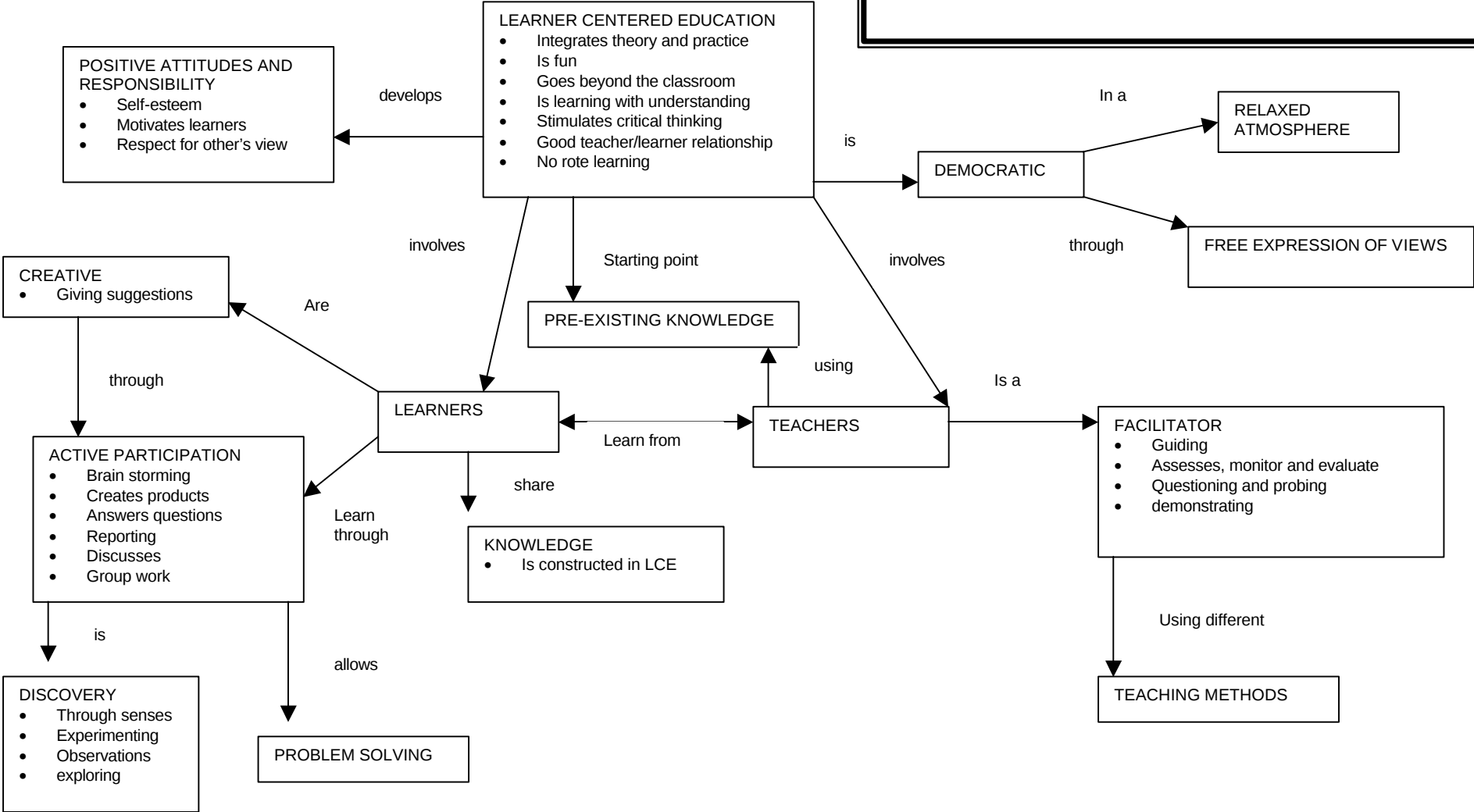
SHARED CONCEPT MAP 1





ADVISORY TEACHERS WORKSHOP 6-8-98

SHARED CONCEPT MAP 1



LIFE SCIENCE SYLLABUSES AND LEARNER CENTRED EDUCATION.

The following questions are meant as a help to you and your group in evaluating the life science curriculum. Your group is not restricted to these questions, please add anything you see as important.

The life science syllabuses are not prescribing how the teacher must teach a topic. They prescribe **what** should be taught and the **competencies** the learners are expected to acquire through the learning experience. Therefore you should evaluate and critique if – and to what extent the curriculum **allows or encourages** the teacher to use a learner centred approach.

1. As stakeholders what are your interests in education?
Not on a personal level (job, salary etc.) but with regards to learners, teachers and society.
2. How or do the life science rationale and aims accommodate these interests?
3. Based on your shared understanding of LCE, are there sections or points from the rationale and aims that supports LCE? – Please elaborate:
4. Are there sections or points that does not support LCE? – Please elaborate:

Choose **one** of the handed out sections from a specific grade (8, 9 or 10) for the following questions. These section all deals explicitly with environmental education in one or other form.

5. Does this section allow for or encourage learner centred education? – Where and how, in your interpretation?
6. If not, argue your case and suggest changes/ improvements.
7. Please elaborate on how your group sees the role of the following stakeholders in relation to the development, implementation and evaluation of the syllabus/ curriculum:

Parents/ learners?

Teachers?

Principals?

NIED?

Other MBEC personnel (specify whom)?

Others (specify)

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