SATELLITE TEACHERS' CENTRES AS AGENCIES FOR THE DEVELOPMENT OF EDUCATIONAL TECHNOLOGY AT SCHOOLS

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DECLARATION

I DECLARE THAT THIS THESIS:

"Satellite Teachers' Centres as Agencies for Development of
Educational Technology at Schools"
is my own work.

Further more, this thesis was not submitted to any other university for examination, to the best of my knowledge.

SIGNATURE

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20-04-98

DATE

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ABSTRACT

The study focuses on a partnered facilitation involving teachers, the media and the learner. The implications of educational technology-based strategies of learning and the need for teachers to develop a theoretical framework of understanding educational technology are considered. The partnership between the teacher, the learner and the media are seen as crucial to the implementation and enhancement of educational technology-based strategies of learning.

In recommending the need for ongoing, sustained training of teachers in educational technology-based strategies of learning, the study concludes that satellite teachers' centre is indispensable as an agency to drive the entire process forward. In this regard it is considered that satellite teachers' centres have the potential to take the focus of training and development of skills closer to schools and arrange on-site programmes.

The large mass of under-qualified and untrained teachers will be able to enhance their educational technology skills to facilitate resource-based learning which is so crucial to the new outcomes based approach to learning and education. South Africa has the media and a large population of learners who are yearning for quality education. In addition, the country has a large store of teachers who are in need of ongoing sustained training in educational technology-enhanced strategies of learning. The study concludes that teachers' centres have been under-utilised and that satellite teachers' centres could operate on a more structured basis in terms of an approved national policy.

CHAPTER 1

INTRODUCTION TO THE STUDY

1.1 GENERAL INTRODUCTION

The transition of the country into a democracy has created the opportunity and the climate for a transformed and innovative education system. Generations of young people have inherited illiteracy through the implementation of the apartheid system of segregated education based on traditional "chalk and talk" modes of teaching and rote learning. The initiative of the Government in introducing innovative learning systems in the classroom is a commitment to redress the imbalances in education and provide quality learning through the launching of "Curriculum 2005" by Education Minister S. Bengu in April 1997. (Vusi: 1997: 3). However, a theoretical framework on its own will be of little value unless it is supported by a body of transformative educators who are given the opportunity of ongoing training, and who in turn would have the capacity to facilitate the process. The teacher is the most valuable asset who can redress the inequities through innovative classroom practice. In calling for a learner - centred education system the educator has to be equipped with the skills to manage an innovative, creative learning environment which promotes critical thinking.

1.1.1 EDUCATION DURING APARTHEID

The Education and Training system under apartheid has been characterised by fragmentation along racial and ethnic lines, widespread inequalities in access to education services and lack of democratic control by participants in the system. This situation has resulted in an impoverished education system for the majority of South Africans, particularly the historically disadvantaged sector. A racially and ethnically based system has been at the heart of apartheid education, with nineteen operating departments, under fourteen different cabinet ministers implementing their own regulations in terms of at least twelve education acts. (Education Policy Unit: 1994: 20). This fragmentation and complexity has resulted in a wasteful duplication of functions and provision of unequal education contributing to the high level of academic impoversishment and consequent disempowerment. "Millions of adult South Africans are functionally illiterate, and millions of South African children and youth are learning in school conditions which resemble those in the most impoverished states." (Government Gazette: 1994: 1).

1.1.2 THE STATUS QUO: A STATISTICAL ANALYSIS OF LEARNERS, EDUCATORS AND SCHOOLS IN KWA ZULU NATAL.

Table 1 provides a schematic representation summarising the education and distribution of schools in the eight regions of the province. It is evident from the tabulation that severe deficiencies

exist in most of the schools and this would obviously have implications for the quality of learning. Such drawbacks as the lack of water, electricity, telephone and the state of the buildings as well as certain schools without libraries will severely impact on government initiatives to promote innovative learning strategies. How then is the government to attain its goal in terms of Curriculum 2005?

1 2 3 4 5

REGIONS	schools without water	schools without power	schools without telephone	schools with buildings not suitable for education.	Secondary schools without libraries.
Empangeni	139	430	508	5	128
Ladysmith	222	384	400	34	124
North Durban	184	269	280	22	76
Pietermaritzburg	2.86	448	500	29	80
Port Shepstone	282	477	514	25	118
South Durban	121	193	215	21	95
Ulundi	394	652	687	25	155
Vryheid	285	461	455	20	42
TOTAL	1913	3314	3559	182	818

Table 1

Distribution of schools in KwaZulu Natal: 1996

Source: HSRC - School and College Register: 1997: 2

Table 2 is a representation of pupil/teacher ratios according to department and education sector - the number of pupils per teacher are well established indicators of the opportunities available to every pupil. These indicators may also be regarded as a measure of the standard of instruction and the contribution to inequalities in education provision for the different racial groups. The tabulation confirms that large disparities existed in this country for decades. It is clear that the average size of the schools particularly in the outlying areas, mostly rural, is large and crowded.

DEPARTMENT	PUPIL/TEACHER
public ordinary school education	RATIO
House of Assembly (Whites)	17,6
House of Delegates (Indians)	21,6
House of Representatives (Coloureds)	23,5
Education and Training (Blacks)	36,3
Self Governing Territories which includes Kwa Zulu Natal	41,0
TBVC States	38,1

Table 2
Pupil/Teacher ratio in S. Africa according to Dept. and Educ. sector: 1990
Source: Dept. of National Education - Education Realities R.S.A.: 1990: 47

From 1990 to the present time no visible change in the pupil: teacher ratio is apparent. (Table 3). The tabulation (Table 3) is a statistical analysis representing the different ratios for the eight regions within the province of Kwa Zulu Natal. The first column provides the Learner: Classroom ratio for the public and independent schools. Column 2 indicates the number of learners to an educator. In column 3 the number of educators to a classroom is given. In most of the public schools the class sizes are large, with very large numbers of learners per classroom as well as a large number of learners to an educator. The ratios represented in the tabulations confirm the kind of education that existed in this country for decades and the failure of education systems to deal with the inequalities.

REGIONS	1	2	3	4
	STATUS	L:C	L:E	E:C
Empangeni	public	46:50	37 :42	1:24
	independent	26:57	16 :91	1:57
Ladysmith	public	47:65	35:92	1:33
	independent	14:41	11:88	1:21
North Durban	public	38:71	29:07	1:31
	independent	23:59	19:07	1:24
Pietermaritzburg	public	40:01	32 :07	1:25
	independent	21:85	13:26	1:65
Port Shepstone	public	47:33	36:00	1;31
	independent	23:27	18:30	1:27
Ulundi	public	40:74	30:80	1:32
	independent	52:58	39:21	1:34
Vryheid	public	53:24	37:55	1:42
	independent	46:51	40:39	1:15
Provincial average	public	44:18	34:23	1:29
	independent	23:68	16:42	1:44

L: C number of learners to a classroom

L: E number of learners to an educator

E: C number of educators to a classroom

Table 3

Ratios of Learner/Classroom, Learner/Educator, Educator/Classroom in the Province of KwaZulu Natal in 1997 source: KwaZulu Natal Department of Education: 1997

1.1.3 THE STATE OF THE LEARNER

The economic survival of post-apartheid South Africa depends on the sound education and training of all youth. However, it is clear that this has not happened due to the poor learning environment and facilities for learning and the lack of adequately trained teachers.

In an ideal environment all children of school going age would attend school, whether at an ordinary school or a special school. The actual participation rate of children of school going age in developed countries where education is not compulsory is an important indicator of the geographical availability of education facilities. It was estimated in 1988 that about 3% of Coloured children and 22% of Black children in the age group 06 - 14 years were not attending school. (Department of National Education: 1990: 44). The transformation to democracy has inherited this backlog and has to set up the mechanism for proper redress.

1.1.4 THE STATE OF THE EDUCATOR

The various education departments of the nine provinces of South Africa provide INSET for teachers through 41 INSET centres and teachers' centres. (Hofmeyer: 1996: 56). As a result of the legacy of apartheid, the multiplicity of providers and the lack of a national policy for teacher supply the provision of INSET is very fragmented. There are nodes of excellence and innovation but in general the quality is poor. (Hofmeyer, J.: 1996: 60). Short courses or workshops dominate. They are offered on the whole spectrum of curriculum - based subjects to teachers. Most institutions in the distance sector are not providing good quality distance education. This is evident from the lack of mixed media as

well as interactive problem-centred approaches to learning, and also face-to-face tutorial support for students. According to the National Teacher Education Audit (1996: 53), the courses offered are of poor academic quality and show little understanding of the realities of South African schools or concern to improve teaching competence.

1.2 THE RESEARCHER'S INTEREST IN THE TOPIC

This investigation draws from the practical experience of the researcher working as a school-based media specialist, Head of the Chatsworth Teachers' Centre and lecturer in the division of educational technology in the Faculty of Education. (University of Durban Westville). The researcher believes that the concept of the Teachers' Centre and its establishment would contribute towards teacher development, curriculum development and in-service education and training. The few centres that did exist during the apartheid era (and still do) did not adequately serve the needs of the entire population because of the political ideology and financial constraints. (Table 4).

The teachers' centres were largely under-utilised and the optimum potential of educational technology remained unexploited. New policies are therefore urgently required to reverse the trends which dominated the history of South African education and training during the apartheid era. This is particularly relevant with the launching of "Curriculum 2005" in 1997 by the Minister of National Education, Prof. S. Bengu. The researcher sees the

potential for integrating educational technology into this new curriculum to enhance the learning and teaching strategies compatible with the new curriculum.

PROVINCE	DEPARTMENT	NUMBER OF TEACHERS' CENTRES	POPULATION GROUP
Cape Province	Cape Education Department	7	White
Transvaal	Non Government Organisation	1	Black
Transvaal	Transvaal Education Department	6	White
Natal	Natal Education Department	2	White
Orange Free State	None	None	-
Natal	House of Delegates	3	Indian
Transvaal	House of Delegates	1	Indian

Table 4

Teachers' Centres in South Africa: Apartheid period.

Source: Pather: M.Ed Thesis: 1984: 7

The innovation could be attained through the partnership of the media specialist, the media centre and the Teachers' Centre as key role players in creating an educational-technology-based learning environment.

Within the context of the South African education system there is an urgent need for teachers to be trained and prepared to meet the challenges of a new curriculum. The Teachers' Centre is an ideal medium to bring about this intervention and form a meaningful

partnership with the educator, the media and the learner. The 'new' South Africa has inherited largely teachers who practised traditional delivery of lessons. Incorporating traditional teaching styles into the new "Curriculum 2005" will only serve to perpetuate traditional rote learning There is therefore a need for more school-focused in-service education training to solve the particular needs of teachers and schools. (Hofmeyer: 1996: 44). The present school curriculum is viewed as one which "encourages pupils to memorise volumes of meaningless, irrelevant facts, while simultaneously suppressing their ability to apply their knowledge to new contexts and to think critically." (Bhika: 1997: 49). This dismal state of affairs begs the need for an alternative approach to education and training. The Department of Education and Training has responded by adopting "Curriculum 2005" and the "Outcomesbased Approach" to learning. "Curriculum 2005" has been adopted as the national policy to drive a new approach to teaching/learning, namely, "Outcomes-Based Education". The rationale behind the launching of "Curriculum 2005" was that there was a need to meet the "economic and social needs of South Africa and its people." (Media in Education Trust: 1997: 3.) The political transformation of South Africa necessitated an educational transformation to redress the backlogs as prefaced earlier. The existing system of education has to undergo a process of restructuring to meet the needs of a diverse school-going community with varying levels of literacy. The majority of the learners (from the historically black schools) come from learning environments which are impoverished, under-resourced and whose

teachers are ill-equipped to cope with the challenges of education transformation. This transformation and the consequent merging of "first" and "third" world standards of education necessitated the launching of the outcomes-based approach to learning.

The "Outcomes-Based Education" (OBE) approach focuses on "what is learnt, rather than on what is taught." (ibid: 3).

Curriculum 2005 is based on eight learning areas, (Table 5) seven critical outcomes and many specific outcomes.

EIGHT LEARNING AREAS		
1	Language, literacy and communication	
2	Economic and management services	
3	Mathematical literacy, mathematics and mathematical sciences	
4	Life orientation	
5	Arts and culture	
6	Technology	
7	Human and social sciences	
8	Natural sciences	

Table 5
The Eight Learning Areas
source: Media in Education Trust: 1997: 2

The curriculum is structured into eight learning areas rather than specific subjects. Learning activities are structured so that they cut across many of the learning areas, allowing for a more integrated and holistic approach to learning. The OBE approach involves the

learners in activities which are relevant to their lives, with the teacher playing the role of a facilitator. The OBE classroom encourages learners to investigate, to work in groups and to problem solve unlike the traditional classroom where learners sit and listen to the teacher. The teacher therefore needs to adapt to his/her classroom to suit OBE. This adaptation requires skills in the use of a "wide variety of resources." (ibid: 3).

It is clear that Curriculum 2005 and OBE cannot bring about transformation unless the process is driven by;

- (i) "skilled" teachers,
- (ii) transformative teachers,
- (iii) and the use of a variety of resources.

The teachers' centre has the potential and the infrastructure to provide the skills and the ongoing training for the transformative educator and the resources for transformation of the classroom environment.

1.2.1 FOCUS FOR ATTAINING THE GOALS

The researcher will investigate the feasibility of developing educational technology at schools through teachers' centres and satellite teachers' centres as the vehicles for delivery of educational technology. Key questions to be answered in the research will include:

- 1. How are Teachers' Centres developing educational technology at schools?
- 2. How do schools (educators and learners) respond to the efforts

of the Teachers' Centres to develop educational technology?

The classroom teacher will form a partnership for delivery of mediated learning to the learners. Such a process of curriculum innovation envisages the participation of teachers themselves in shaping the innovation. Thus they become co-owners of the scheme and not merely implementers of a departmental plan.

1.3 SIGNIFICANCE OF THE STUDY

Curriculum policy makers and politicians themselves do not transform the quality of education that pupils will engage in during their learning sessions in classrooms. Ultimately, it is what teachers think, feel and do in their classrooms that will alter the nature of the learning that pupils will engage in. The pivotal role of the teachers in the transformation of the South African education system is crucial to curriculum reconstruction. The investigation involves the involvement of teachers in ongoing training provided by teachers' centres. The Government, as stated earlier, in terms of its commitment in the Government White Paper 1, has a vision to develop quality education for all South Africans. "The advent of democracy in South Africa has made it both possible and imperative to undertake and overhaul the learning programmes in the nation's schools and colleges." (Government White Paper 1: 1994: 14). Fundamental to the development of the "Curriculum 2005" is the development of teachers. Only teachers will in the final analysis mediate learning to children. The Government initiative however, does not prescribe a clear, cost-effective,

ongoing, long-term plan for training and re-training of educators. Short bursts of training to meet present needs will not help to address the severe deficiencies. This study therefore hopes to provide a long-term strategy for continuous on-going training of all teachers through Teachers' Centres and Satellite Teachers' Centres which would develop and sustain learning through educational technology, viz.:

- 1. The researcher will investigate the possibility of establishing broad principles which might help to establish enhanced learning strategies in the classrooms of the future.
- 2. The Researcher will unvestigate the principles involved in technology-enhanced learning with reference to the teacher, the media and the strategies.
- 3. The study will assess the place of educational technology in learning and the need for teachers to know more about the philosophy of educational technology as well as the implementation of educational technology-enhanced learning in the class room.
- 4. More specifically this study will explore ways in which teachers could attain the skills and expertise through continuing education. Furthermore the study would investigate the feasibility of teachers' centres to act as agencies to facilitate technology-enhanced learning through the partnership of the teacher, the media and the learner in the face of conservative thinking.

For effective enhancement of professional development there has to be a linkage of supervisory services of all stakeholders in education - the subject advisors, colleges of education and university faculties of education as well as the maximum participation of parents, teachers and learners. There is a potential for an integrated approach in a transformed South Africa - such an opportunity ought to be exploited.

- 5. The research will explore the extent to which teacher centres can interact with teachers in formulating and establishing a foundation for educational technology at schools.
- 6. The study will investigate the extent to which teachers can be empowered towards a trend of creativity, critical thinking and fostering critical learning in the classrooms contributing towards a changing perception of their role as reflective practitioners.

CHAPTER TWO REVIEW OF LITERATURE

2.1 INTRODUCTION

The need for transformation of the curriculum has been highlighted in various forums since the 1994 elections. "The South African education system is about to undergo a massive transformation which will change everything from the subjects school children are taught to the way they are taught." (Bengu: August 1994: 15). At midnight on the 22 September 1994 the blueprint of the Government White Paper 1 was released "proposing the dramatic transformation of 27 500 educational institutions for 12 million students from battlegrounds into places of true learning." (Bengu: 23 September 1994: 13). Almost two years later Jane Hofmeyer commented that "1996 is likely to be remembered in the teacher education field as a watershed year because of the implementation of so many Government initiatives at implementing transformation in education." (1996:2). These initiatives culminated in the Government White Paper 1 in 1996. Both the Government sector as well as the academic sector at tertiary and other institutions have engaged numerous discussions and debates on curriculum innovation and education transformation. Convincing arguments have been put forth for eradication of the racist and divisive system of the apartheid system of learning in favour of a new curriculum which is school focused and learner orientated. The reality of transformation was only confirmed with numerous Government

initiatives, the foremost of these being the Government White Paper 1 on Education and Training in 1995.

2.1.1 GOVERNMENT WHITE PAPER 1 ON EDUCATION AND TRAINING

The National Ministry of Education commits itself to a completely fresh approach to the provision of learning opportunities -"The development of new approaches to guided self-study, including the use of a wide variety of media." (Government White Paper 1: 1994: 15.) It is further stated in the White Paper 1 that developing new skills and teacher empowerment are crucial if the "curriculum" and teaching methods are to encourage independent and critical thought and the capacity to question, enquire and form judgments and achieve understanding". (ibid: 12). These goals of the National Ministry have immense implications for teachers' centres to play a significant role in the process of teacher development and educational technology. This is particularly relevant at a time when the entire curriculum is being restructured to meet the demands of transformation in education. Implicit in the White Paper 1, is a commitment to move towards educational technology-enhanced learning with the undertaking by the National Institute of Curriculum Development to "consider the new demands for selfinstructional materials arising from a variety of resources, in particular open learning processes and distance education technology." (ibid: 15).

The government acknowledges that the curriculum, textbooks and teacher education were manipulated for ideological purposes and used as instruments of propaganda and indoctrination during the apartheid era. Consequently new policies are needed to reverse the trends which dominated the history of education and training under the previous government.

2.1.2 NATIONAL QUALIFICATIONS FRAMEWORK

The National Qualifications Framework (NQF) is a new approach to education and training, providing opportunities to learners to learn, regardless of age, circumstances and level of education and training that one may have. The NQF is based on the principles of equity, quality, redress and access to learning opportunities. In terms of the South African Qualification Authority Act, (Act 58/1995). SAQA was given the power to set up and maintain the NQF. The new system will attempt to create a balance between essential knowledge required and the skills of how to apply that knowledge to a range of situations and circumstances. In addition to lifelong learning and redress of imbalances, the new system will provide greater access to education, recognition of prior learning, mobility between programmes and institutions, and for transfer of credits. The NQF is intended to be a mechanism for achieving fundamental restructuring of the education and training system. It encourages new and flexible curricula and the upgrading of learning standards. It will therefore facilitate the movement of learners from one qualification level to another, and encourage flexible access by learners to different modes of learning, whether

based in learning institutions, the work place or community learning centres. Since teachers' centres work with the youth, the educators as well as adults from the community, the NQF can participate effectively with teachers' centres in upgrading learning standards.

The question of teacher support is crucial because of the shift as proposed by the NQF - from a "subject-based approach to an integrated approach to education and training." (Mathews: 1993: 13). The National Qualifications Framework has been crucial to the transformation of curriculum in that new parameters have been set within which a curriculum framework could be developed. The whole process of curriculum change is supposed to be an integral part of democratisation taking place in the country. One aspect of this is to involve teachers in curriculum development. Teacher involvement will affect implementation because teachers are the ones who have to deliver learning programmes in the classroom. Teachers' Centres are the appropriate forums from which teachers can interact and bring about the transformation in terms of new policies.

2.1.3 COMMITTEE ON TEACHER EDUCATION POLICY (COTEP)

Millions of South African adults are functionally illiterate, and millions of South African children and youth are learning in impoverished conditions. In the large, poorly-resourced sectors of the majority of the population, many students either drop out or fail

their senior certificate examinations. (Government Gazette, number 16312:1994:18). The National and Provincial Ministries of Education are dealing daily with the legacy of South Africa's historically separate education and training systems. In view of this, the Ministry has attached great significance to the role of teacher education in the transformation process. "The Ministry regards teacher education as one of the central pillars of national human resource strategy, and the growth of professional expertise and self-confidence is the key to teacher development." (ibid: 29). Teacher education therefore has to play a central role in the government's commitment to redress national reconstruction and development.

In order to develop an integrated, equitable national policy on teacher education, the Committee on Teacher Education Policy (COTEP) was established. (1995). COTEP has as its mission statement, the improvement of the quality of education. During the apartheid years the state provided all pre-service teacher education, either through colleges of education or through universities as reflected in Table 6.1n 1995 there were approximately 117 000 students enrolled in pre-service education training courses in South Africa.

PRE-SERVICE EDUCATION TRAINING PROVIDERS	PRE-SERVICE EDUCATION TRAINING STUDENTS 70 731		
state colleges (contact)			
private colleges (contact)			
state colleges (distance)			
universities (distance)	950		
universities (contact)	20 734		
technikons (contact)	1 717		
TOTAL	116 796		

Table: 6

Pre-service Education Training Enrolment: 1994. Source: National Teacher Education Audit: 1996: 59

As a result of the legacy of apartheid, the multiplicity of providers and the lack of a national policy framework for teacher supply, utilisation and development the field is very fragmented. The new COTEP norms and standards focus on teacher competencies as outputs. The transition to a democratic South Africa has encouraged a number of institutions to review their curricula. Despite this, the quality of teacher education is variable with "nodes of excellence and innovation, but in general the quality is poor." (Hofmeyer: 1996: 60.) With the need for improvement in the quality of black education, non government organisations and the state undertook provision for INSET. (see Table 7).

INSET PROVIDERS	INSET PARTICIPANTS		
state colleges (distance)	32 453		
private colleges (distance)	23 666 59 088 608 129		
universities (distance)			
NGO's (distance)			
technikons (contact)			
technikons (distance)			
universities (contact)	8 209		
TOTAL	124 317		

Table: 7
In-service Education Training for Higher Qualifications
Source: National Teacher Education Audit: 1996: 62.

The majority of teachers involved in INSET for higher qualifications are unqualified and are upgrading their qualifications. As the table shows the scale of provision by the state, through its INSET and teachers' centres, and by non government organisations is roughly equal. However, the very variable nature of the INSET offered, makes it very difficult to assess what such an INSET intervention achieves.

INSET PROVIDERS	INSET PARTICIPANTS		
Department INSET (contact)	122 290		
NGO's (contact)	115 882		
NGO's (distance)	866 239 193		
private college			
TOTAL			

Table: 8
In-service Education Training for School Competence
Source: National Teacher Education Audit: 1996: 63

INSET focused on school competence consists of short courses or workshops with limited impact on teaching and learning in the classroom. Teachers' centres are ideally suited to providing INSET programmes which are classroom focused and of sustainable duration with classroom follow-up. It is important that continuous follow-up sessions with appropriate feedback are undertaken with all educators. One-off visits from the "Departments" will not be able to sustain quality education.

COTEP has reviewed the curriculum in line with its new norms and standards which are recommended to teacher education institutions. The goal of COTEP is the development of a cohesive, integrated curriculum which focuses on developing teacher competences. It is further suggested that for greater effectiveness, INSET should shift from short courses and workshops to more sustained interaction with teachers and schools. This is the kind of

school-focused approach which is the goal of teachers' centres to meet the real needs of teachers. The large numbers of INSET participants have already had the advantage of pre-service training. However, the only access to 'training' that teachers from the majority of the 'Black' schools have is through 'Distance Education'.

More than a third of South Africa's primary and secondary school teachers are involved in some form of distance education.

(National Teacher Education Audit: 1996: 52). This makes distance education - with 129 614, the largest teacher education sector in South Africa. Most institutions in the distance sector are not providing good quality distance education - this is evident from the lack of mixed media, interactive as well as problem-centred approaches to learning and face-to-face tutorial support for students. The courses offered are of poor academic quality and show little understanding of the realities of South African schools. A mechanism is therefore necessary to improve teaching competence with the integration of theory and practice and with the incorporation of educational technology to enhance learning.

2.1.4 THE NATIONAL TEACHER EDUCATION AUDIT

The National Teacher Education Audit is the first truly national audit of teacher education in South Africa. It transcended racial, regional, departmental, provincial and institutional divisions. It produced a database upon which policy planning in teacher education can occur. The findings confirm that the teacher education field is very fragmented and increasingly diverse. The

scale of INSET (in-service education training) is also huge. The teacher education system as a whole pays little attention to defining or developing quality and has no ongoing quality assurance system in place to maintain quality teacher education.

Distance education delivery is also of a poor quality, being predominantly print-based correspondence system with little contact support, use of other media, or use of emerging communication technologies.. Although no specific recommendation is made for the role of teachers' centres in teacher development, it is clear that the reference to "innovation and development of quality education materials" recognises the crucial role that teachers' centres can play. (National Teacher Education Audit: 1996: 97). The Audit recommends that successful innovators in teacher development field should be identified and utilised in curriculum development. Inter-institutional partnerships for the purposes of innovation are encouraged. State development funds would assist institutions to develop the quality of distance education materials and other teaching and learning resources.

The National Teacher Education Audit indicates that the quality of teacher education offered is the biggest challenge confronting South Africa at the close of the 20th century. In order to tackle the quality challenge, "high quality teacher development is required for all would-be and serving teachers." (ibid: 99). The concluding remarks of the Audit bear significant implications for all stakeholders in teacher development, including teachers'

centres: "present policies of teacher supply, utilisation and development are underpinned by inadequate concepts and driven by wrong incentives." (National Teacher Education Audit: 1996: 99). The deep-seated and severe nature of these problems means a national policy framework for teacher supply, utilisation and development is a necessary starting point. The goal should be a high quality system of teacher development which focuses on a professional ethic and a commitment to teaching. There is no doubt about the cardinal role teachers must play in curriculum development. There is an urgent need to develop a programme which should focus on ongoing, continuous training and professional development of teachers so that they will be equipped with the capacity to manage technology-enhanced learning. There is need for national policy on integrating educational technology into the new curriculum. Teachers and learners need education materials to engage with the new curriculum and to be involved in the process of learning, thinking and constructing their own knowledge base. The school media centre and media specialist have a key role to play in this process. The wide range of learning resources is essential for delivery of the new curriculum that is discarding rote learning and moving away from being exclusively text-book driven, allowing learners to develop critical thinking. The researcher believes that Teachers' Centres will provide both teachers and learners the access to ready learning resources since the majority of schools are severely under-resourced. However, the Department of National Education has been prompted into devising a policy on technology enhanced learning - the Minister

appointed a committee to investigate the role of technology enhanced learning in education in 1996. (Mona: 1996: 9). The Committee's findings will serve as guidelines for debate on policy with regard to technology in education and the emerging role of teachers' centres.

2.2 TEACHERS' CENTRES 2.2.1 INTRODUCTION

The numerous Government initiatives currently undertaken in South Africa (vide: chapter 1) are evidence that the country is on the threshold of major changes in education. For any significant change to take place two important conditions are to be met. First, those who are going to be affected by the change have to be involved in creating and directing it. They (the educators) have to be the agents of change, as opposed to being objects of change. Secondly, some mechanism or vehicle has to exist with which they can identify and which they can actually use to facilitate their desired outcomes. In regard to the first point an "essential characteristic of a teachers' centre is that it provides a vehicle for teachers to identify their own needs by which those needs and priorities will be met." (Collins: 1980: 1). In regard to the second point, the teachers' centre is both a place and a vehicle for teachers to design, facilitate and promote change. It would serve as the ideal vehicle as "agency" to deliver educational technology strategies to schools.

2.2.2 TEACHERS' CENTRES: DEFINITION

L. O. Andrews (1981:9) provides an excellent overview of the teachers' centre concept and puts it in perspective by relating it to past changes and future needs in teacher training and school practice. Traditionally, new concepts and major changes in teacher education have come about very slowly. In the mid 1960's new major structural forms did evolve, one designed to improve the field laboratory for pre- service teacher education, and the other to provide agencies at grass roots level for the in-service or continuing education of teachers. "The first type was often called student teaching center and pre-service center". The second was referred to as teacher center, teachers' center, teaching center." (Andrews: 1981:9).

Unfortunately the word "center" was used in so many ways, often with inadequate modifying adjectives, that the word became almost meaningless. Two dictionary definitions of "center" appear related to usage in education: "The source of the influence, action, force, etc." "A point, place, person, etc. upon which interest, emotion, etc. focuses." (Andrews: 1981: 9). Thus the word "center" alone gives little impression of a functioning structure in teacher education. More significantly, the two unique concepts which characterize centers in teacher education are those of institutions, agencies, organisations or even groups of individuals joining together to improve the professional development of educational personnel, and hopefully the education of children. Andrews refers to centers emphasising pre-service teacher education as TEC's (Teacher education centers) and those devoted to in-service

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education as teachers' centers. (1981:10). According to Edelfelt (1980:22) "The teacher center is a place where teachers help each other, a neutral place, a place where all educators become peers, where teachers are monitoring their own work." British educationist, Harry Khan (1977: 27) regards teachers' centres as "both a place and a concept, a place where skills are improved and innovations shared; and a concept of professional growth which values the integrity of each teacher's work. It can respond to the needs of teachers and enhance their professional growth in a positive and constructive way." Khan's definition stresses the teachers' centre as being both a premise and premises. The premise factor is important because the philosophy and activities of a centre stretch beyond the physical barriers of the walls of the centre. In its widest sense it takes into consideration the professional growth of teachers as a body. In comparison Schmeider and Yarger (1977: 29) have defined a teachers' centre as "a place in situ or in changing locations which develops programmes for the training and improvement of in-service teachers, administrators, para-professionals, college lecturers, etc. in which the participants have an opportunity to share successes, to utilise a wide range of educational resources and to receive training directly related to their most pressing teaching problems." Both definitions agree on the following points:

- 1. the sharing principle,
- the request for a centre to respond to teachers' needs, and professional growth and
- skill and methodological training.

Arising from this it is possible to derive a working definition. A teachers' centre is an agency of interaction between educators, learners and the community providing services and resources to enhance learning. Teachers work in collaboration with the centre to satisfy their own needs as well as the needs of their learners. Teachers' centres, working as agencies through satellite teachers' centres, operating in an atmosphere of autonomy and free of bureaucratic control have the potential to make much contribution to enhance the envisaged new curriculum.

2.2.3 SATELLITE TEACHERS' CENTRES

Satellite Teachers' Centres form part of the network of linking with teachers' centres, and interacting with teachers. Each teachers' centre may have in its network three to five satellite teachers' centres which interact with teachers from schools outside the service area of the main teachers' centre. Teachers' centres and satellite teachers' centres subscribe to a common mission statement and objective. The collaborative approach to teacher development allows for sharing of resources, both human and plant. The present Provincial Minister of Education and Culture, Dr V. Zulu, (Phoenix Teachers' Centre: 1996: 3) emphasised the role of Teachers' Centres in professional development "of teachers, for teachers, by teachers." He made reference to the Phoenix Teachers' Centre which was opened in 1986 and "initially served approximately 145 schools from Phoenix to Stanger in the former House of Delegates Administration." The service area for this teachers' centre now includes Kwa Mashu,

Ntuzuma, Inanda-Newtown, Ndwedwe and Verulam. In catering for the needs of the far-off remote schools a Satellite Teachers' Centre was established at Tongaat, namely the Tongaat Teachers' Centre. This satellite of the Phoenix Teachers' Centre serves schools in Verulam, Tongaat and Stanger. The Provincial Ministry has "approved the establishment of Education Development Centres (Teachers' Centres) throughout the province and it is envisaged that teachers' centres and satellite teachers' centres will emerge in five other regions in Kwa Zulu Natal." (Zulu: 1996: 3). Although no provision exists for teachers' centres in the Government's White Paper 1 on Education and Training, the National Ministry of Education has recognised the potential of Teachers' Centres and Satellite Teachers' Centres to make meaningful contribution to human resource development, particularly in the field of educational technology.

2.2.4 MOBILE TEACHERS' CENTRES

2.2.4.1 MOBILE TEACHERS' CENTRE: DEFINITION

A Mobile Teachers' Centre may be defined as a "Mobile unit containing as much as possible of the equipment and display material required in a normal teachers' centre and a small staff to operate it." (Farrant: 1991: 37). Among other functions the major role function of the Mobile Teachers' Centre would be inservice education training and enhancement of educational technology. The mobile teachers' centre differs from both the teachers' centre and the satellite teachers' centre in that the skills and resources are taken to the individual schools in the inaccessible rural areas.

2.2.4.2 MOBILE TEACHERS' CENTRE AS AN INTERVENTION STRATEGY FOR RURAL SCHOOLS

In the inaccessible rural areas, schools are widely scattered and the priority for spending has been on the provision of classrooms. In the context of financial constraints it might be argued, what order of priority a mobile teachers' centre ought to occupy for the rural schools. Despite these problems a mobile teachers' centre would serve as a useful step towards reaching these previously ignored teachers. It could well serve as a workable model which should be considered in the development of quality education for all people.

2.2.4.3 MOBILE TEACHERS' CENTRES - A SITUATIONAL ANALYSIS

2.2.4.3.1 MOBILE TEACHER TRAINING PROGRAMME IN AFRICAN COUNTRIES

A mobile teacher training programme was instituted in Nigeria in 1971 to improve primary education through training of teachers on the job. (Okeem: 1990: 3). The mobile teacher trainers had to carry curriculum and technology innovations to other teachers working in their normal classrooms. The objective of this innovation was to portray the efforts of the Nigerian Government to raise the standards of professional competence of the primary school teachers. A short training course was instituted at Ahmadu Bello University for mobile teacher trainers to organise workshops

in science, social studies, cultural and creative studies. Julius

Nyere of Tanzania introduced the 'UJAMAA' School. (Farrant:

1991:36) through which education was taken to the community
and to teachers, based on the philosophy of self-help. As a result of
the lack of incentives, transport and materials, some of them
became discouraged. (Kolawole: 1975: 230). Nevertheless, the
programme was a contributory factor to the amount of success
achieved in the implementation of the Universal Primary Education
scheme in northern Nigeria. (ibid: 230).

2.2.4 3.2 MOBILE TEACHERS' CENTRES IN BRITAIN

As teachers' centres sprang up from complex origins in the British education scene during the 1960's, the concept worthy of mention is the introduction of the residential teachers' centre in Cornwall, (Mathews: 1973: 36). The actual centre had a peripatetic history, partly economic and educational in origin. They spent two winters at Falmouth, two at Nowquay and Fowey. It suited the schools to release teachers during autumn and spring and to have them back for the summer term, when activities reach more prominence.

2.2.4.3.3 MOBILE TEACHERS' CENTRES IN SOUTH AFRICA/HOMELANDS.

From 1980 onwards the centralised in-service training model adopted by the Department of Homelands at Mamelodi was

continued and expanded. A need for space necessitated the building of a new in-service college at Soshanguve. It was well-equipped with lecture rooms and laboratories and offered accommodation to teachers who came there from all over the country, including Natal. Parallel with the development at Soshanguve there were the decentralized, circuit based in-service programmes of the department. This programme provided training for about 6400 primary and 1000 secondary school teachers. In 1988 the management training programme was extended to the 5 500 rural schools under the Department of Education and Training. In 1986 the first Circuit Teachers' Centres, six in number, were established.

By 1988 there were thirteen of these. The purpose of these centres was to help teachers:

- (i) To keep abreast of development in subject didactics,
- (ii) To receive assistance in preparation of lesson material and resources,
- (iii) To use sophisticated apparatus and audio visual resources.

 During the 1980's private agencies entered the field of the inservice education and training of teachers. These privately funded programmes were decentralized, operated locally with groups of teachers or clusters of schools and provided support systems for teachers in the classroom. Three types of non-governmental INSET programmes are identified:

- (i) Those undertaken by universities eg. The Centre for Continuing Education (University of Witwatersrand), Shell Mathematics and Science (University of Natal).
- (ii) Programmes run by independent organisations eg. The Science Education Project funded by Anglo American Fund.
- (iii) There are various bodies for which INSET is one of the activities they undertake, eg. SACHED (South African Council for Higher Education), ELTIC (English Language Teaching Information Centre).

On a more formal basis, the setting up of a Council of Rectors and Deans of teacher Education In KwaZulu Natal (CORDTEK) in 1987 created a foundation for co-operation. CORDTEK (at that time) consisted of all the rectors of the 17 Colleges of Education, the deans of the faculties of education at the three universities in the region and the heads of schools of education at the three technikons. Arising out of the initiatives of CORDTEK, the Pietermaritzburg 'White' Teachers' College, which was due for closure, is now being used for the further education of 'Black' teachers from KwaKulu Natal, CORDTEK has no doubt strengthened the private INSET programmes throughout the region. The Umlazi College for Further Training under the Department of Education and Culture (KwaZulu) holds decentralized in-service programmes. The VULANI project used the services of experienced lecturers as tutors to provide short courses during the vacations in the rural areas.

2.3 THE NEED FOR TEACHERS' CENTRES

The unique value of the teachers' centre is that it has the capability of eliminating many of the undesirable current practices in teacher education and as offering creative renewal opportunities. A teachers' centre provides a locus for teachers to assemble - in a place that is attractive and professionally stimulating - a place equipped with up-to-date resources, with a media and communications centre, with a materials development centre, with micro-teaching and simulation laboratory. It also promotes professional staff development through individual and group opportunities offered in the form of workshops, seminars, courses and in-service education. With the help of the centre director, the needs and interests of the teachers can be identified, the resources applied and the goals accomplished. Fundamental changes in professional behaviour that result in improved instruction come not so much because the teacher has been exposed to things that are new but more because of a change in his/her beliefs, purposes, values and convictions which cause one to perform differently. According to J. Sikula (1981:3) "Teachers' centres appear to be a vehicle for constructive change in schools and teacher training in years ahead. Involved with them are classroom teachers, school administrators, college and university educators and department of education, all interested in improving education practice."

2.3.1 TEACHERS' CENTRES AS AGENCIES FOR SERVICES AND RESOURCES

A teachers' centre serves the role of a "broker" linking resources with users. Resources may be accessed from within the centre or

accessed from the outside the centre. It is a valuable agency for curriculum development, the production of resource materials and the dissemination of innovations in teaching techniques. It is here that teachers, teacher trainees, lecturers from tertiary institutions and subject advisors meet to exchange information and ideas, examine new textbooks and teaching resources and participate in ongoing training and workshops. The centres provide practical expression of the belief that teacher education is not a terminal process but a continuum of pre-service education. A teachers' centre as the title denotes, belongs to the teachers and is a supportive service organization geared to respond to the needs of teachers. Teachers do not always have access to necessary resources for their classroom needs or for their continued professional development. Linking the teachers' centres with the community acknowledges the fact that every community has a wide range of people and places available for use by teachers with their classes. There is almost an endless supply of community resources which the teachers' centre may tap to offer to teachers. In turn the teachers' centres provide specific services to the community in their role as "community education centres". Courses in adult literacy, hobbies, crafts, and entrepreneurship are offered to members of the community. In combination with the National Qualifications Framework it is possible to upgrade and maintain standards with the possibility of accreditation to adult learners who previously had no access to learning. This is a valuable contribution in terms of providing access to lifelong learning as outlined in the Government White Paper 1. (1995: 10). A possible model of the Teachers' Centre appears in figure 1. This model has been formulated by the writer having researched the

concept through extensive and intensive reading of literature and through personal experience and visits to Teachers' Centres in the country

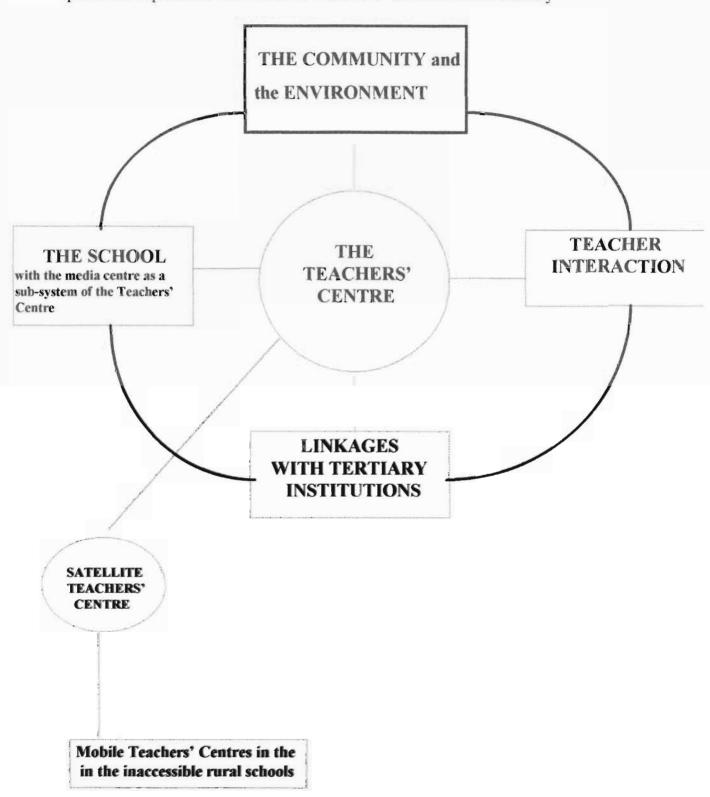


Figure 1
The Teachers' Centre Model
source: The Researcher: 1997

The schematic representation in Figure 1 indicates the interaction between the school, the teachers, the community and tertiary institutions in a spirit of autonomy. The absence of the education department as a bureaucratic intervention is noticeable in this model. Within the school is the media centre, which is one of the many subsystems that make up the teachers' centre and the satellite teachers' centre. The teachers' centre interacts with teachers on an ongoing basis providing educators with teaching resources and educational technology-enhanced strategies for classroom learning. Teachers' centres include the community in their literacy programmes and also put to good use the resources in the community and the environment. In addition teachers' centres interact with the tertiary institution.

2.4 EDUCATIONAL TECHNOLOGY 2.4.1 INTRODUCTION

The numerous Government initiatives discussed earlier have outlined the expectations for an enhanced oucomes- based approach to learning, with teacher education as a priority to ensure delivery of quality education. (Hofmeyer: 1996: 60).

The priority that teacher education ought to receive is documented widely in the National Teacher Education Audit: "The quality of teacher education is the biggest challenge confronting South Africa at the close of the 20th century. In order to tackle the quality challenge, inherited inequalities across institutions must be eliminated. High quality teacher development is required for all would-be and serving teachers." (1995: 99). The audit adds that

there is need for a "system reconstruction" with the goal of a "high quality system of teacher development which focuses on a professional ethic and a commitment to teaching in pursuit of effective human resources." In the Government White Paper No. 15974 (1994: 15), S. Bengu makes reference to a feasibility study of the concept of "National Institute of Curriculum Development." The study will clarify the link between teacher education, especially INSET, and curriculum development, and the future role of non - government organisations. It should consider the new demands for self-instructional learning materials arising from a variety of sources, in particular open learning processes and distance education technology. The Minister regards teacher education as "one of the central pillars of national human resource development strategy, and the growth of professional expertise and self-confidence is the key to teacher development." (Government Gazette NO. 15974: 1994: 16). There is some hope for making educational technology an integral part of the new teacher education programme as the responsibility is left to the "national level of government to provide regulatory mechanisms under which the institutions and bodies responsible will have latitude to design and deliver them." (ibid: 16). Currently there are no future projections for technology-based learning. And even if educational technology is to be integrated into the new curriculum, mechanisms ought to be in place for the management of educational technologies. Furthermore teachers are expected to "show a broad understanding of the principles underlying Curriculum 2005 as well as the concept of outcomes-based

education and its implication for teaching and learning" (Media in Education Trust: 1997: 1) In terms of the Curriculum 2005 orientation programme the creative use of resources is recommended, namely; teachers will:

- * "demonstrate that they are motivated to use a wide variety of educational resources in the classroom,
- *be able to distinguish between good and bad educational materials,
- recognise the role they have to play in resourcing the classroom,
- * know how to access the resources and use them creatively."

 (Media in Education Trust: 1997: 5)

 The Curriculum 2005 programme accepts that almost anything, used creatively, can facilitate learning. In this process the role of teachers is paramount in accessing resources for effective learning. It is further acknowledged that there is a wide range of educational resources within every teacher's reach and that it is important for learners to be able to access resources, and use them meaningfully. It is clear then that educational technology has the potential to make immense contribution to the success of the new curriculum 2005.

2.4.2 EDUCATIONAL TECHNOLOGY: DEFINITION

The term educational technology, to some is "associated solely with the technical equipment and media of education - such as overhead projectors, television, tape-slide programmes, etc."

(Percival and Ellington: 1984: 11). A different group of thinking associates educational technology with a "clinical, systematic analysis of the entire teaching/learning process in an attempt to maximize its effectiveness." (ibid: 11). Percival and Ellington have elicited further definitions (ibid: 19):

- i. 'Educational technology is the development, application and evaluation of systems, techniques and aids to improve the process of human learning.' (Council for Educational Technology in Percival and Ellington, 1984: 19).
- ii. 'Educational technology is the application of scientific knowledge about learning, and the conditions of learning, to improve the effectiveness and efficiency of teaching and training. In the absence of scientifically established principles, educational technology implements techniques of empirical testing to improve learning situations.' (National Centre for Programmed Learning, U.K. in Percival and Ellington, 1984: 19).
- iii. 'Educational technology is a systematic way of designing, implementing and evaluating the total process of learning and teaching in terms of specific objectives, based on research in human learning and communication and employing a combination of human and non-human resources to bring about more effective instruction.' (Commission on Instructional Technology, USA: in Percival and Ellington, 1984: 19).

Derek Rowntree deals with educational technology as a "rational, problem solving approach to education, a way of thinking sceptically and systematically about learning and teaching."

that modern media make possible and if the teacher is to open up the curriculum, then students need a wide choice of resources.

(Rowntree: 1982: 189). Furthermore, to give effect to this concept the Teachers' Centre has the potential to provide the necessary skills and resources to teachers and other regional ventures.

2.4.3 STATUS OF EDUCATIONAL TECHNOLOGY

As we approach the next millenium we are overwhelmed by the instantaneous, global-wide communication of information. dissemination through electronic means such as E-mail and the internet as well as the pervasiveness of satellite communications which causes us to forget that only several decades ago such a phenomenon would have only been a dream. The entire global community has unfortunately not exploited the potential of this communications technology into a full scale technology for learning. Only now is there some attention being given to implications for education. The extent to which the implications are fully understood and appreciated will have far-reaching implications for enhancing educational technology.

2.4.3.1 A GLOBAL STATUS OF EDUCATIONAL TECHNOLOGY

In his address to the Conference on Multi Media in Education, Dr.G. Kistan referred to the "great divide that the emerging technology has created between the information poor and the information rich". (1996:3) Over seventy percent of the world population belong to the Third World with poverty, poor communication network, little educational opportunities and

have." (Riley: 1995: 27). Sheekey (1995: 27) believes that the Clinton administration's Technology Literacy Initiative is designed to "get America's students ready for the 21st century."

Access to computers and electronic information services is considered essential for achieving the goal to ensure that all students learn how to communicate effectively. Private and public initiatives will ensure that networked computers are available to all teachers and classrooms approximately by the year 2000. "Networking promises to bring parents, teachers, children, and social services together in responsive and responsible ways not before achievable." (Komoski and Priest: 1996: 30). Learning is no longer limited to schools as "electronic villages" emerge. A wide range of community-based agencies can become directly engaged in education and work-related training services.

In a few years, the United States Department of Education will release the 'Condition of Education for the Year 2000 and the latest findings of the National Assessment for Educational Progress Survey. Most likely, these reports will suggest a high correlation between school achievement and what students do after school hours.

2.4.3.2 STATUS AND ROLE OF EDUCATIONAL TECHNOLOGY IN SOUTH AFRICA

The priorities of the government of the day are focused on redistribution of financial resources to basic education services, housing and health services, in an effort to redress the severe inequalities created by the apartheid regime. A primary objective of the new strategy for schools would therefore be to achieve an equitable distribution of education provision throughout the nation, in such a way that the quality of provision in under-resourced areas is raised and reductions in public fundings to better-resourced schools are responsibly phased in. During the apartheid phase the different departments which were racially divided had inadequate provision for enhancement of educational technology.

EDUCATION LEVEL	BLACKS	COLOUREDS	INDIANS	WHITES
Pre-school	R352,00	R314,00	R375,00	R1896,00
Primary	R456,00	R578,00	R529,00	R2164,00
Secondary	R852,00	R692,00	R1030,00	R3176,00

Table 9

Private expenditure per child: 1993 - South Africa
Source: Edusource Data News, No. 8/April 1995: p. 9

The per capita expenditure for each child varied considerably across racial and ethnic categories as evident in Table 9. The 'new' government has the task of fulfilling the aspirations for an equitable and high quality education for all and at the same time redress the crisis in education. This being the background it is understandable why there has been a lack of development of infrastructure for educational technology-enhanced learning. However, the schools in the department of House of Delegates had developed a system of transforming the "school libraries into resource centres" (Pather:

1984: 88). For the first time emphasis was given to audio-visual resources and its application for learning. The division of education launched the "educational technology services - converting libraries into resource centres and establishing teachers' centres together with regional resource centres." (ibid: 89). The regional resource centres were the direct link between the teachers' centres and the teachers. Academics, the community and the private sector are however impatient - in some countries, says Mona, "the internet has become a nation-wide phenomenon and their schools are already connected to the information superhighway" (Mona: 1996: 2). The Department of National Education has not responded with a plan to integrate computers and with it educational technology into the schools.

2.5 INTEGRATING EDUCATIONAL TECHNOLOGY ACROSS THE CURRICULUM

Most teacher educators agree that a stand-alone "technology" course for teachers is of limited value if it is isolated from the rest of the teacher education curriculum and that it should be integrated across the entire curriculum. Unless students see the use of technology modelled in their other courses, unless they have an opportunity to make the connection between technology and instruction in the subject or level they will teach, unless they have an opportunity to see effective use of technology modelled by teachers in the classrooms and have an opportunity to use it themselves under the guidance and mentorship of experienced practitioners, they are likely to graduate with limited professional

skills in this area and harbour a questionable attitude toward the use of technology in education. (Collis: 1994: 135).

Educators during the post World War 11 period as well as now,
"are concerned with subject matter (content) teaching, and often
ignore the art of communication, the psychology of teaching and
learning and the use of educational technologies."

(Kistan: 1996, 3). The concept put forth by Rowntree (1984:
188) has practical possibilities for learning in a "new classroom"
in South Africa in partnership with Teachers' Centres namely,
"the teacher designs the learning experiences out of what he and
his students can do or make themselves, together with what he can

2.6 CONCLUSION

buy or borrow from outside."

The message from policy makers is clearly spelt out in the numerous working documents discussed earlier, namely, that there is a need for 'life-long learning'. If education is perceived as being 'lifelong', then the educators are faced with even more responsibility to make responsible changes.

In exploring the role of teachers' centres and satellite teachers' centres in enhancing educational technology the writer was constrained by the paucity of relevant local literature in the area of research. It was extremely difficult to access authoritative information in the area of research not only from local 'authors' but also from writers abroad. Firstly it is evident that there is a

scarcity of research writings in the field of satellite teachers' centres and educational technology in South Africa. However, whilst there might be a handful of specialist researchers in the field of educational technology and teachers' centres there are no known specialist journals published locally to stimulate research writings.

Furthermore, very little stimulus is forthcoming even from universities of South Africa for scheduling of conferences in the field of teachers' centres and educational technology. Globally educational technology-enhanced learning enjoys very high status through international conventions, namely

- The "EdTech '96 Conference', organised by the Australian Society for Educational Technology was held at the University of Melbourne, Australia.
- The 1997 "AECT Summer Leadership Conference" was held during July/August at St. Paul, Minnesota.

Whilst such conferences are open to all persons interested in developing their leadership skills as leaders in this field, many academics are precluded from participating through inadequate sponsorship from their institutions. Failure to promote this area of research and study will isolate local researchers from sharing and exchanging information and skills. An emerging democracy can

ill-afford such a deficiency particularly at a time when the country is at the crossroads of change and embarking on a new 'Curriculum 2005'.

Financial constraints have caused universities to limit their budgets to only "popular" literature and cut back on purchase of books and journals in scarce fields. Although the internet is at the forefront of electronic communication, globally there are no contributions from local 'authors' in this field of study. The writer was therefore constrained to depend on literature from newspapers, magazines, brochures, statistical information, reports by state departments as well as opinions of policy makers.

Research in teachers' centres and satellite teachers' centres together with educational technology is vital for the new 'Curriculum 2005' to be successful. It is essential for academics to be afforded the opportunity of access to information in this scarce area of research which has the potential to alter the climate of learning. Whilst academics are awed by the global 'information revolution', locally a widening 'information gap' is perceived in the scarce fields of study such as "satellite teachers' centres" and educational technology.

CHAPTER THREE RESEARCH METHODOLOGY

3.1 INTRODUCTION

Educational research is a systematic, controlled, empirical and critical investigation of hypothetical propositions. It is a disciplined process of arriving at dependable solutions through a systematic and planned collection, analysis and interpretation of data. (Cohen: 1997: 17).

One of the primary purposes of the research is to seek solutions to problems that arise around existing knowledge. Educational research would then serve as a valuable tool to uncover the ultimate truth

The logical development of hypotheses and the clarification and interpretation of findings will guide the researcher towards developing an understanding of the role of teachers' centres and satellite teachers' centres and their interaction with teachers in enhancing the development of educational technology at schools. The research will help to evaluate the existing role of teachers' centres and explore the feasibility of the services being extended to schools through a network of satellite teachers' centres.

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The researcher will make recommendations for the development of policy for a network of teachers' centres, satellite teachers' centres and teachers to work collaboratively, towards educational technology-enhanced learning. This will contribute immensely to facilitate learning within the concept of the new "Curriculum 2005".

3.2 THE RESEARCH METHOD

Data collection related to the experiences and perceptions that educational practitioners had with regard to teachers' centres and educational technology. The survey method was found to be appropriate as it allows for qualitative as well as quantitative description to be presented. In selecting a research instrument the researcher had to keep in mind the need to eliminate bias in selecting only a representative sample from the school population of Chatsworth. The survey method was appropriate as it was convenient and economical.

3.3 REASONS FOR SELECTING THE SURVEY METHOD

The survey method as a type of data collection procedure has the advantage of economy in terms of designing the method as well as data collection. The method used for data collection was reliable and relatively cost-effective, with respondents being easily accessible by telephone, mail or motor transport.

It is possible to collect data in a relatively very short time using a survey method. A small fraction of the population (sample) provides reliable attributes of the larger population (Fowler: 1988:119). Through the survey method it is possible to gather data at one particular point in time ("cross sectional"). The data collected at "one point in time" would have no effect on the research should there be changes with the passage of time. (Creswell: 1994:117). This is significant in giving validity to the research findings so that future policy makers will find the results relevant and worth considering. Given the usual constraints over time and finance, the survey is an appropriate method of collecting information through postal questionnaires from selected respondents. The single main expenditure is usually the fieldwork which accounts for interview time, travel time and transport costs.

It is generally believed that the "single method" approach to research yields only limited and sometimes misleading data.

(Creswell: 1994: 118). The survey method makes provision for adequate qualitative and quantitative descriptions. Combining qualitative and quantitative approaches in a single study helps to mix methods and combine research designs making provision for a balance between the qualitative and quantitative data.

The effect of triangulation was enhanced by "bringing together" data and using tables and graphs to provide numerous graphic representations. The categorisation and organisation of data in graphic detail helps to confirm validity of the research findings.

3.4 RESEARCH INSTRUMENT

The researcher made use of two research instruments namely, questionnaires and interviews. The questionnaires (of the self-completion type) were clear, unambiguous and uniformly workable. The design and structure of the questionnaires ensured that there was minimal room for potential errors from respondents. As far as possible every care was taken in structuring questions to engage the interest and co-operation of participants to elicit answers as close as possible to the truth.

Interviews were conducted with the Acting Principal of
Chatsworth Teachers' Centre, and the curriculum development
officer at the Teachers' Centre. The researcher considered it
expedient to include the Principal of Phoenix Teachers' Centre in
recognition of his relatively longer experience with teachers'
centres to reinforce validity with regard to perceptions about
teachers' centres.

Unstructured interviews were held, adhering to a single purpose and planned approach. The unstructured interviews allowed for greater flexibility and freedom on the part of participants. In opting for the unstructured interview account was taken of the established rapport between the researcher the respondents, and

was assured of receiving sincere, well-motivated and accurate data.

3.5 SAMPLE AREA

The researcher chose Chatsworth as the sample area for conducting the survey. Chatsworth is approximately 25km south of Durban. Chatsworth has developed into a stable 'township' with a settlement of predominantly Indians, having been established as an exclusively "Indian Township" almost 35 years ago under the Group Areas Act. Despite the many constraints, schools in Chatsworth have a reputation for academic excellence. With the transition to democracy the demographics of the school population has changed with the admission of a large percentage of children from "African" communities. This composition is seen as significant by the researcher as it has implications for learning within the new "Curriculum 2005". The school-going population comprises children from low, middle and high income groups. Included in the survey are the schools in the more affluent areas of Mobeni Heights, Kharwastan and Umhlatuzana Township which are within the service area of the Teachers' Centre.

3.5.1 REASONS FOR SELECTING CHATSWORTH.AS A SAMPLE AREA

The researcher opted for Chatsworth as the sample area because of his close working relationship with the area over the many years as an educator and Head of the Chatsworth Teachers' Centre. The researcher had established a close network with 45 secondary schools and 77 primary schools (total of 12.2) which were

designated as falling within the service area of the Chatsworth Teachers' Centre.

The schools in Chatsworth are easily accessible to the researcher as well as to the Teachers' Centre. Consideration was also taken of the long-standing reputation of the Chatsworth Teachers' Centre (a pioneer centre established in 1979). (Pather: 1984: 115) and its contribution to a wide clientele. The clientele includes a network of educators, subject advisors, Non Government Organisations, Community Based Organisations, lecturers from tertiary institutions, commerce and the broader private sector.

3.6 DEFINING THE SAMPLE 3.6.1 TARGET POPULATION

Teachers from the primary and secondary schools within a radius of 15-20 km of the Chatsworth Teachers' Centre were included in this survey. In a large survey researchers usually draw a sample from the population to be studied (Cohen: 1997: 86). Although the schools were easily accessible, data collection had to be linked to a pre-determined sample of educators due to factors of expense and time. The researcher therefore selected a representative sample of the total population in advance. The Principal as well as other educators of the Chatsworth Teachers' Centre were also included in the survey.

3.6.2 TOTAL NUMBER OF PRIMARY AND SECONDARY SCHOOLS IN CHATSWORTH

TOTAL NUMBER OF SCHOOLS IN CHATSWORTH

PRIMARY	SECONDARY	TOTAL
15	30	45

Table: 10
Total number of schools in Chatswoth

3.6.3 SAMPLE SIZE

NUMB	ER OF SCHOOLS IN THE SA	MPLE
PRIMARY	SECONDARY	TOTAL
06	09	15

Table: 11 Number of schools in the sample

3.6.4 NUMBER OF TEACHERS INCLUDED IN THE SAMPLE

NUMBER OF T	EACHERS INCLUDED IN	THE SAMPLE
PRIMARY	SECONDARY	TOTAL
30	45	75

Table 12 Number of teachers included in the sample

3.6.5 RESPONDENTS FROM THE TEACHERS' CENTRE

From a staff of 20 at the Chatsworth Teachers' Centre, 10 participated in completing the questionnaires. The high percentage of 50% was necessary because of the unique staff structure at teachers' Centres as compared to schools. (See Table 13). Adequate care was taken to ensure that the investigation was representative of the different 'divisions' within the teachers' centre.

3.6.6 THE STRUCTURE OF STAFF AT TEACHERS' CENTRE

	PRINCIPAL
	DEPUTY PRINCIPAL
CI	URRICULUM DEVELOPMENT
	OFFICERS
	SCHOOL PSYCHOLOGIST
VOC	CATIONAL GUIDANCE OFFICER
TEL	LEVISION/VIDEO PRODUCTION
	MEDIA SPECIALIST
R	EPROGRAPHICS SPECIALIST

Table : 13 Structure of Staff at Teachers' Centre

The staff structure shows the principal as head of the Teachers'
Centre with a Deputy Principal. The Curriculum Development
Officer, School Psychologist, Vocational Guidance Officer, the
Television Production Specialist and the Media Specialist perform
specialist functions. The repreparables specialist on the other hand
serves as a technician.

3.7 SAMPLE METHOD

In order to obtain a sample representative of the whole population in terms of gender, phases taught, subjects taught, age, (Cohen: 1997:88) the stratified sampling method was used for selection of the school-based educators. This was necessary to ensure that specific characteristics are represented in the sample and that the sample reflects the true characteristics of the population. (Fowler: 1988:120). By mutual agreement with the school principal respondents were selected to be representative in terms of gender, age, subject specialisation and phase specialisation. Having grouped the teachers into age, gender, subject specialisation and phases a random selection was made from which five participants were selected from each school. The researcher made every effort to exclude elements of bias or prejudice in terms of age, sex, creed subject specialisation.

3.8 ANALYSIS OF DATA

Editing included a check to ensure that there was an answer to every question. All questions were fully completed. An "Accuracy Check" was made to confirm that all questions were answered correctly. A coding frame was developed into the questionnaire. In the case of some of the questions coding was developed after the questionnaire was administered and answered by the respondents. (Cohen: 1997: 102).

The data was entered into the data sheet on the MS Word Excel programme from where totals and averages were calculated. The spreadsheet makes provision for statistical calculations to be made to the highest level of accuracy. Once the statistical information is derived the data can automatically be converted to graphic form using a variety of graphs and tables.

3.9 PILOT STUDY

In order to establish the face validity of the instrument a pilot study was undertaken. (Creswell: 1994: 120). This helped to improve questions, format and the scales. The pilot study adequately tested for any deficiencies, namely:

- · grammatical and spelling errors,
- · ambiguities and confusion,
- lack of simplicity,
- · length of questionnaire,
- repetition.

The pilot study was undertaken with six teachers (studying towards the B.Ed degree with specialisation in Educational Technology) at the University of Durban Westville. The students were very cooperative due to the relevance of the questionnaires to their field of study. Through the pilot study the researcher was able to make

revisions so that their comments and suggestions were included in the final instrument, namely

- (i) the terminology used in the questionnaires was within the level of all respondents,
- (ii) appropriate amount of time was allocated,
- (ii) ambiguities were excluded.

The pilot study significantly improved the structure and correctness of the instrument.

CHAPTER FOUR

ANALYSIS OF DATA

4. 1 SCHOOL-BASED INVESTIGATION 4.1.1 INTRODUCTION

A large volume of data was collected from respondents at schools and the Teachers' Centre. In this chapter the mass of data is reduced to a form that is suitable for analysis. 75 questionnaires were handed out to respondents at 15 schools and 10 questionnaires were handed out to respondents at the Teachers' Centre. Of the 75 questionnaires, respondents completed and returned 50, representing a 67% return. Although a 67% return is acceptable the researcher considered it necessary to check for response bias to confirm the effect of non response on the survey estimates. The researcher randomly telephoned 05 non-respondents to determine whether their responses would differ substantially from those of respondents. It was found that the telephonic responses did not differ substantially from the responses received. The response rate from the participants at the Teachers' Centre was 100%. The respondents were selected from both the professional staff (principal, curriculum developers, psychologists, vocational guidance officers, media specialists) and the support staff (technicians, clerical assistants). The data collected is presented in this chapter in the form of graphs, tables and statistical information. A detailed analysis of the data follows each presentation. On the

basis of the analysis and findings it is hoped to develop a further basis for an understanding of satellite teachers' centres as agencies for the development of educational technology at schools.

4.1.2 PERCEPTIONS ABOUT EDUCATIONAL TECHNOLOGY

4.1.2.1 UNDERSTANDING OF EDUCATIONAL TECHNOLOGY

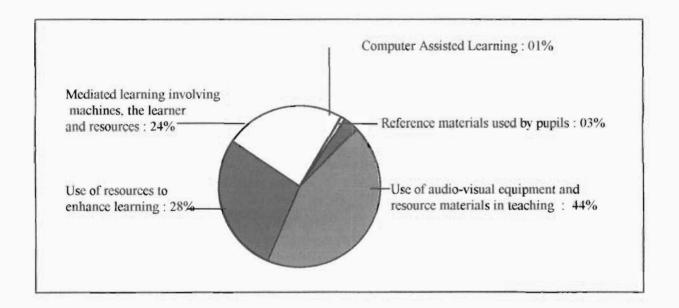


Figure 2
An understanding of educational technology

Figure 2 indicates that 44% of the respondents understood educational technology as the "use of audio-visual equipment and resource materials in the teaching-learning situation.", while 28% indicated that educational technology referred to the use of resources materials which assist in enhancing learning, with a further 24% indicating that educational technology refers to

mediated learning involving "machines, resources and the learner." 3% of the respondents referred to educational technology as the "use of reference materials by learners to explore topics while 1% indicated that educational technology was "computer assisted learning." It is clear from the varied responses that a clear consensus was not put forward. This implies that the respondents differ in their perception of educational technology. The respondents obviously lack a clear theoretical understanding to assist their informed decision. This lack of clear, unambiguous understanding of educational technology has significant implications for their classroom practice. In addition it has important implications for their understanding of the role that satellite teachers' centres and teachers' centres would play in enhancing the development of educational technology. The reference to the "use of resource materials which assist in enhancing learning" by 28% of the respondents and "mediated learning involving machines," resources and the learner" by 24% of the respondents suggests that teachers associate resources with educational technology. This perception is disconcerting if the use of resources are commonly referred to as educational technology without the careful mediated intervention involving the teacher, the media, the equipment and the learners. The lack of an outright consensus on educational technology suggests that the status of educational technology is not prominently established in the minds of teachers. This response also implies that teachers are familiar with the notion of audio visual equipment and resources but not educational technology.

There was clear agreement that computer assisted learning does not refer to educational technology. Only 1% of the respondents agreed that computer assisted learning refers to educational technology. A clear understanding of this perception is significant particularly in view of the often confused perception between educational technology and information technology.

4.1.2.2 PERCEPTIONS ABOUT TEACHER INVOLVEMENT WITH PROGRAMMES INITIATED BY THE TEACHERS' CENTRE.

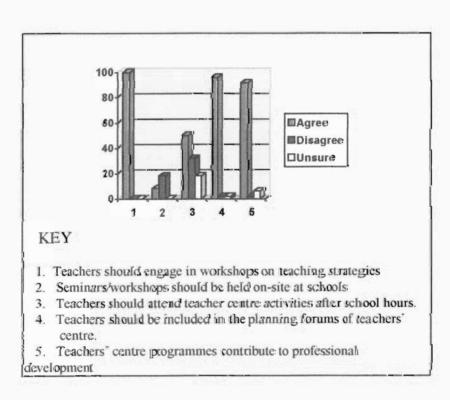


Figure 3

Perceptions about teacher involvement with programmes initiated by teachers' centres.

It is evident from the graphical analysis from Figure 3 that there is a 100% support from respondents to engage in workshops on teaching strategies. This response is encouraging and is indicative

that teachers are aware of their limitations and are keen to develop their professional skills. The response reflects a much-felt need by teachers to enhance their skills and develop greater professional growth. There is obviously a vacuum as far as training needs of teachers are concerned - and this gap has come about through lack of structured programmes either from the departments of education or from teachers' centres. It could also be an indication of the lack of direction and motivation that is so characteristic of the present phase of transformation. As teachers are left to their own devices there appears a sense of inadequacy in practising teachers. In figure 3. 96% of the respondents agree that teachers should be included in planning forums of teachers' centres. This bears a very close relationship to their 100% commitment to engage in workshops on teaching strategies. This belief is further re-inforced by 92% of the respondents who agree that teachers' centre programmes contribute to professional development of teachers. This close correlation in perceptions has immense potential for establishing the importance and status of teachers' centres and educational technology as agencies for enhancing learning. The way is clear for including teachers in meaningful training programmes through agencies such as satellite teachers' centres and teachers' centres. The responses have implications for the Department of Education to consider establishment of satellite teachers' centres and enhancing the status of educational technology in order to keep abreast of the current trends in teaching/learning techniques. This is all the more important as we are on the threshold of educational change. The innovation discussed here has relevance for the envisaged

Outcomes Based Education approach which would depend on resources and a resourceful teacher to be successful.

However it is evident that 82% of the respondents favour "on-site workshops" held at schools. This relates closely with 50% of the respondents who agree to attending teachers' centre activities after school hours. Although a large majority of respondents (82%) favour on-site programmes, 50% of the respondents do not mind attending activities scheduled further away at teachers' centres. This is also an indication that satellite teachers' centres which could work more closely with teachers have the potential to fulfil this need. The 82% agreement on on-site programmes also has significant implications for considering the concept of mobile teachers' centres', which will be able to interact more meaningfully with teachers on the ground.

4.1.2.3 PERCEPTIONS ABOUT THE ROLE OF TEACHERS' CENTRES IN ENHANCING EDUCATIONAL TECHNOLOGY AT SCHOOLS.

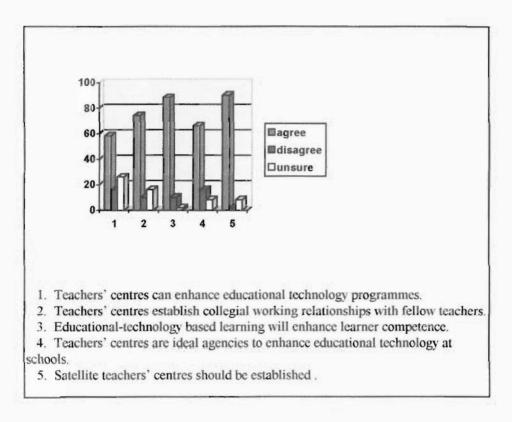


Figure 4

Perceptions about the role of Teachers' Centres in enhancing educational technology at schools

Figure 4 provides an insight into what teachers believe the role of teachers' centre to be. 74% of the respondents agree that teachers' centres establish collegial working relationships with teachers and 58% agree that teachers' centres have the expertise to enhance educational technology programmes. This perception is significant in considering a possible working relationship between teachers and teachers' centres. This perception is given further support by 90% of the respondents who agree that satellite teachers' centres should be established to cater for schools in remote areas. On the question

of educational technology programmes undertaken by teachers' centres 88% of the respondents agree that educational technology based learning will enhance learner competence and that teachers' centres are the ideal agencies to enhance educational technology at schools. (62 % of respondents agreed).

4.1.2.4 TEACHER ATTITUDE TOWARDS TECHNOLOGY-ENHANCED STRATEGIES OF TEACHING -LEARNING

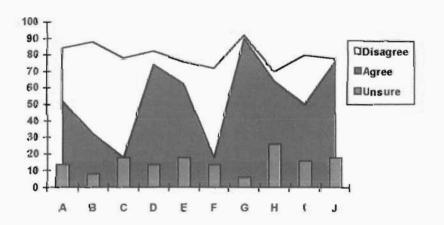


Figure 5

Teacher attitude towards technology-enhanced strategies of teaching-learning.

Figure 5 represents an analysis of teacher attitude towards technology-enhanced strategies of teaching-learning. An overwhelming majority of respondents (90%) agree that educational technology enhances learning. This perception correlates closely with the 76% of respondents who agree that technology-enhanced strategies of learning have advantages over traditional methods of teaching – learning. A further 64% agree that educational technology provides self-renewal. With reference to the statement

that "there is no assurance that educational technology has value", only 18% of the respondents agreed, whilst 60% of the respondents believed that educational technology did have value. An assessment of teacher attitudes towards educational technology in terms of these four aspects indicates the considerable support for educational technology enhanced strategies of teaching learning. It is encouraging that the majority of the respondents hold educational technology and its application in such high esteem. It gives an indication that the respondents have a reasonable understanding of the place and value of educational technology in learning. Such pre-knowledge that respondents already have will greatly assist any attempts to develop educational technology and its implementation in the future.

However, the respondents do indicate that there are practical difficulties which impede implementation. 52% of the respondents agreed that the "lack of time" was a problem, whilst 74% indicated that the "lack of access and availability of resource materials" hampered utilisation. The indication is that teachers are supportive of educational technology enhanced strategies of teaching-learning, but are stifled by practical difficulties. A disappointing aspect is the response from 62% of the participants that "teachers' centres fail to interact with schools and teachers". In the light of the interest and perception of respondents, it is clear that the teachers' centre has failed to grasp the opportunity of exploiting the skills and enthusiasm of teachers. Greater teacher participation could be secured through teachers' centres and satellite teachers' centres.

A very significant response was received from respondents in assessing whether teachers are "highly self-motivated". Only 18% of the respondents agreed, whilst 54% disagreed. In contrast 50 % of the respondents agreed that "teachers are receptive to change". These two aspects of teacher attitude towards educational technology indicate that there is a potential for exploiting technology-enhanced learning. Teachers' centres have the skills and expertise to make the timely intervention and bring about the change for which teachers are yearning.

4.1.2.5 AVAILABILITY OF AUDIO VISUAL EQUIPMENT

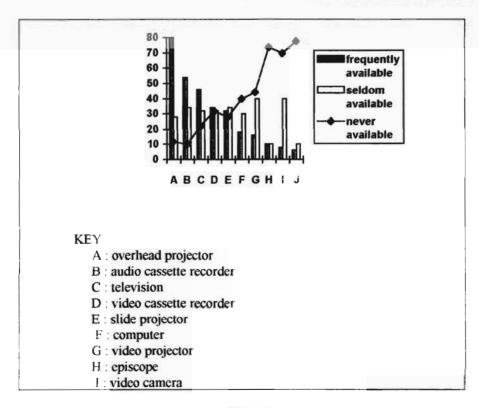


Figure 6

Availability of audio visual equipment

80% of the respondents in this category (figure 6) indicated that the overhead projector was the most easily available equipment and that the audio cassette recorder was frequently available as indicated by 54 % of the respondents. Most schools are evidently equipped with these two items of equipment. Both the overhead projector and audio cassette recorder are very versatile, easy to use and cost effective. In correlation with actual usage it is found that 60% of the respondents indicated that they used the overhead projector frequently and 12% used it seldom. This is encouraging. On the other it is evident that only 38% of the respondents indicated using the audio cassette recorder frequently. This is understandable in view of the limitations that the audio cassette recorder has in terms of its versatility with all subjects. The overhead projector on the other hand lends itself more easily to a wider range of subjects. 46% of the respondents indicated that the television is frequently available while 34% of the respondents indicated that the video cassette recorder is frequently used. Correspondingly in terms of actual usage it is evident that 24% of the respondents reported using the television frequently while 52% used it seldom. The reasons for the low usage of such a powerful medium of instruction is possibly due to the earlier assertion by a large percentage of respondents that teachers are not highly self-motivated. For ease of reference Table 16 is presented giving a comparative analysis of the availability of audio visual equipment and its corresponding use.

4.1.2.6 AVAILABILITY OF AUDIO-VISUAL EQUIPMENT AND FREQUENCY OF USE

AUDIO VISUAL EQUIPMENT	frequently available %age of respondents	frequently used %age of respondents
overhead projector	80%	60%
audio cassette recorder	54%	38%
television	46%	24%
video cassette recorder	34%	20%
slide projector	18%	8%
computer	16%	22%
video projector	10%	4%
episcope	8%	0
video camera	6%	0

Table 14

A comparative analysis of the use of available audio visual equipment

It is evident from Table 16 that the extent to which most of the equipment are utilised is almost in direct relation to the availability of the equipment. This implies that the equipment are judiciously utilised and that there is no wastage of resources.

4.1.2.7 AVAILABILITY OF RELATED RESOURCE MATERIALS AND THEIR CORRESPONDING USE

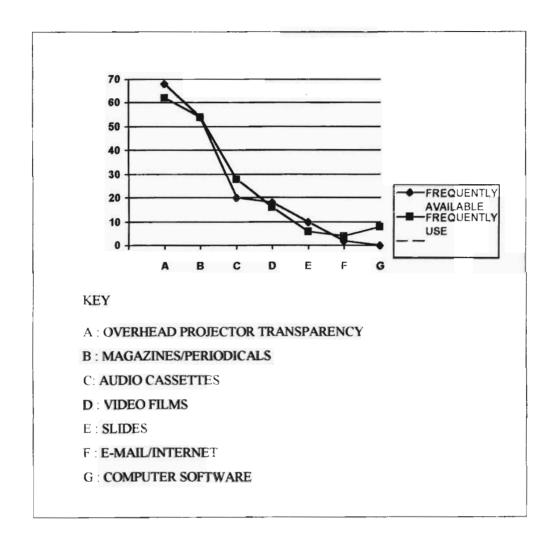


Figure 7

Comparative analysis of availability of audio visual resources and their use.

A very close relationship is apparent between the availability of the audio visual resources and their use as indicated by respondents.

(Figure 7). 68% of the respondents indicated that overhead projection transparencies were frequently available and 62 % indicated that these were frequently used. Similarly 54% agreed that magazines and periodicals were frequently available with 54%

indicating that they were frequently used. A similar trend is evident in respect of audio cassettes, video films, slides, internet and computer software. The investigation indicates that most schools are not equipped with a wide range of audio visual equipment. This has the effect of limiting teachers in developing their skills in acquiring familiarity with a variety of media usage. The positive aspect of the analysis is that all audio visual resource materials are used in accordance with their availability. This trend has significant implications for the enhancement of educational technology. Well-resourced schools, together with satellite teachers' centres to provide and sustain professional development will greatly enhance skills of teachers in the use of educational technology.

4.1.2.8 AVAILABILITY OF SUPPORT SERVICES

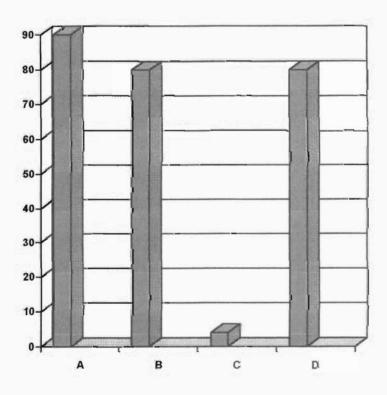


Figure 8
Availability of support services

The schools included in this investigation have well-established media centres. This is confirmed by the response of 90 % of the re respondents reflected in Figure 8 and Table 17. In addition 80% of the respondents indicated that they were within easy access of a teachers' centre. Only 4% of the respondents indicated that a satellite teachers' centre was accessible to them. From the analysis it is clear that these schools and their teachers have the ideal setting in the way of media centres and satellite teachers' centres.

0%age of respondents who indicated the service was available
90%
80%
4%
80%
0

Table 15
Availability of support services at the teachers centre

The environment is well-suited to enhance and develop educational technology-enhanced strategies of learning. The teachers' centre is ideally placed to initiate the partnership with teachers and provide ongoing training and service.

4.1.2.9 SERVICES USED AT A TEACHERS' CENTRE

% age of respondents used the service.
26%
18%
10%
2%
48%
48%
2%

Table16 Services used at a teachers' centre

Although the schools included in the survey are within easy access to the teachers' centre the actual participation of teachers as indicated by the respondents is very disappointing. 48% of the respondents indicated that the teachers' centre was used for purposes of curriculum development and preparing resources for teaching. Only 26% indicated that they had attended workshops in educational technology and 18% attended seminars/conference in educational technology. 10% of the respondents indicated that they had attended in-service training in educational technology. It is clear that the teachers' centre has scheduled very relevant programmes

essential for enhancement of educational technology. Unfortunately the services have not been adequately utilised by teachers. Possibly the teachers were not sufficiently motivated to become actively involved in actually participating in the programmes scheduled by the teachers' centre.. Other factors cited by respondents for the poor response were:

- The absence of release time for teachers during normal school hours,
- The absence of a prescribed departmental policy for the use of the teachers' centres by teachers,
- The lack of enthusiasm and motivation amongst teachers,
- The adherence to traditional methods of lesson presentation.

Teachers have become accustomed to follow prescriptive ways of managing their classrooms. The teachers' centres are perceived as merely optional agencies. They lack the authority to issue directives to teachers for compulsory participation.

4.2 TEACHERS' CENTRE-BASED INVESTIGATION 4.2.1 SERVICES AVAILABLE AT THE TEACHERS' CENTRE

90 % of the respondents indicated that services are available at the teachers' Centre in television production, photography, reprographics and curriculum material production. 80% of the respondents indicated that a computer laboratory offered a service to the users. It is evident from the investigation that internet and satellite communication are not available.

SERVICES AVAILABLE AT THE TEACHERS' CENTRE	%AGE OF RESPONSE
Television production	90%
Photographic services/dark room	90%
Printing services	90%
Curriculum material production	90%
Computer laboratory	80%
Internet	0%
Satellite communication	0%

Table 17 Services available at the teachers' centre

The programmes offered have the potential for developing teacher skills and enhancing their classroom practice. This supported further by the support services provided at the Teachers' Centre.

90% of the respondents indicated that services are available at the Teachers' Centre in television production, photography, reprographics and curriculum material production. 80% of the respondents indicated that a computer laboratory offered a service to the users. It is evident from the investigation that internet and satellite communication are not available.

The programmes offered have the potential for developing teacher skills and enhancing their class-room practice. This is supported further by the support services provided at the Teachers' Centre as detailed in the next paragraph.

4.2.2 SUPPORT SERVICES PROVIDED AT THE TEACHERS' CENTRE

SUPPORT SERVICES	%AGE OF RESPONSE
Courses in computer literacy	90%
Courses in television production	80%
Workshop in curriculum development	80%
Courses in television script writing	80%
Courses in photography	70%
Research on internet	10%

Table 18 Support services provided at the teachers' centre

90% of the respondents reported that courses were organised for teachers in computer literacy. These are short courses catering for a small number of participants at any one time. 80% of the respondents indicated that courses were organised in television script writing, television production and curriculum development

and 70% of the respondents indicated that courses in photography were offered. It seems that there have been very positive attempts by the teachers' centre to provide a relevant and good quality programme to its clientele. Unfortunately whilst there is justification for relevance and quality of the courses it is evident that just a small group of educators are actually engaged in comparison to the large population of teachers needing the skills. If these courses are offered at an accelerated pace targeting the entire cross-section of teachers, educational technology will certainly hold good promise for the future and have a profound effect on teaching and learning. It is not enough to merely plan and organise professional activities. Teachers' Centres must schedule programmes in accordance with an approved national policy to engage the participation of all teachers. Such a policy has to be driven with the objective of enhancing classroom learning with educational technology. For the implementation to be successful there has to be an integrated approach involving the teachers' centre, the teachers' and the education department.

4.2.3 COURSES ORGANISED FOR TEACHERS

90 % respondents indicated that courses in in-service education training were offered whilst 80% indicated that courses were organised in professional development and needs assessment. However it is not clear to what extent there has been implementation of the newly acquired skills by teachers.

COURSES ORGANISED BY TEACHERS' CENTRE	%AGE OF RESPONSE
In-service education training	90%
Professional development	80%
Curriculum development	80%
Needs assessment	80%
Courses in educational technology	70%
Evaluation of media	60%
Action research	50%

Table 19 Courses organised by the teachers' centre

The teachers' centre has not done any follow-up assessment. These are the areas in which teachers actually need upgrading to enhance their skills in application of technology-enhanced skills.

4.2.4 ASSESSMENT OF TEACHER PARTICIPATION IN TEACHERS' CENTRE ACTIVITIES

Figure 9 is an assessment of the level of teacher participation in teachers' centre activities. The largest degree of teacher participation has been in the area of curriculum development and in-

service education training (60% responded "very positive" and 30% responded "positive").

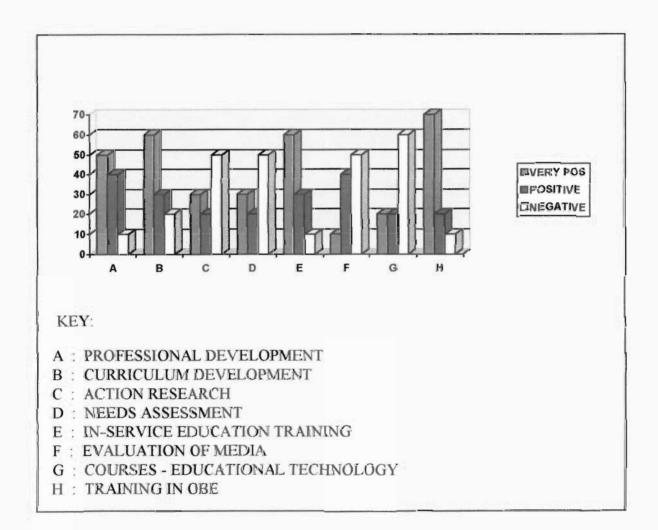


Figure 9
Assessment of teacher participation in teachers' centre activities

Level of teacher participation was given as very positive for inservice education training (60%) and professional development (50%). These courses, particularly curriculum development are essential to the actual practice of teachers. It was ascertained through interviews that teachers were preparing curriculum materials in the form of "learning packages" in certain subjects namely, biology, general science, technical drawing, geography. This skill is vital, particularly in the transformation period since text books have become irrelevant and costly and the need exists for teachers to prepare original learning materials for children. It is disappointing however, that in other key areas namely, action research (30% of respondents were very positive), needs assessment (30% very positive), evaluation of media (10% of the respondents were very positive) and courses in educational technology (20% of the respondents indicated very positive), the level of teacher participation has been poor.

70% of the respondents indicated that the level of participation for training in OBE was "very positive". Perhaps this increase in participation is due to the immediacy of the problem and the demands made upon teachers by the Department of Education to upgrade teacher knowledge and skills. It was found that courses provided in educational technology are poorly attended (60% of the respondents indicated that level of teacher participation was negative). A similar high negative response is evident for action research (50%), needs assessment (50%) and evaluation of media (50%).

4.2.5 NEEDS OF TEACHERS FOR EDUCATIONAL TECHNOLOGY MATERIALS

The indication from respondents (Figure 10) is that the highest demand from teachers is for use of printing services (90% of the respondents indicated a high demand). This reprographic service is mainly to produce printed materials in the form of "work sheets" tests and "notes".

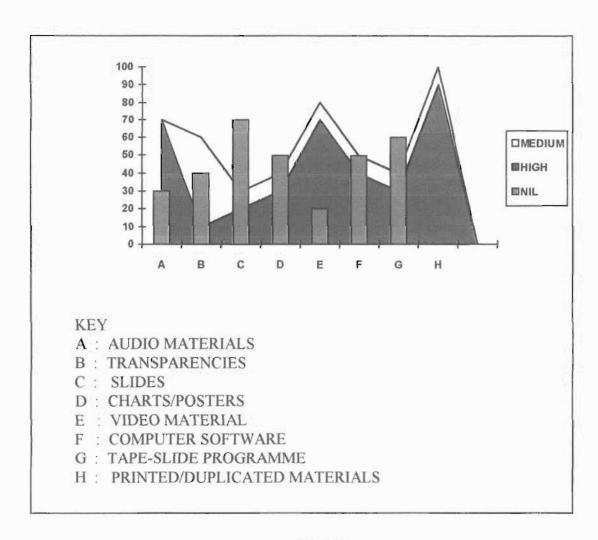
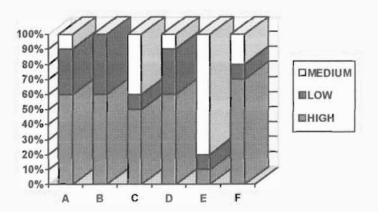


Figure 10
Needs of teachers for educational technology materials

Printed materials on their own, meet a reprographic need and do not simply contribute to enhancement of educational technology. It is regrettable that large numbers of teachers would resort to merely burdening pupils with printed materials. It is noted that 70% of the respondents indicated "no demand" for slides and 60% of the respondents indicated no demand for tape slide programmes.

It also indicated that a high demand exists for audio materials (70% of the respondents indicated a high demand) and video materials (70% high demand). Together with audio materials slides could be integrated to create innovative learning experiences. 50% of the respondents indicated that no demand exists for charts/posters available at the teachers' centre. It is disconcerting that valuable resources are not exploited to good advantage. These audio visual learning materials have much possibility for enhancing educational technology. If the reprographic materials mentioned earlier are effectively combined with these audio-visual resources educational technology would be developed and enhanced.

4.2.6 TEACHER PROFICIENCY



KEY: A: USE OF RESOURCES IN TEACHING

B: FAMILIARITY WITH AUDIO-VISUAL

C : LITERACY IN COMPUTERS

D: UNDERSTANDING OF EDUCATIONAL TECHNOLOGY

E : KNOWLEDGE AND USE OF INTERNET FACILITY

F: WILLINGNESS TO BE TRAINED AND RE-TRAINED

Figure 11
Teacher proficiency in familiarity with educational technology

An investigation of the extent to which teachers are familiar with aspects of educational technology revealed that 60% of the respondents indicated that teachers showed a high level of familiarity with use of resources. A similar response of 60% was obtained for familiarity with audio visual equipment and understanding of educational technology. However this relates to the proficiency as displayed by visitors to the teachers' centre. The large numbers of teachers who do not visit the teachers' centre remain to be initiated through efforts of the teachers' centre. Another interesting response was that 70% of the respondents indicated that visitors to the teachers' centre were willing to be trained and re-skilled. This aspect has great promise for enhancement of educational technology and changing the teachinglearning scenario. There is a close correlation between the facilities provided by the computer laboratory and the actual familiarity of the clientele (50% of the respondents indicated that visitors to the centre showed familiarity in the literacy of computers). Quite understandably only 10% of the respondents indicated familiarity with use of internet.

4.2.7 PERCEPTIONS ABOUT TEACHERS' CENTRES

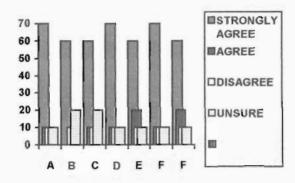


Figure 12 Perceptions about Teachers' Centres

KEY

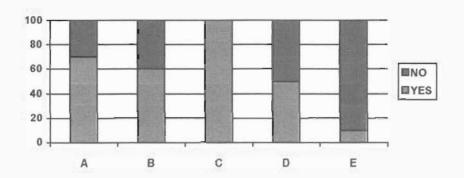
A	Teachers' centres facilitate educational reform
В	Teachers' centres involve teachers in planning
С	Teachers' centres are autonomous institutions
D	Teachers' centres should arrange on-site activities for schools
E	Teachers' centres should take programmes to schools in mobile units
F	Teachers' centres engage educators to think more broadly
G	Teachers' centres can enhance educational technology programmes

There was strong agreement from 70% of the respondents (Figure 12) that teachers' centres facilitate educational technology reform.

An assessment was also made of teachers' centres as agencies which engage educators to think more broadly and less traditionally

to which 70% of respondents agreed strongly, 60% of the respondents strongly agreed and 20% of the respondents agreed that teachers' centres are ideally placed to enhance educational technology programmes. These perceptions indicated by staff at the teachers' centre give an indication of the kind of work that they engage in at the teachers' centre. It also gives an indication of the role of the teachers' centre in an effort to provide professional development courses for teachers. The responses confirm the credibility of teachers' centres as far as the staff at the teachers' centres are concerned. It is possible that the staff at the teachers' centre realise that travelling time and distance are factors which affect regular attendance. 70% of the respondents indicated that the teachers' centre should arrange on-site activities for schools and 60% believe that the teachers' centre should take programmes to schools in mobile units. This was also positively stated by respondents who were surveyed at schools. This is a significant factor as it addresses the concerns of teachers who find accessibilty to teachers' centres a problem. Furthermore it takes into account the time constraints that teachers so often complain about. More importantly by bringing together teachers and the media opportunities would be created for greater contact at the level of the schools. This will particularly enhance participation of teachers from the more remote and rural schools.

4.2.8 USE OF THE TEACHERS' CENTRE



KEY

A: NON-GOVERNMENT ORGANISATIONS

B: COLLEGES OF EDUCATION

C: TEACHERS FROM NEIGHBOURING SCHOOLS

D: TEACHERS FROM RURAL AREAS E: SATELLITE TEACHERS' CENTRES

Figure 13
Teachers' Centre as a Community Education Centre

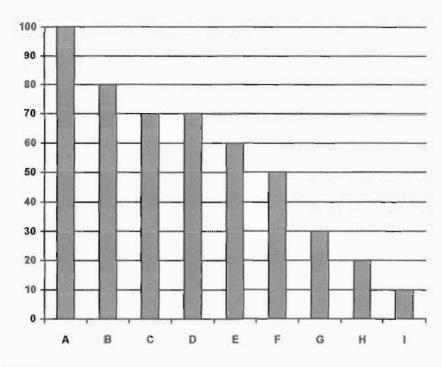
It is clear from the graphical representation (Figure 13) that all respondents from the teachers' centre confirm that the centre is used by teachers from the neighbouring schools. However only 50% of the respondents indicated that the teachers' centre is used by teachers from rural areas. This is a problem which is realistic and could be addressed through implementation of services by satellite teachers' centres and perhaps mobile teachers' centres. Participants from colleges only use the centre to a small extent as indicated by 40 % of the respondents. This is possibly due to the well-established media centres at most of the Colleges of Education. However it is essential that professional links be maintained by Colleges of Education and Education Faculties of Universities with teachers' centres to exchange essential skills and innovation. It is

encouraging to note that 70% of the respondents indicated that teachers' centres are used by Non-Government Organisations.

These organisations such as the Child Welfare Organisation, Early Learning Centre, Road Safety Association, The Chatsworth Hospice, The Women's Circle, Environment Association represent various facets of the community. The teachers' centre provides a useful service in an informal way in engaging community participation. It is evident that only 10% of the respondents indicated that the teachers' centre is used by satellite teachers' centres. This is so because there are no satellite teachers' centres in close proximity to the Chatsworth Teachers' Centre.

4.2.9. LIAISON BETWEEN TEACHERS' CENTRE AND OTHER ORGANISATIONS

The Teachers' Centre and the Department of Education evidently have a close working relationship. The response from 100% of the participants (Figure 14) confirming close liaison with the Department of education does not necessarily imply that the relationship is concerned with developing educational technology. The Department of Education maintains links with Teachers' Centres (as confirmed through interviews) for administrative purposes.



KEY:

The state of the s	
A. Department of Education	
B. Colleges of Education	
C. Cultural organisations	
D. Teacher unions	
E. Non-government organisations	
F. Satellite teachers' centre	3
G. Municipalities	
H. University faculties	
I. Museums	

Figure 14

Liaison between teachers' centre and other organisations

In addition departmental initiatives at professional development of teachers are co-ordinated by the teachers' centre. A close relationship exists with Colleges of Education (as indicated by 80% of the respondents). Colleges of Education do work in partnership with Teachers' Centres to conduct professional development courses. 70% of the respondents indicated that the Teachers' Centre

liaises with Teacher Unions and Cultural Organisations and 60% of the participants indicated liaison with Non-Government Organisations. These responses give a positive indication of the efforts of the teachers' centre to establish and maintain contacts as Community Education Centres. This aspect of non-formal education is important in pursuing the concept of "life-long" education. Although 50% of the respondents indicated that teachers' centres liaised with satellite teachers' centres, the level of contact could increase vastly with the establishment of satellite teachers' centres in the service area. These in turn would assist to enhance the development of educational technology. Teachers' Centres should liaise to a greater extent with faculties of education at universities (20% of respondents indicated liaison with University Faculties) in order to benefit from the ongoing research and innovative programmes initiated by the faculties. Furthermore education faculties are at the forefront of pre-service teacher training and should be included in professional training programmes of teachers' centres.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION

As we move towards the next millenium South Africans are aware of the major transformation in education and the multitude of problems that challenge this process. The severe financial constraints and the inheritance of an impoverished education system from the previous government have contributed enormously to the present state of crisis in education. In an effort to redress the imbalances and overhaul the system of apartheid education the government has introduced Curriculum 2005 and the Outcomes-Based Approach to education. The government of the day has undertaken the task of establishing a more relevant education system which will meet the demands of the broader masses of people.

This study was conducted amongst teachers at schools in Chatsworth and staff at the Chatsworth Teachers' Centre. The research gives an insight into the potential of teachers' centres (working in partnership with teachers) to contribute meaningfully to educational technology-based strategies of learning through satellite teachers' centres. The government has inherited approximately 350 000 teachers who need to undergo major transformation to effect competent delivery of learning. Short bursts of one-off training courses envisaged by the

government will have little effect in bringing about a sustained development of skills. It is recommended that teachers' centres and satellite teachers' centres be structured to contribute to a better quality of classroom practice integrating the principles of educational technology. Such an intervention is assured of contributing immensely to the new learning as envisaged in Curriculum 2005 and the Outcomes Based Approach in Education. This principle is further supported by the "Growth, Employment And Redistribution" document released by the government in 1996, which calls for "full development of the individual and the community". (Sadtu News: 1997: 2). The report outlines the poor completion rates of learners in primary and secondary schools and the general poor quality of education. It is thus the duty of the state to provide basic quality education. Without this commitment, the inequalities will continue to be entrenched.

The study concludes that all teachers need to develop a theoretical framework about educational technology and its implications for learning. It would be erroneous to view educational technology merely as equipment or resource materials. The perception of mediated learning involving the teacher, the learner and audiovisual resources ought to be the ideal learning environment which teachers' centres and satellite teachers' centres should strive to establish.

This study seeks solutions to the following key questions:

- The perception of teachers' centres as agencies to bring about educational technology-based strategies of learning,
- The participation of teachers in teachers' centre programmes.
 Taking these key considerations into account the following conclusions were arrived at;

5.2 SCHOOL-BASED INVESTIGATION 5.2.1 PERCEPTIONS ABOUT EDUCATIONAL TECHNOLOGY

It was difficult to establish a popular perception about educational technology because of the variations in response received from teachers. The wide range of responses received made it difficult to establish a clear consensus on a perception of educational technology. This implies that teachers have a nebulous idea of what educational technology entails and what implications it has for learning and education in general. A small majority of respondents referred to educational technology as the "use of audio visual equipment and resources in the teaching-learning process". An almost equal percentage of teachers varied their understanding of educational technology firstly as "the use of resource materials which assist in enhancing learning" and secondly as "mediated learning involving machines, resources and the learner". It is important for teachers to develop a theoretical framework of educational technology so that they will understand its implications for learning related to the new curriculum.

5.2.2 TO WHAT EXTENT DO TEACHERS PARTICIPATE IN TEACHERS' CENTRE PROGRAMMES?

The responses received in reply to the investigation in this category contributed to a belief that teachers were openly committed to working in partnership with teachers' centres. Furthermore they expected teachers' centres to include teachers in the actual planning of workshops, technology-enhanced learning strategies and conferences. In order to extend and develop their own skills teachers shared a commitment to engage in workshops on teaching strategies. This show of commitment indicates the will of teachers to develop a curriculum that will meet the demands and expectations of parents and fit with the vision of creating innovative teaching strategies.

Whilst there was a strong show of commitment to participate in teachers' centre activities, teachers preferred programmes to be scheduled on-site at schools. This implies that whilst teachers "showed commitment" they were only prepared to participate in the programmes provided they were scheduled on-site, closer to their schools. The problem of travelling costs, and availability of time were cited as problems. This perception lays the foundation for a strong motivation for considering satellite teachers' centres and mobile teachers' centres. Such a concept working in conjunction with the teachers' centre will bring together the three important components that can transform learning - the teacher, the media and the learner. Opportunities for training and development

of skills in implementation of educational technology should be provided to all teachers. The decentralised, local sites in the form of satellite teachers' centres will minimise travelling. In the light of these considerations it is strongly recommended that satellite teachers' centres be established to cater for the needs of teachers in all areas, more particularly those in remote areas. Well coordinated satellite teachers' centres would ideally work through teachers' centres which will endeavour to provide the essential skills and training to teachers.

5.2.3 WHAT IS THE PERCEPTION ABOUT THE ROLE OF TEACHERS' CENTRES AS AGENCIES FOR ENHANCING EDUCATIONAL TECHNOLOGY AT SCHOOLS?

There was general agreement that teachers' centres do have collegial working relationship with fellow teachers and that teachers' centres have the expertise to enhance educational technology programmes. This positive perception about teachers' centres provides a heightened image of teachers' centres and gives credibility to their potential to take innovation to the classroom. This perception has a strong relationship with the agreement by respondents that "educational technology-based learning will enhance learner competence." It is significant that the respondents related the role of teachers' centres to enhancement of teacher skills as well as learner competence. To take the process forward almost all respondents clearly agreed that satellite teachers' centres should be established to cater for schools in remote and outlying

areas. This perception about teachers' centre, educational technology-enhanced learning and satellite teachers' centre clearly indicated the need for a properly structured policy to drive the teachers' centre concept.

It is recommended that a permanent feature of the learning environment should involve teachers' centres, satellite teachers' centre, the teacher and the learner. The study concluded that a structured policy should be put in place by the department of education to implement educational technology-based strategies of learning. Whilst financial constraints may be cited as a restraining factor, it is necessary to establish trends towards this kind of network in an effort to phase in gradually. Educational technology as a strategy should therefore be included as an integral part of the implementation of Curriculum 2005 and Outcomes Based Education because of its relevance to learning. This initial development is necessary to ensure that current perceptions (as evident in this study) about educational technology, teachers' centres and satellite teachers' centres will continue to be reinforced and contribute to the design of learning.

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5.2.4 TEACHER ATTITUDE TOWARDS EDUCATIONAL TECHNOLOGY-ENHANCED STRATEGIES OF TEACHING/LEARNING.

Against the background of a positive perception about a partnership between teachers' centres, satellite teachers' centres and educational technology, the respondents confirmed that

educational technology-based learning does have value as against traditional methods of teaching. This study proves that there is a definite place for educational technology in bringing about relevant learning. However, the investigation identifies that there is a break in communication since "teachers' centres fail to interact sufficiently with schools and teachers" as reported by 62% of the respondents. This difficulty is possibly due to the atmosphere of freedom and voluntary participation that the partnership was based on. There was no compulsion for teachers to use the services of the teachers' centre. Such a relationship depended largely on personal initiative and therefore could not be relied upon for constructive long-term effect. To be more cost-effective and accountable it is recommended that the interaction of teachers' centres with teachers operate along more prescribed lines so that agreed commitment can be adhered to. This is necessary to meet the needs of large scale teacher empowerment and development towards Curriculum 2005. Whilst the respondents agreed that "teachers are receptive to change" it was also reported by 52% of the respondents that there was no time available for educational technology-based strategies. This recurring problem together with the failure of the teachers' centre to interact sufficiently with teachers is possibly due to the low level of participation in teachers' centre activities. Satellite teachers' centres established closer to the local schools will certainly help to alleviate these constraints.

5.2.5 AVAILABILITY OF AUDIO VISUAL EQUIPMENT AND THE EXTENT OF USE

This study indicates the current status of educational technology in schools. It was established from replies of respondents that only certain audio visual visual equipment were extensively used. There was a strong relationship between what was available and the extent of their use. The study indicated that all schools were equipped with the overhead projector and it was the only equipment that was extensively used. Regrettably, equipment such as the audio cassette recorder and television were not judiciously used. Poor quality software, equipment in disrepair and general lack of teacher orientation to educational technology were cited as major problems by above principals and teachers. However, the most vociferous criticism was aimed at the government which did not support initiatives to implement innovation because of budgetry constraints. It was established that there was a crying need for a consistent, well-implemented, national programme and policy. If one visits a school it is evident from replies of respondents that although there is a theoretical perception of educational technology and teachers' centres, the schools fall short in implementation because of the absence of a controlled education system. The study found that only 46% of the sample listed television as "frequently available" and 24% indicated that it was "frequently used". The survey on the use of video cassette recorder indicated that only 34% stated that it was "frequently available", whereas the equipment was frequently used by only 20%. A direct relationship

existed between the low user-demand of audio visual equipment and resources on the one hand and teacher attitude to educational technology-enhanced strategies on the hand - 52% of respondents felt that there was no time for planning educational technology-based strategies of teaching/learning.

5.2.6 AVAILABILTY OF RELATED RESOURCE MATERIALS AND THEIR USE TO ENHANCE LEARNING

A strong relationship exists between the availability of audio visual resources and their use by teachers. 68% of the respondents indicated that the overhead projector transparencies were frequently available and that it was correspondingly used by 62%. Similarly 54% of the respondents reported that magazines and periodicals were frequently available and 54% reported that the magazines and periodicals were frequently used. The study proved that supplies of software were dwindling in schools and that schools were becoming poorly resourced. This state of affairs has negatively impacted on the motivation of teachers. Very little scope exists for teachers to design creative instructional materials since versatile equipment such as slide projectors, video cassette recorders and audio cassette recorders were hardly ever used by teachers. Furthermore the problem was worsened by the scarcity of resource materials, particularly slides, video films and audio cassettes.

It is strongly recommended that the Department of Education make budgetry provision for the supply of resources and implementation of educational technology. Faculties of University (Teacher Education Division) and Colleges of Education could be called upon for professional expertise since educational technology forms an integral part of pre-service training at these institutions. If it is believed that teaching-learning strategies are to remain traditional and teacher-dominated, like the schools of the past, there is little incentive to change. The challenge for the government is to provide leaders in the application of educational technology in learning.

5.2.7 AVAILABILITY OF SUPPORT SERVICES

The survey concluded that the schools included in the survey were within easy reach of public libraries (indicated by 80% of respondents), teachers' centre (80%) as well as the school media centre (90%). The proximity to these centres places teachers in a favourable position to bring about the learning partnership namely, teacher- media - the learner. The study provided a sound basis for understanding the role and place of educational technology in learning and for teachers to know more about the philosophy of educational technology.

5.2.8 TO WHAT EXTENT ARE SERVICES PROVIDED BY THE TEACHERS' CENTRE, UTILISED BY TEACHERS?

It was evident from the study that teacher participation at workshops, conferences, in-service education training and resources planning for educational technology has been dismally poor. It is necessary to emphasise that the "machine" is not necessarily the "aid" to the teacher in his/her pedagogic role. The machine or machines, are in effect but one element in the teacher training process of the three-fold partnership - teacher, learner and media. The survey indicated that an important element, namely training sessions in professional development to enhance educational technology had been poorly attended by teachers. The study further concluded that teachers "lack of understanding of the principles of educational technology" have led them to believe that educational technology represents a bringing together of several machines.

5.3 INVESTIGATION OF THE ROLE OF TEACHERS' CENTRES

5.3.1 WHAT SERVICES DO TEACHERS' CENTRES PROVIDE?

The implementation of educational technology at schools depends largely on a partnership involving the teacher, the learner and the media. This study has included the teachers' centre as the specific agency which could initiate and sustain this significant relationship. The inclusion of the teachers' centre as the agency is vital because of the large mass of teachers who lack basic training. Despite the enthusiasm and skills that existing teachers might have there is no guarantee that educational technology will be enhanced. This aspect of the study was quite explicit in the foregoing discussion

where the respondents attributed failure to the lack of interaction by teachers' centres.

The study indicated that a range of very relevant and valuable services are offered at the teachers' centre - this was corroborated by 80% of the respondents. This gives a clear indication that the teachers' centre has the capacity, the expertise and the skill to design relevant courses in educational technology. This also confirms that the teachers' centre acknowledges and understands the needs of the teachers. This augurs well for the future particularly in view of the need for the formation of a structured relationship with teachers. The question of partnership has been emphasised to a great extent. The crucial question that follows is therefore - Do teachers participate in teachers' centre programmes? An assessment of actual teacher participation in teachers' centre activities indicated that the extent of participation is hardly representative of the large majority of the teaching corps. The extensive costs, labour and time cannot justify the use of the teachers' centre by just a small minority. Less than 20% of the respondents agreed that there was positive participation in courses on evaluation of media and educational technology. As discussed in the preamble to this chapter a theoretical understanding of educational technology is crucial to appropriate implementation of educational technology-enhanced strategies of learning. If the involvement of teachers is so negative then teachers' centres will be unable to initiate change on their own accord. In contrast it is evident that 70% of the respondents indicated that a high demand

existed for audio materials and video materials. Apart from this the demand for other related audio-visual materials was very minimal. In discussions with principals of schools it emerged that it was the obligation of the teachers' centre to create mechanisms for involving greater participation of teachers. It is certainly possible that teachers' centres should become involved in future projections for educational technology-based learning. Merely having the capacity and the infrastructure is of little consequence. The management of the educational technology and the development of communication with teachers is crucial to the success of this partnership. A key to effective service provision is the relationship between the teachers' centre and the teachers at schools. Thereafter it is the concern of the teachers' centre to ensure that the teachers are able to function at a consistently high level. A good manager at a teachers' centre can create a well functioning unit under less than perfect conditions. The study indicated that 90% of the respondents reported reprographic services as the most used resource by teachers. The mere printing of "notes" and worksheets can hardly contribute to innovative learning on their own

The conviction of this study is that teachers' centres do have the potential to contribute to the enhancement of educational technology at schools.

5.3.2. WHAT IS THE PERCEPTION OF THE TEACHERS' CENTRE STAFF ABOUT THE TEACHERS' CENTRE?

In contrast to the extent of participation by teachers, the staff at the teachers' centre appeared to be positive and strongly agreed that teachers' centres are the ideal agencies to enhance educational technology programmes. It was further confirmed that teachers' centres did facilitate educational reform, a fact which was reported by more than 60% of those in the sample. The respondents agreed that teachers' centres should arrange on-site activities to enable more teachers to attend the programmes. The response from the staff at the teachers' centre was encouraging. At the same time the response supports the recommendation for satellite teachers' centres to take programmes closer to schools to enlist greater teacher participation.

5.3.3 ROLE OF THE TEACHERS' CENTRE AS A COMMUNITY EDUCATION CENTRE

The study confirmed that the teachers' centre is the focus for interaction with not only school-based educators but also other structures which represent a broad cross-section of the community. More than 60% of the respondents indicated a strong liaison with municipalities, non-government organisations, teacher unions and cultural organisations. Such an initiative from the teachers' centre contributes to establishing the concept of life long education as outlined in the National Qualifications Framework. The government has the opportunity to utilise the concept of the

teachers' centre to implement the "new" system of education based on learning programmes. In addition to lifelong learning and redress of imbalances, the new system will have access to educational technology through the teachers' centre programmes.

Currently there are 350 000 teachers who must be introduced to Outcomes Based Education approach in 1998. Teachers' Centres and satellite teachers' centres should become the heart of the action in piloting the ongoing training in educational technology. This study confirms beyond doubt that teachers' centres are the ideal agencies to bring about educational technology-based strategies of teaching-learning in schools. Based on the responses of teachers, staff at teachers' centres, visits to teachers' centres and interviews with staff it is evident that teachers' centres are greatly under-utilised. This calls for strong commitment from teachers to support the teachers' centre concept. Equally the teachers' centre has to discover creative ways of increasing teacher involvement. South Africa is at the crossroads of change and can ill afford wastage of human and material resources. Teachers' centres were in the past under-utilised - because they depended on voluntary participation through the initiative of teachers. The severe financial constraints and the urgent need for quality classroom instruction and equity demand that educators share greater commitment and show accountability to the community. It is therefore recommended that teachers' centres and teachers should work along prescribed ways of implementing educational technology-based strategies of learning.

5.4 CONCLUSION

Political democracy has created a euphoria about education transformation. Policy makers (politicians) have mapped out a destination for education with the implementation of Curriculum 2005. Regrettably the journey to that destination is not clearly defined. "How" children learn and the "modes and methods" of learning have not been sufficiently thought spelt out with the inevitable frustration of the implementers. If positive goals and skills are to be instilled in teachers they must be supported by ongoing training in educational technology-based strategies of teaching. The learner will benefit from effective facilitation by competent and adequately trained teachers. To complete the partnership the support of the satellite teachers' centre is vital. Fundamentally the teachers' centre and through it the satellite teachers' centre would be able to involve teachers more directly in developing educational technology at schools. In this way the efforts of the teachers will be supported to provide the best possible education for all children. A poorly trained teacher will remain an under-utilised resource in education - teachers who are participants at teachers' centres will be thought of as both learners and teachers.

Having inherited a legacy of illiteracy from the apartheid period, the democratic government has committed itself to redressing the inequities. The launching of "Curriculum 2005" is the government initiative to bring about innovative learning systems.

However this research concludes that the actual implementation can only be undertaken by transformative educators who have access to ongoing professional development and training. The teacher will only be able to redress the inequities if he/she is adequately equipped with ongoing, sustained training. Short "one-off" training sessions aimed at orientating teachers towards "Curriculum 2005" are not solutions to bringing about a creative learning environment which promotes a new kind of learning distinct from the apartheid era. The government initiative should include a policy for "de-skilling" and "de-schooling" teachers to adapt to the demands of innovative learning.

This research has been considered necessary to provide the longterm plan essential for continuous on-going training of all teachers through teachers' centres and satellite teachers' cewhich have the potential to develop educational technology-based strategies of learning at schools.

Effective transformation of learning and the learner requires a linkage of all stakeholders - the superintendents of education, the universities, colleges of education, the teachers, the learners and the community. The research concludes that such an integrated approach can be attained through teachers' centres and satellite teachers' centres.

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QUESTIONNAIRE

TEACHERS' CENTRES AS AGENCIES FOR DEVELOPMENT OF EDUCATIONAL TECHNOLOGY AT SCHOOLS

PURPOSE OF THE QUESTIONNAIRE

The purpose of the questionnaire is to assess the extent to which Teachers' Centres will enhance the development of educational technology at schools, working through Satellite Teachers' Centres or Education Development Centres. The questionnaire hopes to elicit information regarding the learning materials available to educators and learners at school media centres, satellite teachers' centres and teachers' centres. It would further probe the extent to which the available learning resources are effectively exploited in the learning process. The potential for educational technology to contribute to inter-active learning as envisaged in Curriculum 2005 and by the **outcomes based education** programme of the new syllabi will also be researched.

Annexure 1

SCHOOL-BASED EDUCATORS PARTICULARS OF PARTICIPANTS

Place a TICK next to the option selected

1.1 Age category in years

20 - 25	
26 - 30	
31 - 40	
41 - 50	
51 +	

1.2 Gender

Male	
Female	

1.3 Qualifications

Matriculation	
Diploma in Teacher Education	
Diploma in Resource / Media	
Degree	
Degree - Post Graduate	

1.4 Teaching Experience in Years

00 - 05	
06 - 10	
11 - 15	
16+	

Annexure 2

QUESTIONNAIRE FOR SCHOOL-BASED EDUCATORS

1. PERCEPTIONS ABOUT EDUCATIONAL TECHNOLOGY

Please place a TICK in the block, next to the statement that defines educational technology most appropriately.

Educational Technology refers to...

The use of audio-visual equipment and resource materials in the in the teaching/learning process.
The use of resource materials which assist in enhancing learning.
Mediated learning involving machines, resources and the learner.
Computer assisted learning.
Reference materials used by learners to explore topics

2. PERCEPTIONS ABOUT TEACHER INVOLVEMENT WITH PROGRAMMES INITIATED BY TEACHERS' CENTRES.

Please place a TICK in the appropriate block for each of the following statements indicating your options.

		agree	disagree	unsure
2.1	Teachers should engage in workshops on teaching strategies.			
2.2	Seminars/workshops should be held on-site at schools.			
2.3	Teachers should attend Teachers' Centre activities after school hours.			
2.4	Teachers should be included in the planning forums of teachers' centres.			
2.5	Teachers' Centre programmes contribute to professional development.			

3. PERCEPTIONS ABOUT THE ROLE OF TEACHERS' CENTRES IN ENHANCING EDUCATIONAL TECHNOLOGY AT SCHOOLS.

Please place a TICK in the appropriate block selecting an option.

		agree	disagree	unsure
3.1	Teachers' centres have the expertise to enhance educational technology programmes.			
3.2	Teachers' centres establish collegial working relationships with fellow teachers.			
3.3	Educational Technology-based learning will enhance learner competence.			
3.4	Teachers' centres are the ideal agencies to enhance educational technology at schools.			
3.5	Satellite Teachers' Centres should be established to cater for schools in remote areas.			

4. TEACHER ATTITUDE TOWARDS TECHNOLOGY-ENHANCED STRATEGIES OF TEACHING-LEARNING.

Please place a TICK against the option selected.

		agree	disagree	unsure
4.1	No time is available for planning educational technology-based strategies.			
4.2	Feel comfortable with traditional methods of teaching.			
4.3	There is no assurance that educational technology-based learning has value.			
4.4	The lack of access and availability of resource materials.			
4.5	Teachers' centres fail to interact sufficiently with schools.			
4.6	Teachers are highly self-motivated.			
4.7	Educational technology enhances learning.			
4.8	Educational technology provides self-renewal.			
4.9	Teachers are receptive to change.			
4.10	It has advantages over traditional methods.			

5.AVAILABILITY OF AUDIO-VISUAL EQUIPMENT

Please place a TICK in the appropriate block indicating your option.

	frequently available	seldom available	never available
5.1 computer			1
5.2 episcope			T
5.3 slide projector			
5.4 overhead projector			
5.5 television			
5.6 video cassette recorder			
5.7 video projector			
5.8 video camera			
5.9 video cassette recorder			
5.10 other (specify)			

6. USE OF AUDIO-VISUAL EQUIPMENT

Place a TICK in the appropriate block indicating your use of technology-enhanced strategies.

	frequently use	seldom use	never use
6.1 computer			
6.2 episcope			
6.3 slide projector			
6.4 overhead projector			
6.5 television			
6.6 video cassette recorder		1	i
6.7 video projector			3
6.8 camcorder/video camera			
6.9 cassette recorder			

7. AVAILABILITY OF RELATED RESOURCE MATERIALS Please place a TICK next to the resource/s that are available to you.

	Frequently available	seldom available	never available
7.1 overhead projector transparencies			
7.2 slides			
7.3 video films			
7.4 audio cassettes			
7.5 e-Mail via internet			
7.6 computer software			
7.7 magazines/periodicals			

8.USE OF RELATED RESOURCE MATERIALS TO ENHANCE LEARNING

Please place a TICK in the appropriate block, indicating your use of resource materials.

	Frequently use	seldom use	never use
8.1 overhead projector transparency			
8.2 slides			
8.3 video film			
8.4 audio cassette			
8.5 e-Mail via internet			
8.6 computer software	VI HOTELES		
8.7 magazines/periodicals			
8.7 other - (specify)			

9. AVAILABILTY OF SUPPORT SERVICES.

Place a TICK next to the support service that is available to you.

	Available
9.1 media centre/library at school	
9.2 public/municipal library/media centre	
9.3 satellite teachers' centre	
9.4 teachers' centre	170¢
9.4 other - specify	

10.WHICH OF THE FOLLOWING SERVICES HAVE YOU UTILISED AT A CENTRE/S?

Place a TICK next to the option selected.

10.1 workshop in educational technology	
10.2 seminar/conference in educational technology	
10.3 in-service training in educational technology	
10.4 internet/ e Mail	
10.5 curriculum development material	
10.6 resources for class-room teaching.	
10.7 reprographic	
10.8 other - specify	

Annexure 3

PARTICULARS OF STAFF AT TEACHERS' CENTRE

Please place a TICK in the block next to the option selected.

1. AGE CATEGORY IN YEARS

20 - 25	
26 - 30	
31 - 40	
41 - 50	
51+	

2. GENDER

Female	
Male	

3. QUALIFICATIONS

Please place a TICK in the block, next to the option selected.

Matriculation
Diploma in Teacher Education
Diploma in Resource/Media
Diploma in Library Science
Degree
Post graduate degree

4. EDUCATOR EXPERIENCE IN YEARS Please place a TICK in the appropriate block.

	01 - 10	
		
L	11 - 15	
	16 - 20	
	21 - 25	
	25 +	

5. EXPERIENCE IN MEDIA/EDUCATION IN YEARS

Please place a TICK in the appropriate block.

01 - 05	
06 - 10	
11 - 15	
16+	

Annexure 4

QUESTIONNAIRE FOR STAFF OF TEACHERS' CENTRE

PURPOSE OF QUESTIONNAIRE

The questionnaire will serve to determine the role of Teachers'
Centres in enhancing the development of educational technology at
schools. It will serve to assess the extent to which Teachers'Centres
actively interact with teachers providing services in terms of the needs
of the clientele.

1. SERVICES AVAILABLE AT THE TEACHERS' CENTRE

Please place a TICK in the appropriate block if the service is available at the Centre.

1.1 television production	
1.2 photographic services/dark-room	
1.3 computer laboratory	
1.4 internet / e Mail	
1.5 printing services	
1.6 curriculum material production	
1.7 satellite communication	

2. SUPPORT SERVICES PROVIDED AT THE TEACHERS' CENTRE

Place a TICK in the appropriate block to indicate the services that are available at the Teachers' Centre.

2.1	courses in television script writing
2.2	courses in television production
2.3	courses in photography
2.4	research on internet
2.5	courses in computer literacy
2.6	workshop in curriculum development

3. IN WHICH OF THE FOLLOWING CATEGORIES WERE COURSES ORGANISED FOR TEACHERS?

Please place a TICK in the block, against the option selected.

3.1 professional development	
3.2 curriculum development	
3.3 action research	
3.4 needs assessment	
3.5 in service education training	
3.6 evaluation of media	
3.7 short courses in educational technology	

4. ASSESSMENT OF TEACHER PARTICIPATION IN IN TEACHERS' CENTRE ACTIVITIES.

Place a tick in the appropriate block indicating the level of teacher participation.

	Very positive	positive	negative
4.1 Professional development			
4.2 curriculum development			
4.3 action research			
4.4 needs assessment			
4.5 in-service education training			
4.6 evaluation of media			
4.7 short courses in educational technology			

4. DEMAND FROM TEACHERS FOR EDUCATIONAL TECHNOLOGY MATERIALS.

Place a TICK in the appropriate block to indicate the extent of demand from teachers.

	high demand	medium demand	no demand
5.1 audio materials			
5.2 transparencies			
5.3 slides			
5.4 charts/posters			
5.5 video material			
5.6 computer software		7-51	
5.7 tape-slide programme			
5.8 printed/duplicated materials			Laure
5.9 other - specify			

6. TEACHER PROFICIENCY

Place a TICK in the appropriate block to indicate the extent to which visitors to the Teacher Centre are familiar with the following aspects of educational technology.

	high	low	unsure
6.1 use of resources in teaching			
6.2 familiarity with audio visual equipment			
6.3 literacy in computers			
6.4 understanding of educational technology		- II	
6.5 level of training in educational technology			
6.6 knowledge and use of Internet facility			
6.7 willingness to be trained and retrained			

7. THE FOLLOWING STATEMENTS INDICATE PERCEPTIONS ABOUT TEACHERS' CENTRES.

Place a TICK in the appropriate block indicating the option selected.

		strongly agree	agree	disagree	unsure
7.1	Teachers' centres facilitate educational reform				
7.2	Teachers' centres involve teachers in planning.				
7.3	Teachers' centres are autonomous institutions.				
7.4	Teachers' centres should arrange on-site activities for schools.				
7.5	Teachers' centres should take the programmes to schools in mobile units.				
7.6	Teachers' centres engage educators to think more broadly and less traditionally.				
7.7	Teachers' centres are ideally placed to enhance educational technology programmes.				

8. WHICH OF THE FOLLOWING GROUPS USE THE SERVICES OF THE TEACHERS' CENTRE?

Place a TICK in the appropriate block indicating the option selected.

8.1	Non Governmental Organisations	
8.2	Colleges of Education	
8.3	Teachers from neighbouring schools.	
8.4	Teachers from rural areas.	
8.5	Satellite Teachers' Centres	
8.5	Other - specify	

9.WHICH OF THE FOLLOWING ORGANISATIONS DOES THE CENTRE LIAISE WITH?

Indicate with a TICK in the appropriate block the option selected.

9.1	Satellite Teachers' Centres	
9.2	Colleges of Education	
9.8.	University faculties	
9.4	Teacher Unions	
9.5	Cultural Organisations	
9.6	Municipalities	
9.7	Museums	
8.8	Department of Education	
8.9	Non Government Organisation	
8.8	Other - specify	