

A STRATEGY FOR EQUALISING THE
EDUCATIONAL OPPORTUNITIES FOR PEOPLE
WITH VISUAL IMPAIRMENT

by

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UNIVERSITY
OF
JOHANNESBURG

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SINOPSIS

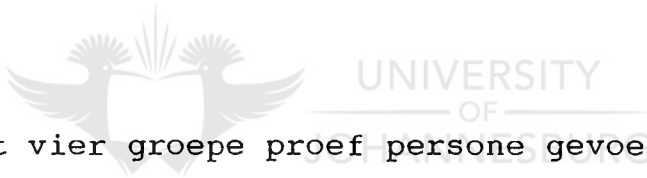
Hierdie studie het die opvoeding vir visueel gestremde persone ondersoek. Oorweging is gegee aan 'n strategie vir die gelykmaking van opvoedkundige geleenthede in Suid-Afrika, deur die gebruik van 'n rekenaar. Die studie het die gespesialiseerde opvoeding en in besonder 'n spesiale skool en sy doeltreffendheid in die voorsiening in die behoeftes van 'n visueel gestremde student geanaliseer.

Die meeste visueel gestremde persone word op grond van hul gebrek opvoedkundig gemarginaliseer. Die stap om hulle in die wêreld van die onbekende in te wy, is blykbaar minder toereikend. Dit lyk nie asof onderwys per sè die verkryging van gelyke opvoeding lewer wat onontbeerlik is vir loopbaan - en beroepskeuses nie. Die uitwerking om opgelei te wees, het nuttigheidswaarde en dien ander oogmerke. Dit sal verrassend wees as 'n opgeleide persoon niks beter kan doen nie of nie sekere vaardighede kan beoefen wat bruikbaar kan wees en dus help om geld vir 'n lewe te verdien nie. Tensy opvoeding vrugte afwerp is dit 'n verkwisting en nie werd om nagestreef te word nie.

Hierdie studie het opvoedkundige ongelykheid as fokuspunt geneem; gevolglik het dit daarna gestrewe om die dinamika van die onderrig-proses tussen die onderwyser en die visueel gestremde leerling in die klaskamer aan te pak. Die rekenaar as die middel om visueel gestremde leerlinge in staat te stel om vakke wat

tradisioneel gesien onprakties is, te neem, was die kern van die navorsingsprojek. Verder is die rekenaar gebruik om leerlinge in staat te stel om wiskunde te neem, asook om kontrole te verkry oor hul druk - vormwerk ten opsigte van formaat en spelling.

Ten einde 'n wyer spektrum van die navorsingsprobleem te dek is 'n poging in hierdie studie aangewend om verder as die onderhoudsdata te gaan. Dit was 'n poging om te soek vir verduidelikings van die opvoedkundige potensiaal van swart visueel gestremde leerlinge in 'n spesiale skool, waar die ontwikkelingsproses plaasvind. Dus is beide kwalitatiewe metodes (soos onderhoude) en kwantitatiewe metodes (soos die eksperiment) gebruik om die geldigheid van die uitslag van hierdie navorsing te verhoog.



Onderhoude is met vier groepe proef persone gevoer. Die eerste groep was onderwysers van Pionierskool, die Prinsipaal en die Uitvoerende Direkteur van die Instituut vir Blindes - almal blankes. Die tweede groep was blanke studente van Pionierskool. Die derde groep was onderwysers van Filadelfia Skool - swart en blank. Die vierde groep het bestaan uit studente van Filadelfia Skool - almal swart.

Tien proefpersone was vir die eksperiment beskikbaar. Die agt proefpersone is ewekansig gekies aangesien die fasiliteite vir slegs agt proefpersone voorsiening kon maak. Toe is 'n groep van agt visueel gestremde standard tien studente vir die eksperiment

beskikbaar gestel.

Die literatuur is sorgvuldig nagegaan om die wordingsgeskiedenis van die opvoeding van persone met visuele aantasting bloot te lê en hoe dit deur die duistere jare ontwikkel het. Hierdie ondersoek het gelei tot die gebruik van die rekenaar in Europese skole wat voorsiening maak vir visueel gestremde leerlinge. Dit het in hierdie studie aan die lig gekom dat visueel gestremde leerlinge Wiskunde kan doen deur middel van 'n rekenaar, gekoppel aan 'n stamsintetiseerder. Verder kan hul omvattend op hul spelling verbeter. 'n Mite is weerlê dat veral swart leerlinge nie Wiskunde kan doen nie. Die afwesigheid van Wiskunde of die beperkte omvang van vakke by spesiale skole vir swartes, veral op sekondêre vlak, benadeel sommige visueel gestremde leerlinge.



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CHAPTER ONE

STATEMENT OF THE PROBLEM AND AIM OF THE STUDY

1.1 INTRODUCTION

Education is a human activity. It is a universal phenomenon and every child is by virtue of birth entitled to it. It is the thorough core of culture. The act of intensifying education must result in the enhancement of the development of a person who must take up his place in society.

Some people with visual impairment are by virtue of their disability educationally marginalised. The act of initiating them into the world of the unknown seems less sufficient and thus justifies educational intervention as Despouy (1993: 1) puts it: "owing to the presence of physical and social barriers that prevent their integration and full participation in the community." As a result, millions of children and adults throughout the world are segregated and deprived of nearly all their rights, and lead a wretched, marginalised life (cf. Haskins, 1979: 1-3).

In concurring with Despouy (1993: 1), one has an obligation to do what is necessary to enable the impaired to enjoy the effective exercise of all their human rights on an equal footing with others. It is found impelling and appealing to justice in South-Africa to redress the imbalances emanating from the

misconceptions. This misconception either of the sighted or the impaired himself, hinders him from optimally developing as a person. Furthermore, this factor is exacerbated by racial prejudice and cultural deprivation.

A question may be asked about why educate the blind when there are less adequate facilities for the sighted children? Two factors are essential to be considered: First, because of the very nature of their disability, blind children are more in need of help than most others. Secondly, as the general pattern of technological development that advances rapidly forward it is shortsighted and unrealistic, both economically and socially, to exclude the impaired (Salisbury, 1974: 4).

According to the United Nation's declaratory provisions, every person has the right to education, employment and decent life. This provision incorporates persons with disabilities. Persons with disabilities are human beings as human as the rest. However, the life of a person with visual impairment does not reflect the outcome of equal educational opportunities. Each day is a titanic struggle to vanquish impediments and the discriminatory treatment they often receive (Despouy, 1993: 1).

This assertion concerning education for visually impaired people is further reverberated by international organisations for the blind. This educational policy statement affirms the right to education of all individuals enshrined in the 1948 universal declaration of human rights. This was echoed at the 1990 world

conference on education for all, (Campbell, 1993: 1).

There remains a great deal of work to be done if visually impaired people are to work and live on equal terms with sighted members of the community. It is thus imperative to provide pertinent, proper facilities, equipment to promote and correct comprehension of the problems and a realistic attitude to visual impairment (Blunkeft, 1992: 1).

In the old South-Africa, a Black person with visual impairment was further dually disadvantaged. Firstly, he is disadvantaged by the colour of his skin as in terms of statutory declaration of 1953, the Bantu education act no. 47 of 1953. This was the probable result of the Eiselen Commission whose terms of reference included searching separate education for Whites. On 1 January 1954, the Africans felt the pinch of the act that was biased against Black people. The education was inferior, no more secondary schools were to be built in urban areas and less money was to be spent on it. Secondly, he was disadvantaged by virtue of his visual impairment. In the open labour market, education for people with visual impairment proved to be an iridescent dream. All the educational opportunities and learning experiences turned out to be white elephants. The specialised education for Black people with visual difficulty and institutions was no exception to the rule. Right now they still exhibit the legacy of Bantu education Act. The educational opportunities were not satisfactory (cf. Coutts, 1992: 2-4; Rowland, 1989: 1/2).

This Bantu Education policy culminated in what is known as the Soweto uprising of 1976. It was when the use of Afrikaans as the medium of instruction was to be enforced in all African schools. Students mobilised and organised demonstration that ended in bloody confrontation with the authorities and the police resulting in the death of many youths. This was a catalyst and a precursor for the events to come. Protest assumed unabated proportions going beyond educational boundaries engulfing the entire system of apartheid. School boycotts by the students and chalk-downs by the teachers engaged the authorities yearning for the end of the apartheid regime. The call to return to schools and the shout for culture of learning seems unheeded yet. The specialised education was not left untouched (Coutts, 1992: 4).

Certain Black communities regard it as a taboo to have a child with a disability. Often this child would suffer inhumane degradation and would be reduced to an inert entity. For this child prospect for developing as a person is nonexistent. Commonly, age-limit spells an educational cul de sac. Often than not reasonable expectations and a desire for education are some hostages to economic and educational realities. Those who survive the dreaded psychometric tests usually escape the matriculation guillotine, but normally would barely escape the horns of labour prejudice, bias, stereotyping and stereotyping (Rowland, 1989: 1-6).

Following the recommendations of the De Lange Commission of 1981,

the nationalist government introduced three new educational models. This was done with the view of opening the way for multicultural education in South Africa. This trend is right now sporadic in the institutions of specialised education (Coutts, 1992: 4).

1.2 THE VISUALLY IMPAIRED IN PERSPECTIVE

The visually impaired people are a small minority of the population, with disability in South-Africa. However, the human rights declaration of the United Nations demands that the life problems of this section of population be adequately solved. Their problems are not alone confined to the physical. They all have multi-faceted problems to face, of so serious a character as to effect their total development as persons. Their training and education reflect a lack of equal educational opportunities that only a multi-pronged strategy can solve the imbalances (Cutsforth, 1972: 1).

It is a general supposition that blindness represents the mere absence or disability of a single sense. On the contrary, visual impairment radically changes and utterly reorganizes the entire life of the individual. The earlier this frustration occurs, the greater the reorganization demanded. Frustration on seeing individuals whose perception and attitudes decide, comprehensively, the behaviour of the visually impaired has great effect (cf. Vaughan, 1995: 18; Cutsforth, 1972: 1/2).

From the instant the seeing child loses his sight, adjustments occur. These Influences from within the individual and from his social environment begin to shape his process of development as a person. Society has not yet come to comprehend the fact that it is, somehow, morally responsible for the development of the visually impaired. No one yet has adequately understood how to educate the blind (Cutsforth, 1972: 1/2).

All mental activities of the congenitally blind child are distorted by the absence of sight. His social world and perceptual world is not the same world in which the seeing child lives (Cutsforth, 1972: 3).

Globally, the education for people with visual disability is receiving attention. In developed countries where a move toward mainstream education is advocated, it has not been a bed of roses. Integrated programmes resulted in the neglect of braille and people with visual difficulty remained illiterate. In the developing countries residential schools were expensive to run. Politicians spend huge sums of money on the military than on education for people with disability. Furthermore, inaccessibility to print information thwarts the efforts of mainstreaming. Unless a multi-pronged approach is adopted to redress the imbalance, be it in the residential schools or mainstreaming, the problem will stay with us (cf. Horton, 1988: 1-5; Wilson, 1992: 35-37).

Further, mainstream schools and classes, continue to exist.

Integration is an accepted idea in theory. Making it work in practice is beset with hardships, shortage of adequate funding, resources and training. Teachers express uncertainty about their abilities to cope successfully and to provide the best educational opportunities for those children in their classes who have special needs (Wade, 1987: 13).

The focal point in this regard is how pupils learn. To turn the blind eye to individual differences and variations in ways of learning is, probably to make learning much more difficult for many children. Most often, visually impaired people are regarded as having their world, i.e., the world of the blind (cf. Blunkeft, 1992: 1/2; Wade, 1987: 14/15).

People with disability are perceived to be unproductive and hard to integrate into the workforce. Furthermore, they find themselves left at the goodwill of employers and their colleagues. The question that arises is whether goodwill alone sanctions guarantee for some employment to people with disability. If the answer is no - how could it be otherwise under conditions of mass unemployment and unequal opportunity, (Rowland, 1989: 1/2).

It is questionable whether schooling or education yielded the achievement of a desirable state of mind: knowledge and understanding that is caused deliberately by the educator (Hamm, 1993: 33-40).

In other words the person has become educated, and in doing so has developed fully as a person. The process of education has opened to him a vast inheritance of knowledge and understanding. Certain effects of being educated have utility and serve other ends. It would be a surprising thing if an educated person could do nothing better or could not do certain skills that might be employable and thus help to earn money for living. Unless education has some such demonstrable pay-off, it is a waste and not worthy of pursuit (Hamm, 1993: 44-54).

However, the fruits of the labour embarked upon at the school level is massive unemployment and marginalised people with less positive self-concept. City street corners and sheltered workshops are an impelling signal and a constant reminder that strategies must be employed for empowering people with visual disability through education. Furthermore, there is no provision made in the teacher training institutes for teachers to equip them with knowledge and skills required in the specialised education. The hands-on-experience training for African teachers fell short of redressing the imbalance in the education for people with visual impairment (Scott, 1982: 2).

Many professionals, parents and young people who passed through these schools overseas, felt they were too removed from the mainstream of education and were not preparing pupils adequately for adult life. It became clear that pupils' needs were not being met as well as they might be under the prevailing arrangements (Hegarty, 1981: 9).

Often the blind person, captive in his situation, finds himself subject to the authority of some sighted person, be it within the blindness system or in the world at large. The actions of the sighted person are made to appear ironical in the sense that, while he behaves in earnest, those under his authority perceive his actions in caricature. The misconceptions or dubious motives are frequently at the root of the difficulties experienced by visually impaired people. The good intentions of sighted people are all too often contradicted by their actions. To oppose these actions directly is of little avail (Rowland, 1985: 97/98).

There is no world of the blind. There is the world we all live in. The blind people have to come to terms with it. One has a moral responsibility to persuade others to make it a little easier for the visually impaired people to cope with that world and to deal with the realities they face in everyday life. What need to be done, is to make it possible for people with visual impairment to do a job, whatever it may be, on equal terms with their sighted colleagues (Blunkeft, 1993: 2).

The quest for equalising educational opportunities for people with visual impairment must have its genesis in the re-examination of the existing schools whether it is residential or mainstreaming. The success of the existing school catering for students with disability lies in meeting the educational needs of the students (Mittler, 1993: 9).

What must be done to meet the educational needs of the people with visual disability in the best and possible terms? What strategies should be employed to equalise educational opportunities for those with visual impairment? Will pedagogic intervention enhances personal development and so have equal education and equal opportunity? Will technology help equalise educational opportunities? Will the educators, in view of technology change their perception of the visually impaired students?

It remains momentous to know whether a strategy like a computer will not enhance the educational opportunities; thus enable the visually impaired to do mathematics and enhance their language skills and by that opening doors at the open labour market.

1.3 GLOSSARY



People with visual impairment are generally understood and alluded to from two perspectives, namely, a stereotypical perspective and theoreotypical perspective.

Stereotyping is a way in which one group views another by selecting a limited number of characteristics and attributing them to the other group as if they were typical of it. Such stereotyping, which may be positive as well as negative, occurs between racial groups, religious communities, and social classes. Any particular stereotype may have some basis in fact or none at all and may be adopted deliberately or unconsciously. It may

also be applied with such conviction that it even has persuasive force in influencing the manner in which the group so viewed perceives itself (cf. Lynch, 1986: 36; Rowland, 1985: 1/2).

Blind people, too, are subject to stereotyping. Most blind persons can call to mind some incident in which an uninformed stranger treated him as though he were helpless and pitiable, or, on the positive side, as if he were in possession of some remarkable faculty (Rowland, 1985: 2).

Theoretotyping means seeing people with visual impairment through the eyes of theories. These are the theories propounded by experts to interpret visual impairment. Such theories substantially do not rely upon empirical research directly, but generally draw upon current psychological, sociological and anthropological insights to analyse the meaning of blindness as a personal experience and cultural phenomenon (Rowland, 1985: 12/13).

The significance of such theories is by no means purely academic. Any theory in particular might be used to typify blind people in general, which is called "theoretotyping". This is the tentative statements of the theorist in the course of time that come to be rendered as the factual statements of the practitioner. Such speculative reasoning of the social scientist may be regarded as rigid dogma by one generation of workers and perpetuated through the generations as if it were established truth. This original school of thought will continue to exist even if it has been

surpassed by newer trends scientifically. The stultifying effect of such theories is especially evident when they provide the rationale for practical programmes of education. There is as well a tendency to elevate the proponents of such theories to the status of official spokesmen on visual impairment. Whatever they might have to say about visual impairment is accepted as authentic and authoritative (Rowland, 1985: 13/14).

In the face of these tendencies and practices it is hard to adopt a pragmatic approach to education or to implement a policy of diversified training. There have undoubtedly been cases where such theories have given positive direction to professional work, but, whatever the merits or demerits of particular theories may be, they always obscure the facts about visual impairment by imposing on them one interpretation exclusive of all others (Rowland, 1985: 12-14).

Visual impairment in this explanation is the knowledge acquired through association with people with visual impairment or theories written about them not as a lived-through experience. As the person with visual impairment seen, persuasively so he might be impelled to behave. Similarly, In other words the perception by teachers and parents decides the nature, course and strategies deemed practical and relevant for equalising educational opportunities for people with visual difficulty.

Previously acquired cultural definitions and learned

categorisations, may in turn make it difficult to accept alternate classifications and, when formulated as stereotypes, may cause antipathy, adverse behaviour and even violence (Lynch, 1986: 36).

The aspirations, potentials and limitations of people with visual disability must be examined to afford them optimal and meaningful participation in their education.

Vivid comprehension of the idea "visual impairment" is fundamental if practical, relevant and authentic strategies are to be employed in equalising educational opportunities for people with visual difficulty. It remains to be seen whether there will be improvement in the educational opportunities if appropriate strategies are adopted to redress the inequality and imbalances fraught in specialised education.

According to Hallan (1991:8) Special Education means specially designed instruction that meets the unusual needs of an exceptional child. Special material, teaching techniques, or equipment and facilities may be required.

By the term "visual impairment," it is meant both classes of people with residual eyesight generally called partially sighted and those whose visions are zero or at least can perceive light and generally called "blind." The term "visual impairment," is synonymous with visual disability and visual difficulty. These terms shall be used interchangeably throughout this study.

The term visual disability was adopted in the 60's by leaders in the fields of blindness and partial vision. This covers the continuum of visual impairments (Scholl, 1986: 17).

Brennan (1985: 30) coins the definition of special educational need as follows: " A special educational need exists when any disability affects learning to the extent that special access to the curriculum, special or modified curriculum, is necessary if the pupil is to be appropriately and effectively educated." The need may be at any point on a continuum from mild too severe; it may be permanent or a temporary phase in the pupil's development.

1.4 THE STATEMENT OF THE PROBLEM

The problem concerned with in this study is to determine whether the computer as an educational aid can equalise the educational opportunities for people with visual impairment. This is in the light of the prevalent unequal access to the educational opportunities for people with visual impairment, which does not afford equality with the sighted people. Visually impaired people constantly remain marginalised in terms of employment despite their having been educated. Further, the scope of subject-choice is so narrow that career options are frustratingly limited. By virtue of being visually impaired, a pupil has his future options inflexibly and unjustly predestined. This state of affairs, inevitably, yields to disadvantages, inequality, prejudice, stereotyping and theoreotyping.

1.5 THE AIM OF THE STUDY

The aim of this study is to investigate and determine the effect of a strategy like the computer in the equalisation of the educational opportunities for people with visual impairment. Furthermore, the study seeks to establish the effect of computer usage in subjects considered inaccessible to people with visual impairment. The attitude and perception of the educator toward both the learner and the role the assistive device plays in the education situation will be examined. The perception that the person with visual impairment has about his potentials will be studied. Ultimately, educational opportunities constitute the core of the research. In other words, the focus of this study will be on what must be done to fully and in the best possible terms meet the educational needs of persons with visual impairment. What strategies must be employed to equalise educational opportunities for visually impaired people?

1.6 THE METHOD OF THE RESEARCH

A literature study will form the basis of this research. The nature of visual impairment and the effect of it on the present educational opportunities and employment opportunities will be carefully scrutinised. Strategies to bring about the equalisation of educational opportunities will be looked at, in particular the use of the computer in the school setup. Already existing data on education for people with visual impairment will be examined for relevant information.

School teachers will be interviewed to determine their views, attitudes and perception of specialised education. Students from both schools for Whites and school for Blacks will be interviewed to determine their views, attitude and perception of both specialised education and education at the regular school. A group of Black students will be randomly selected for the experiment on the use of the computer for wordprocessing and mathematical operations.

1.7 THE PROGRAMME OF THE RESEARCH

* Chapter One presents the outline of the necessity of the research in the light of the background of the current specialised education for people with visual impairment in South Africa. Problems encountered at the school level and opportunities in the open labour market will be discussed. Then the problem is formulated and the aim of the research is stated. The method of research is then described.

* Chapter two will be the perusal of the existing literature to afford an intellectual grip on the education and the effect of the computer in the education of people with visual impairment.

* Chapter three will pay attention to the carrying out of the research project. The stages of the programme will be detailed.

* Chapter four will present the findings of the study.

* Chapter five will be the summary, recommendations and conclusion.



CHAPTER TWO

THE EDUCATION FOR THE VISUALLY IMPAIRED IN CONTEXT

2.1. INTRODUCTION

It is with amazement that one ponders over the phenomenal genesis of the education of people with visual impairment and how it has evolved through the years. This is depicted by the literature that is replete with appreciable and relentless efforts of men and women who toiled to make education a reality.

2.2 THE DEVELOPMENT OF SPECIAL EDUCATION

Special education for pupils with special needs is a relatively recent development in Great Britain, as elsewhere. Much of this development has centred on special schools separate from the regular school. Special education has tended for many years to be seen almost by definition as the preserve of special schools. Throughout the nineteenth century various special schools were founded first for pupils with sensory impairments. Early developments were sporadic, and originated from local initiatives rather than from legislation. Education in the school was the panacea. The concern was to relieve distress and facilitate employment rather than to educate.

The local education authorities succeeded the school boards in 1902.

Their task was to provide special schools. This led to the further development of a separate system (Hegarty, 1981: 8).

The physical and sensory impairment were determining factors. Learning difficulties were conceived in terms of mental deficiency. The impaired people were considered to be different from the rest of children. With this conviction, separate educational systems were developed (Hegarty, 1981: 8).

Special schools meanwhile were suffering from their isolation. Many professionals, parents and young people who passed through these schools, felt they were too removed from the mainstream of education and were not preparing pupils adequately for adult life. This was not nor could it be a universal criticism. Many special schools continue to equip young people for independent adult living in a wholly commendable way. It became clear that pupils' needs were not being met as well as they might be under the prevailing arrangements (Hegarty, 1981: 9).

Later, it was argued that special schools should be brought closer into line with ordinary schools. The special schools should be seen as helpful variation of the ordinary school.

The 1944 year saw the opening up of the possibility of integration. In cases where the impairment was not serious, education was provided for in any school (Hegarty, 1981: 9).

2.3. TRENDS IN THE EDUCATION FOR THE BLIND

The philosophical foundation for the education of the blind was laid by Diderot, physician to King Louis XV and a great Enlightenment philosopher. In 1749 he published the letter on the Blind for the use of those who have eyesight. This essay's contents were founded on Diderot's contacts with two of the prominent blind people, Nicholas Saunderson and Maria Theresia von Paradis. The competence of these two people convinced him that blind people could lead normal lives and that they could be intellectually competent (Scholl, 1986: 1).

2.3.1 EARLY SCHOOLING FOR THE BLIND

Diderot and his contemporaries, including Paine, Jefferson, and Franklin in the United States, advocated the needs, rights, value, and obligations of the individual. He extended his philosophy to embrace blind individuals (Scholl, 1986: 1).

The institution des Jeunes Aveugles was established in France in 1784 by Valentin Haüy. He devoted his time in educating blind children to read so that they could earn their living in more dignified ways. In his quest for promoting the educational course for the blind, Haüy attended a concert given by Maria Theresia von Paradis. There Haüy was impressed to learn about her medium of reading and writing using pin-pricked letters (Scholl, 1986: 1).

The first student, to attend was Francois Lesueur, who attended half the day and continued begging the other half. Eventually Haüy subsidized his education so that he could give up begging entirely. The institution's enrolment grew comprehensively (Scholl, 1986: 2).

Haüy believed that all students should study music and acquire vocational skills. He was complemented on his students' ability to read and write; to sing music; to carry out everyday activities. He focused on their achievement and competence, rather than pity for their being blind. Valentin Haüy, produced the first embossed type for touch reading between 1745 and 1822 (Scholl, 1986: 2).

Haüy established the first school for blind children, which became a model. Haüy accentuated reading and advanced the development of embossed print; he believed in the vocational potential of blind people and instituted vocational training at his school (Scholl, 1986: 1/2).

It was subsequent to the foundation of Haüy's institution that the first schools for blind children were opened in the United States. In 1829, Perkins School for the Blind was established. It opened its doors to students in Boston in July 1832, under the direction of Samuel Greatly Howe (Scholl, 1986: 2).

In 1932 American and British committees signed an agreement to adopt

Standard English Braille as the uniform type of reading and writing, a century after Louis Braille presented his code (Scholl, 1986: 4).

2.3.2 RESIDENTIAL SCHOOLS FOR THE BLIND

In the early nineteenth century it was the common trend for the affluent to send their children to residential schools. This served as a precursor for the establishment of residential schools for blind children in the United States (Scholl, 1986: 2).

The first state-aided school was established in 1837 in Ohio. This was a response to the view that children, including visually impaired and blind children, were entitled to a free, public education. However placement in residential schools was by preference or need of the students (Scholl, 1986: 2).

Residential school education for Black visually impaired children tended to follow the segregation or integration patterns of their various geographical areas. Prior the Emancipation Proclamation, it is uncertain whether any Black blind children were educated in the South, since education was extensively denied to their sighted fellowmen (Scholl, 1986: 2).

Generally the programs for these children were inferior to those for White children. This was due to the poor quality of equipment and educational materials that were often given by the departments for

White children. The dots in braille books were so worn down that they were illegible. Furthermore, Black teachers were barred from attending the limited number of segregated training facilities. They also could ill afford the cost of travelling to nonsegregated facilities in other parts of the country (Scholl, 1986: 3).

The first residential school in South-Africa was the Pioneer school. It was exclusively for Whites and a wide range of subjects were offered. Few years later, Athlone was established. This was the residential school and it accommodated Blacks although it was geared for the coloured community. This ideal of mixing different races was later abandoned and only coloureds were admitted.

The first school for the Blacks established by the roman Catholic church was Siloe catering exclusively for the various Sotho speaking students. It was followed by the establishment of Bosele, another school for Sotho speaking students. Vuleka, the first school for Zulu speaking students was established almost concurrently with Bosele.

Pioneer and Athlone were both catering for all the standards. Siloe was the only school for Blacks catering for all standards. Vuleka and Bosele went as far as accommodating standard six.

The first multi-ethnic school was Filadelfia established in 1985. This was the first high school for the Nguni speaking students.

However, it must be pointed out that Philadelphia accommodated also the physically impaired and the students with hearing impairment.

The type of education offered in these schools was almost the same lacking complexity, i.e., in terms of activities and limited choice of subjects. The Pioneer school was the only school that enjoyed a superior kind of education in so much as helping its students to go to London for Physiotherapy training. All other schools were precluded by the type of education. No matter how good the results were, without Mathematics and Physical Science, an iridescent dream in the non-White schools, further training lay in the never-coming future.

Throughout the nineteenth century residential schools were usually the sole resources for the education of the visually impaired children (Scholl, 1986: 3).

Hauy held that each blind child must be considered as an individual. He believed further that a visually impaired child must be educated according to his interests and potentials. The curriculum of the residential school should be in uniform with the public day schools. The emphasis should be on music and crafts so that blind students could be trained to take their places in the social and economic life of their communities (Scholl, 1986: 3).

Booth relates schooling experiences of a totally blind pupil at an

ordinary school. The significant difference experienced by the visually impaired student was that it was a school for seeing children and that his education rested solely on support service. It was expensive but was essential if the blind pupil were to succeed in their studies. The work often had to be prepared in two forms. The work was done on a braille machine for the blind pupil so that the pupil can read and correct it. The work was then transcribed into print for the teacher to mark (Booth, 1984: 40-45).

The other immense contribution to the advancement of education for blind children was made by Louis Braille in the early 1800's. The genesis of the embossed dot code and Braille's adaptation of it reflects the significance of Braille's contribution that is crucial and indispensable as a system of effective communication. Without reading and writing, the education of blind children would have remained as it had been in the epoch of the Middle Ages (Scholl, 1986: 4/5).

2.3.3 SCHOOLING FOR THE PARTIALLY SIGHTED

Dr. Bishop Harman in 1907 argued that children with low vision required special educational programs and that these children were not blind. They should not be in schools for the blind, but should be given an education adapted to their needs (Scholl, 1986: 7).

In 1908, a class, the first in the world devoted specifically to the

education of partially sighted children, was opened. The class, housed in a building on the playground of an elementary school, was called the "Myope School" to distinguish it from the school for blind children (Scholl, 1986: 7).

However, the pupils went to the elementary school in regular classes for oral and some other activities. A view was held that partially sighted children should not be completely segregated from sighted children. No reading nor writing using eyesight was allowed. Using residual vision was to further reduce it (cf. Gulliford, 1978: 34; Scholl, 1986: 6).

A shift was made in April 1913 where partially sighted pupils in Roxbury were inevitably segregated from sighted children. This class, called the "Defective eyeSight Class" was housed in a small, unused school building (Scholl, 1986: 7).

The second class started in September 1913, by Robert Irwin, director of the program for visually disabled children in Cleveland. This reflected a further drift from mainstream education. Due to the fact that blind and partially sighted students were placed in separate classes, each group was provided with materials suited to their needs (Scholl, 1986: 7).

The year 1963 brought about the relief. Consequent to research, residential and day schools began to allow low vision children to

use whatever size print they preferred. This served as the catalyst for opening doors for partially sighted children. Brightly coloured pictures were put on classroom walls; children were helped and encouraged to paint, to read print and to watch films. Attention was given to windows, to lighting, and to the position of desks. Partially sighted children ceased to be discouraged from holding their books close to their noses to see the print better. However, most of the teachers felt that unless they used special materials with visually impaired children, they were remiss in their duty. They thought somehow their roles as special teachers were superfluous (Gulliford, 1978: 34).

The first, one and only school for partially sighted in South-Africa, Prinshof, was established on 19 May 1967. This school was exclusively for Whites and the curriculum followed closely that of the mainstream education. It is a residential school and does not cater for the blind, i.e., those who use braille.

2.4. THE EDUCATOR OF THE VISUALLY IMPAIRED

Several teachers in the residential schools lacked teaching experience. Most of these teachers had only high school qualifications and some were students of the schools in which they were employed (Scholl, 1986: 7).

Educational authorities globally pinned their hope on in-service

training. The school principals and senior personnel were expected to train new staff in the daily teaching situation. Sometimes the newly appointed teachers were sent to other schools for the blind for observation. There they were to acquaint themselves with the education of visually impaired through practical training (Kapp, 1991: 366).

The first courses for teachers of blind children and of partially sighted children were offered in 1925 at the university (cf. Kapp, 1991: 366; Scholl, 1986: 7).

The certificates were awarded on completion of university-based pre-service or in-service courses and that the candidates were expected to display the ability to read and write braille. Successful completion of some formal courses was considered equivalent to teaching experience. Certification system was adopted in 1938 and the first awards were made in 1940 (Scholl, 1986: 7).

Some universities and other training institutions offer specialist courses which maybe followed on either a full-time or part-time basis while the candidate continues teaching (Kapp, 1991: 366).

It was only the desegregation laws and the arrival of American federal funding for teacher preparation that smiled on Black teachers. It opened opportunities for all qualified candidates to enrol in colleges of their choice (Scholl, 1986: 7).

2.5. MAINSTREAM EDUCATION AS THE STRATEGY FOR EQUALISATION

Mainstreaming education is an educational approach that emanated from the principles of normalization and integration. It gained momentum in the last two decades. As from that time, it was greeted with a positive response in most Western countries. Mainstream education entails providing for the impaired child in regular schools (Kapp, 1991: 71).

The concept of integration entails a process of making whole, of combining different elements into a unity. As used in special education, it refers to the education of pupils with special needs in ordinary schools. Integration provides a natural environment where these pupils are alongside their peers and are freed from the isolation that is characteristic of much special school placement (Hegarty, 1981: 10).

The concept is a complex and dynamic one. It has evolved from a simple opposition to placement in a special school to encompassing a variety of arrangements in ordinary schools. This diversity is commonly described in two ways: first, in terms of the nature of the association between the "special" group and the ordinary school; and secondly, in terms of organisational structure (Hegarty, 1981: 10).

Warnock, as cited by Hegarty (1981: 10/11) distinguishes three main forms of integration in terms of association: Vocational, social and

functional. Locational integration exists where special units or classes are set up in ordinary schools or where a special school and ordinary school share the same site. Social integration is where children attending a special class or unit eat, play and socialise with other children, and possibly share organised out-of-classroom activities with them. Functional integration is the fullest form of integration and is achieved when vocational and social integration lead to joint participation in educational activities. Here children with special needs join, part-time or full-time, the regular classes of the school and make a full contribution to the activity of the school.

This approach does not imply, however, that all handicapped children must be returned to the regular schools. Appropriate public education with the necessary supportive services should be provided for every impaired child. Such education should be based on every child's unique educational and teaching needs (Kapp, 1991: 71).

What is involved in integration programs are the rights of people with disabilities to participate in the activities of everyday life (Mittler, 1993: 54).

Integration depicts striking ambivalence for the visually impaired child. On the one hand, its content and quality should be commensurate, similar and comparable to that of the ordinary child. On the other hand, it should meet the special needs of a visually

impaired child so that he can optimally gain access through the school to the same areas of knowledge and the same skills, and acquire the same norms and healthy personality as those considered ideal for sighted children (Kapp, 1991: 366).

The proponents of mainstreaming argue that the residential school is the method of segregating the blind from the sighted children. This is analogous to cutting them off from society. This is the immense miscalculation that can ever be made. The public school is perceived as the place to educate a blind child associating him with the people with whom he will live when he leaves school. This meant placing children in the regular classes where specially provisions necessary to enable them to complete their work are made. Contacts and competition with sighted peers with whom they would live and work in the future was momentous and preferable to segregation during the school years (Scholl, 1986: 6).

The first attempt to assher in the era of mainstream education occurred in Scotland. In 1872 the Scottish Education Act included provisions for educating blind children among sighted children in public schools. This was the first legislation officially facilitating integrated education of blind pupils with their sighted peers (Scholl, 1986: 5).

In 1904, Curtis reported that teaching blind children in public schools had limitations. It would not be advisable for all children

but that the plan justifies strong consideration (cf. English, 1985: 49-54; Scholl, 1986: 5).

Curtis initiated a plan of a resource teacher or resource center. With this plan, a teacher would move from school to school giving advise to teachers in the ordinary school. Sometimes special teachers were employed to teach braille and typing. Students would spend most of their time in the regular classes (cf. Department of Education and Training, 1991:5/20; Gulliford, 1978: 35; Scholl, 1986: 5).

Functional integration, which is usually considered as authentic integration, involves children with special educational needs joining and learning in ordinary classes as full participants (Mittler, 1993: 55).



The idea of integration as a process is similar to the idea of integration being a means to an end. Though both ideas enable a more dynamic view of the process of normalisation, these views obscure the crucial question regarding the ends of integration (Mittler, 1993: 55).

It has been shown in Africa that mainstream education is a two-way process. It not only trains the blind child but, because it exists and functions in the midst of communities, it educates the local population about the visually impaired. Secondly it meets the

educational needs of the visually impaired people (Salisbury, 1974: 3-5).

Further, mainstream education offers company instead of physical isolation: the knowledge that one is wanted and is part and parcel of a community (Salisbury, 1974: 3-5).

In general, the issues are best dealt with in relation to the question of how to educate children with special educational needs in ordinary schools. Two principles prevail regarding integration as the strategy to equalise education of people with visual impairment: the principle of nonsegregation as opposed to integration based on the principle of a fully comprehensive education system (Mittler, 1993: 54).

A desegregationist position works from the existing special school sub-system and enquirers whether this sub-system can be attached to the main school system. Non-segregationism commences from the existing ordinary school system and asks whether this system can be extended and adapted to ward off the exclusion of children to the segregated system. Non-segregationists expect to be convinced why schools cannot be for all. The desegregationist position maintains that ordinary-school-based provision for children with special educational needs has more advantages than disadvantages compared to special schools (Mittler, 1993: 54).

The debate is about how equality can be achieved. Sometimes, to achieve equality, disadvantaged groups feel the need for different situations and a level of separation to develop their own strengths and identities (Mittler, 1993: 58).

Differences in the integration debate appear to be related to fundamental social value issues about the balance between individual choice and social equality. Underlying this balancing is whether primacy is given to the individual's (libertarian), perspective or to the social, collective (egalitarian), perspective (Mittler, 1993: 58).

Most of the recent criticisms of special schooling have been of the excessive focus on the area of the deficit. This was done at the expense of a broad, the more balanced common curriculum. This can accommodate additional goals and objectives that take cognisance of individual needs. Visual impairment, requiring the special curriculum elements of learning braille and mobility are the core learning goals (Mittler, 1993: 83).

The integration movement, which in its radical version implies the closing of special schools or their merging with ordinary schools, has ever been a bone of contention. When integration is criticized by professionals, it tends to be swept aside and ascribed to professional self-interest. However, when criticisms come from parents, then the debate assumes a different nature (Mittler, 1993:

56/57).

Certain learning contents are essential to the visually impaired child in the educative support he receives on the way to adulthood. To achieve this aim, the blind child is taught to acquire everyday skills with a view to personal independence and social integration (Kapp, 1991: 366).

What is of essence in the controversy of integration, is the perfected art of blending the diversities in terms of limitations with the commonalities in terms of equalisation of educational opportunities. It is an inevitable logical conclusion that the greater the degree of functional impairment, the greater the degree of modification or differentiation is needed in the common and flexible curriculum (Mittler, 1993: 83).

Regular schools had problems. Teachers did the best they could. This was not always good enough however. This was because they lacked the expertise or the possibility of giving individual attention or they did not have the commitment to special educational treatment. After all, it was the domain of the special school, which had the requisite staffing and expertise (Hegarty, 1981: 9).

2.6. THE COMPUTER AS THE TECHNOLOGICAL STRATEGY

The quest of conceptualizing the potential of the computer in

education and training has been the impetus in the involvement of Human Science Research Council. The committee was appointed in terms of the HSRC Education Research programme to conduct continued research into educational research. This has been consequent to the findings and recommendations contained in the HSRC Education Report: Provision of Education in the RSA. The specific task of this work committee was to investigate the possible use of the computer in education and training. |

Dr. Savoie (1981: 1-5) holds the view that vocational obstructions encountered by blind people in vocational opportunities lie in communication that is elemental for virtually every career. but the main media of communication is in print which is inaccessible to visually impaired people. In this way the visually impaired people are precluded from any job categories due to inherent requirements for high visual skill. However, most of the jobs oriented specifically to visual skills could probably be performed by a visually impaired person given the proper equipment.

A new surge of the spirit of independence has been resuscitated in people with impairment. This spirit has been nourished, comprehensively. The private sector has become aware that a great deal of people with impairment are capable of executing tasks as well as their able-bodied counterparts (Savoie, 1981: 1-5).

Optacon is a tactile reading machine for the blind - and it can

significantly enhance the employability of a blind person. The optacon allows users to read typewritten notes, Inter-office, most literature and correspondence without sighted assistance. This ability to work reliably, confidently, and independently, is often the difference between getting a job and not getting one. (Savoie, 1981: 2).

The "Speech+" as the encoding aid, entails The use of encoded output that makes the device easier to use and is reliable. The "Speech+" uses the microcomputer (Savoie, 1981: 2-5).

Braille can be stored in digital form on magnetic cassettes which provides compact storage. In order to read braille stored on the cassette, the visually impaired person uses a dynamic, 20-character braille display. This has controls allowing advancing through the text naturally or for random access. One cassette can hold about 400 pages of braille. Paperless Braille machine has a standard braille keyboard that allows the blind user to write information on the cassette (Savoie, 1981: 2-4).

By equalising their educational opportunities, dramatic and lifelong impact on the blind will be immensely enhanced. Their decisive and indispensable independence, and their employability will be ameliorated (Savoie, 1981: 4).

The potential of conceptualizing the computer as an educational aid

has been explored by the Research Center for the Education of the Visually impaired at the University of Birmingham. Consequent to this involvement, it was found that immediate feedback of results is available to the student, and difficulty levels can be modified to accommodate the potential of the learner. The teacher can utilise information stored in the computer to observe the learner's progress (Douglas, 1994: 96/97).

Furthermore, the computer can exploit output devices which can present information to visually impaired children in braille or speech. The benefit for partially sighted learners the advantage is that the learner can get close to the image without casting a shadow upon it. The light can be adapted through contrast and colour levels to suit individual children's needs (Douglas, 1994: 97). The computer can respond to a variety of input devices. These facilitate access to visually impaired learners. The keyboard might be appropriate for an able child who is word-processing a letter, while a switch might be appropriate for a child who is learning cause and effect. This potential can be realised by addressing strands of software development such as programs for stimulating basic visual and cognitive skills: translation programs converting between braille and text, access programs which provide access to talking word processors and programs to train in braille and typing skills (cf. Douglas, 1994: 97-98; Spencer, 1990: 3).

2.7 CONCLUSION

The arrival of micro-computers and its availability in institutions, has necessitated the development of software. Consequentially, this has augmented the range of vocational opportunities; thus evacuating the blind from the sheltered workshops into the open labour market: business office, the scientific laboratory and unlocking the university doors (cf. Douglas, 1994: 96; Vincent, 1982: 1).



CHAPTER THREE

THE COMPUTER AS EQUALISING STRATEGY - THE EXPERIMENT

3.1 INTRODUCTION

One strategy adopted by the African National Congress towards the equalization of educational opportunities for people with visual impairment, is mainstream or inclusion. This is an integrated, continuum-based progressive mainstreaming which attempts to offer a framework within which all children can achieve their potential catered for in regular schools. Specialized education is viewed on a continuum of needs of learners irrespective of the impairment. In this regard, provision of education is gotten to via needs (A.N.C. White PAPER on education, 1995: 10/11).

However, specialized education for children whose learning needs are appropriately met through specialized education will continue to exist. The issue here is on the role of specialized education in supporting entry into the mainstream for children who have achieved coping levels (A.N.C. White Paper on education, 1995: 10/11).

The children at the extreme end of the continuum are expected to be catered for in special schools. The degree of their disabilities is such that it is highly unlikely that they could benefit educationally elsewhere (A.N.C. White Paper on education, 1995:

10/11).

The model assumes a commitment to the maximum use of all material and resources. This is done to promote education and redress current imbalances in education (A.N.C. White Paper on education, 1995: 10/11).

3.2 THE SHORT-COMING IN THE PRESENT EDUCATION FOR THE BLACK VISUALLY IMPAIRED PEOPLE

Education is the vehicle through which a person is changed from what he is to what he ought to be. It is geared at initiating a person to the world of knowledge so that a person can take his place in community and lead a life worth living. However, the present education for people with visual impairment falls short of this decisive and crucial core educational objective (Haskins, 1979: 15).

The present subjects offered at the school level have a limiting factor. Consequently, a Black visually impaired remains unequal to his White fellow student from a school for Whites and his sighted fellow student from a regular school. Further, through prejudice, stereotyping and theoreotyping, his potential is held hostage.

This presents for a visually impaired student a double disadvantage. Firstly, it is in terms of equal educational opportunities at the school level and secondly, it is equal opportunities in terms of

both career options and job opportunities. However, the use of a computer for wordprocessing and Mathematical operations will be employed. This is done to determine whether the computer will not simplify optimal participation in the educational opportunities. Further, that Mathematics, which was deliberately excluded from the scope of subjects offered cannot be done. It is generally assumed in this study that the use of a computer in a classroom will improve the achievement level for spelling and mathematical operations.¹

It is imperative to determine first whether there are any shortcomings in the educational opportunities afforded the students. Further, it must be ascertain whether visual impairment does not limit the scope of their subject choice. Furthermore, it is essential to determine whether the subjects offered are by choice or whether the impairment hinders accessibility to a wide range of options regarding subject choices. It is an impelling thing to take cognizance of inevitable interwovenness between subject choices and employability.

3.3 THE RESEARCH DESIGN

To cover a wider spectrum of the research problem, an attempt was made in this study to go beyond the interview data. This was an endeavour to look for explanations of the educational potential of the Black visually impaired pupils in the special school. This is where the process of development occurs. Therefore, both

qualitative methods (such as interviews) and Quantitative methods (such as the experiment) were used to enhance the validity of the outcome of this research.

This study took educational inequality as its focal point. Consequently, it strove to come to grips with the dynamics of the process of education in the classroom between the teacher and the visually impaired learner. The role of the computer as the equalising strategy was adopted. Factors like optimal educational opportunities and maximum learning experience were scrutinised. The impact of the computer in the classroom situation was evaluated.

3.4 STAGES OF THE RESEARCH

This research comprised two phases. Phase one are the interviews of different groups. Phase two is the experiment.

PHASE ONE:

- * The instruments.
- * The subjects.
- * The procedures.

PHASE TWO:

- * The instruments.
- * The subjects.
- * The procedures.

In obtaining the required facts and information in this study, two different techniques for collecting data were used. First the qualitative research method for collecting information regarding the opinions, attitude and perception of both the students and teachers in two different special schools was used. Secondly, the quantitative research method was used to determine the effect of using the computers in classrooms for spelling and mathematical operations. The experiment covered a period of five weeks. The first week was used for the pretest. Three weeks were devoted to assistance to the experimental group. The last week was used for posttest.

3.4.1 PHASE ONE: INTERVIEWS

Some questions for the interview were thoroughly prepared. The fact that Black pupils were to be interviewed also, was taken cognisance of. Interviewees were told to answer all questions frankly and honestly. They were told that their views and opinions were essential. All questions were formulated so that all the interviewees felt free to respond.

All groups were enthusiastic and co-operative.

3.4.1.1 STAGE ONE: SUBJECTS

Four groups of subjects were interviewed. The first group was that of teachers at Pioneer School, the principal and the executive

director of the Institute of the Blind - all White - of which Pioneer is the component. The second group was that of White students at Pioneer school, who could express themselves well in English and were willing to be interviewed. The third group was that of teachers at Filadelfia school - Black and White. The fourth group comprised students at Filadelfia school - all Black.

3.4.1.2 STAGE TWO: INSTRUMENTS

Semi-structured interviews were conducted with both teachers and students at two different schools (Pioneer and Filadelfia).

3.4.1.3 STAGE THREE: PROCEDURES

Semi-structured interviews were conducted. Copies in print of questions were made available to the respondents - teachers - prior the interview with a letter requesting the interview. A tape-recorder was used for recording interviews. Furthermore, a braille copy for students was provided and again a tape-recorder used for recording the interviews. The students were told beforehand what the purpose of the interview was and how the interview would be held, as described above.

The pupils at Filadelfia were not told that they would be asked to participate in the experiment. The experiment was conducted a month later -two weeks before the end of August 1995.

3.4.2 PHASE TWO: THE EXPERIMENTAL DESIGN

Four sets of microcomputers were used. The dec-talk synthesizers were selected and connected to the computers. This was because of their good quality voices. A student would choose the preferred voice that sounded clearly. This had a great deal of advantage for Black pupils. The ability to hear the read text or message was crucial and decisive. The pupils had to be able to hear keys pressed as they worked.

Anxiety and excitement overwhelmed most of the pupils. Some of them have never seen a computer before, let alone hearing the foreign voice. However they took comfort in the fact that the researcher was visually impaired himself. This factor also enabled the researcher to correctly interpret their emotions in this regard. The fact that the researcher has been working with specialised computers for several years, help pupils settle much quicker. The pupils were allowed some time to "see" the physical structure of the equipment to ease their tension.

WordPerfect was chosen as a wordprocessor because it worked very well with the synthesizer. All messages were automatically read. This kept pupils informed every moment of the status of the computer. This was essential because there was immediate feedback. The pupils had effective control over their work. This motivated the pupils to venture into the unknown with the aid of the

researcher.

Spelling checking was not a bustle and hustle. The voice read all options and the pupils could make no mistake in choosing the unintended option. The synthesizer had three different variations for verifying the text, word or character. In other words, the pupils had optimal access to printed text just like the sighted pupils would have. This facility would advance the visually impaired pupils to the level of equal access with the sighted pupils.

The Attache program was chosen because of its reliability and validity. It followed the normal procedure and syntax for working out mathematical operations. It kept the pupils informed of the status of the computer. If the incorrect procedure was followed, it showed that it was an error. Pupils had to follow the procedures explained by the researcher to arrive at the correct answers.

The fact that all these activities were shown on the screen was fascinating. This means the sighted person could have worked along with the visually impaired pupil without any hassle. What appeared on the screen of the computer, is what the pupil gets through the synthesizer. This fact has tremendous educational implication for the advancement of meeting the needs of visually impaired people.

3.4.2.1 STAGE ONE: SUBJECTS

Ten subjects were available for experiment. The only eight subjects were randomly selected because the facilities could cater for only eight subjects. Then, a group of eight visually impaired Standard ten students was made available for the experiment. This group was then divided into two groups by means of random assignment to ward off preexisting differences. Four students formed group A as a control group the other four students, group B as experimental group.

3.4.2.2 STAGE TWO: INSTRUMENTS

Texts for spelling were made available. Brailers were provided for writing by both groups for the pretest. For posttest, group B received the computers with voice synthesizers, Attache - a computer program for Mathematics, designed for visually impaired and WordPerfect as a wordprocessor was made available. For both groups braille copies containing calculations were provided.

3.4.2.3 STAGE THREE: PROCEDURES

In order to test whether the use of a computer in a classroom for spelling and mathematical operations will yield better results, a pretest was done to allow for comparison. Thirty minutes were allocated for this test. The pretest to be done had two parts: a

text for transcription that was read orally and calculations on a braille copy and were to be done on the brailier. All subjects were seated in a classroom, each in his desk with a brailier and blank sheets. A text was read to them and they were to write it in braille and calculations to be done with brailier.

At the end of the session, all scripts and questions were collected. A period of three weeks was allowed to elapse. Group B received assistance that is the lesson on how to use wordprocessor checking the spelling and how to do Mathematics using Attache for the entire duration. The effects of these lessons were expected to reflect on the post-test.

WEEK-ONE

DAY ONE



- * The first session was used for general orientation and for introducing the computer to the pupils. This session served also as the means to acquaint the pupils with the voice of the synthesizer. They were taught how to control the rate, pitch, tone, volume and how to select the kind of voice preferred.

DAY TWO

- * During session-two, the pupils were taught how to turn the

computer on and load the wordprocessor. They were shown how to exit the program when they have finished working.

DAY THREE

- * The third session was used for instructing pupils on how to use the basic commands. This comprised, inter alia, writing text, deleting text, inserting text, saving text and retrieving text.

DAY FOUR

- * The fourth session was used for teaching pupils spell checking. At this stage, they were taught simultaneously how to control the speech for reading specific areas on the screen. Secondly, they were taught how to do the actual spell checking using the wordprocessor. In other words, the speech synthesizer must be used to translate messages and text from the wordprocessor into speech.

DAY FIVE

- * Session five was used for teaching pupils to check the codes in a document. They were shown how to delete the unwanted code.

WEEK-TWO

DAY SIX

- * The first session was used for revising all previous lessons.

DAY SEVEN

- * During the second session, pupils were introduced to the Attache program. They were taught how to enter expressions and how to read the response.

DAY EIGHT

- * The third session was used for instructing pupils on how to call the Attache program within the wordprocessor for mathematical operations.

DAY NINE

- * The fourth session was for mathematical exercises.

DAY TEN

- * Session five was used for revising the Attache commands and doing selected mathematical exercises.

WEEK-THREE

DAY ELEVEN

- * Session one was spent on how to achieve accuracy within reasonable time. This objective was attained by doing some exercises.

DAY TWELVE

- * Session two was used for remediation. The pupils who experienced some difficulties were given individual attention.

DAY THIRTEEN



- * Session three was used for revising the wordprocessor.

DAY FOURTEEN

- * Session four was used for revising the Attache program.

DAY FIFTEEN

- * Session five was used for consultation. Those pupils who needed assistance or clarification were attended to. This was

the last session of assistance to the experimental group.

At the end of three weeks, both groups assembled for a post-test. Group A as the control group still used brailers and group B as experimental group used computers for both the text and calculations. At the end of the session, braille copies were collected from group A, the control group and Group B, the experimental group saved their work on disks.

Data collected by means of interviews from both teachers and pupils was then tabulated and analysed. Data collected by means of experiment was tabulated and then analysed as outlined in the next chapter.

3.5 CONCLUSION



In special schools for visually impaired - predominantly Black - Mathematics is considered the impossibility and a computer a reality in the sighted world. Poor spelling is regarded as a common phenomenon plaguing visually impaired students. Standard seven - the academic level in South-Africa where subject choice is made - has become a dreaded stage. It has become imperative for school to bring about realisation in the students that subjects-choice signals the power of choice about the alternate options for the future not the open gate to sheltered workshops.

CHAPTER FOUR

THE FINDINGS OF THE RESEARCH

4.1 INTRODUCTION

In this chapter the outcome of all the stages of the research will be reviewed. The findings of the pretest scores of both groups, the control and the experimental group, will be compared with the posttest scores. The taped interviews, in respect of students' and the teachers' answers, will shed the light regarding the attitudes, views and perceptions towards the specialised education. The outcome of the experiment will be discussed.

First the analysis and the findings of the interviews conducted at two schools, namely, Pioneer school and Filadelfia school will be discussed. The analysis and findings of the interviews held with the teachers from these schools will follow. The pretest scores of both the control group and the experimental group will be the next discussion. Analysis and the findings of the posttest scores of both groups will be given last.

4.2 ANALYSIS AND FINDINGS

4.2.1 INTERVIEWS

4.2.1.1 PUPILS

ITEM ONE: MEDIUM OF READING AND WRITING

* What do you use for reading and writing in the classroom?

BRAILLE	TAPES	COMPUTER	PEN
100%	100%	25%	50%

According to the response, all pupils, in predominantly White school and predominantly Black school use braille for reading and writing. In this instance, braille is fundamental and indispensable as the means or medium of reading and writing because it allows them 100% accessibility to their work.

All pupils use typewriters for communication. However, in the school for Black, it is further used for transcribing classwork for the teacher to read and mark the work of his pupils. The occurrence of this phenomenon is foreign to the other school. This means 100% of Black visually impaired pupils are alienated from their classwork. A pen is used by White pupils largely for signature purposes.

The Standard ten pupil said that typing was not ideal medium especially when writing the examination. Errors could not be detected easily and thus they cannot be corrected. Sometimes one writes two pages only to be told that the machine has not been writing. It is frustrating, he said.

A tape-recorder is comprehensively used at the school predominantly for Blacks and there is no use of a computer in a classroom. Only 25% pupils use the computer in the school for Whites. In other words, the use of a computer in a classroom is not yet adopted by educators.

ITEM TWO: SUBJECT CHOICE

* Do you think your choice of subjects can lead to the career or job of your choice?

YES	NO
12.5%	87.5%

Only 12.5% feel that the scope of the choice of subjects is wide sufficiently to allow best subject choice based on the individual's potential and interest. Conversely 87.5% pupils find themselves inescapably compelled to do subjects not in their own potential and interest. This is a sufficient number warranting review of subject choice at the schools.

One student at Filadelfia told the researcher that the subjects they were taking were not of their choice. The scope is so frustratingly limited. It is like choosing between the devil and the deep blue sea. At the end of Standard ten, one will not be able to follow one's career.

A chasm between the present education and career, which is its ultimate goal is looming. Most of the pupils do not see their dreams come true in the light of the present education.

ITEM THREE: THE TYPE OF SCHOOL PREFERRED

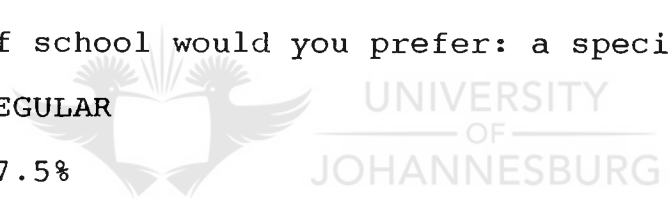
* What type of school would you prefer: a special or regular?

SPECIAL

REGULAR

62.5%

37.5%



Thirty-seven and a half percent pupils consider themselves capable of taking subjects offered at the regular school. Conversely, sixty-two and a half percent of the pupils do not see their way in subjects offered at the regular school. This may raise alarm in certain quarters.

Thirty-seven and a half percent are apparently so satisfied with the education they receive that they would choose the same education again. CONVERSE STATEMENT - 62.5% are so dissatisfied

with the education they receive that they would not choose the same education again. It is 37.5 percent Of the pupils that consider the status of their education to be of equal footing with those in the regular schools. Conversely, sixty-two and a half percent consider their education to be disadvantaging them.

A pupil from Pioneer said that the special school is suitable for the visually impaired pupils. Pupils are few. The teachers are qualified and they all know braille very well. Mathematics and Physical Science is taught. Braille and accessories are used without much trouble.

It was pointed out during the interviews that Black pupils have never been to any special school catering for White pupils. The same holds true with the White pupils. They do not have an inkling of what happens in the special schools for Blacks. The apartheid policies have segmented, separated and segregated the visually impaired pupils along the racial lines.

The technological advancements made in White schools and the expertise would help equalise the education. The subjects offered and resources at Pioneer school outshine those at the Black special schools. It is like having two countries. A first-world country: that of the Whites and a third-world country: that of the Blacks.

4.2.1.2 TEACHERS

ITEM ONE: ADEQUATE EDUCATIONAL OPPORTUNITIES

* Do you think the education offered at the special school is adequate and equal to that at the regular school?

YES	NO
50%	50%

All teachers interviewed have an experience of teaching at a regular school. This factor puts them in the position where they can compare the education offered at the regular school and that offered at the special school.

Most of the teachers think that they have a shortage of resources for the subjects they offer. All White teachers from a school for Whites, consider themselves having adequate resources. In other words, most of the Black teachers are unable to offer adequate educational opportunities to visually impaired pupils. What percentage of pupils lack adequate learning experiences, remains to be seen.

White teachers feel that the level of education offered at the special school is equal to that offered at the regular school. Teachers in the school for Blacks hold that the level of education is not equal to that in the regular school.

Fifty percent of teachers argue that education offered at the special school is equal to that offered at the regular school. Conversely, 50% yearn for better education and better educational opportunities to be afforded visually impaired pupils.

White teachers think it is possible for visually impaired pupils to attend at the regular school and take subject offered there. This, however is dependent on condition that some kind of modification in the curriculum is done to adapt to people with special needs. It is the Black teachers who believe that it is not feasible for visually impaired pupils to attend at the regular school despite modifications.

White teachers in the White school think that the subjects they offer can lead to various careers. It is only 25% in the same school that feel differently. Seventy-five percent of Black teachers hold that subjects offered do not lead to various career options. Only 25% feel that subjects offered can result in career options.

One Black teacher at Philadelphia told the researcher that they could not find a way of visiting other special schools. She said that she does not even know the subjects offered at Pioneer school. Let alone the equipment, she said. The Black pupils never had the opportunity of discussing with their fellow White pupils matters of common interest. They are so polarised that it

is inconceivable that they could come together, she maintained.

ITEM TWO: THE TYPE OF SCHOOL PREFERRED

* If you were to choose, would you prefer a special school to a regular school?

SPECIAL	REGULAR
100%	0.0%

All teachers say that a special school is a wonderful place to work at. If given a chance to choose again, they would choose to work at a special school.

Teachers are in unison regarding specialised training as a precondition for assuming employment at a school catering for visually impaired. They hold that it is impossible to teach a visually impaired pupil in the same manner as a sighted one. Additional aids, equipment, material, creativity, dedication, empathy and a great deal of other activities are required, - a factor that makes it to be a special school.

Teachers believe that the prospects for personal growth are not excellent but they can equip a pupil with adequate learning experience. However, the same educational opportunities do not advantage the pupils in terms of employment or career options.

Maturity, personal growth and development surely can be achieved. The issue is a mature adult who cannot be employed as the result of his education. This is the imbalance in education that must be redressed, more so in the light of major educational reform initiatives.

4.2.2 THE EXPERIMENT

The specialised education fell short of equipping visually impaired people with employable skills. The Black pupils were further disadvantaged because of apartheid policies. Resources and inkling into the potential of visually impaired pupils became the vehement academic impediment. Visually impaired pupils missed their education. Subjects taken landed them in the open streets or sheltered workshop.



In the light of technological development, the computer was considered appropriate to sever as equalising strategy in the education. As indicated in chapter three, it worked like magic. At first pupils battled with the foreign voice, accent and the computer commands.

As it was anticipated in this study, as indicated in chapter one, the performance was remarkable as discussed below in this chapter.

4.2.2.1 PRETEST SCORES

CONTROL GROUP

SPELLING	MATHEMATICS
58%	20%
60%	40%
63%	40%
53%	20%

EXPERIMENTAL GROUP

SPELLING	MATHS
65%	20%
50%	20%
61%	20%
60%	40%



4.2.2.2 THE HYPOTHESIS

Ho: The achievement level of visually impaired students using the computers in a classroom for spelling and Mathematics is not different from the achievement level of the visually impaired students using brailers for spelling and Mathematics.

Hi: The achievement level of visually impaired students using the

computers in a classroom for spelling and Mathematics is higher than the achievement level of the visually impaired students using braille for spelling and Mathematics.

4.2.2.3 TESTING THE HYPOTHESIS

Two independent groups were used and the data is of ordinal, therefore the Mann Whitney U-test was used to test the hypothesis.

4.2.2.4 INTERPRETATION OF DATA

It must be pointed out that every statistical statement conceals a second statistical statement that is its converse. With this information that may be equally significant and vital in achieving the intellectual grip on the phenomenon is de-emphasized.

In this instance, the spelling seems good; However, conversely spelling errors make up 40%. Statistically 40% is masked by statistics. This formulation draws attention to an alarming level of spelling errors whereas the original statement has the opposite effect.

The knowledge of Mathematics does not exceed 40%. Only three pupils out of eight achieved 40%. In other words, all subjects lack between 60% and 80% of mathematical knowledge. This means

one form of knowledge - mathematical knowledge - was not acquired during the process of education: which was to let pupils acquire all forms of knowledge in depth and breadth.

The pretest session seemed an awful experience. Most of the pupils would hesitantly move back and forth between their brailled texts and Perkins machines. Absolute silence, for some moments would prevail. The researcher would move between the desks to make pupils aware of his presence in case they needed any clarification. The end of the session brought about a feeling of relief in the pupils.

4.2.2.5 POST-TEST SCORES

The text and mathematical operations were rearranged so that the pupils would not easily remember their previous responses. The contents, however, remained the same to be equivalent and valid for comparison. The computers were swapped around and the pupils were randomly seated in the desks.

CONTROL GROUP

SPELLING	MATHEMATICS
61%	20%
60%	35%
55%	45%

53%

25%

EXPERIMENTAL GROUP

SPELLING	MATHS
----------	-------

100%	100%
------	------

100%	100%
------	------

100%	100%
------	------

100%	100%
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The control group does not show any significant improvement either in Mathematics or spelling. Their spelling scores were slightly changed just as the mathematical operations. The experimental group shows significant improvement. They showed tremendous enthusiasm and enormous interest in their work. This lively and jovial mood characterised all the computer sessions.

One pupil told the researcher that he did not think that he was able to do mathematics. He said he was told that visually impaired people would never be able to do mathematics. Now, he must review his options for the next year.

Due to the fact that this crash course fascinated the pupils, a plea was made by the control group to attend subsequent sessions which do not have any bearing on this study. This was the wonderful experience they have been lacking, they said.

4.3 CONCLUSION

In the light of these results, it can be safely concluded that Black pupils can do Mathematics when aided with a computer that uses a voice synthesizer. The traditional mythological "truth" does not hold true anymore. Poor spelling can no longer be a concern. It has been revealed beyond any doubt that visually impaired pupils can tremendously improve on their spelling. !

It remains a mammoth task that the educators of visually impaired constantly adopt the enquiring mind. This will help enhance the educational opportunities so that their education can be instrumental in bringing about a life worth living - a life of human dignity. Impairment ought not become a disability in education that is supposed to make him a better and developed person.

CHAPTER FIVE

SUMMARY, RECOMMENDATIONS AND CONCLUSION

5.1 THE OVERVIEW OF THE RESEARCH STUDY

This study investigated the education for people with visual impairment. Consideration was given to one alternate strategy in equalising the educational opportunities in South-Africa, namely the use of a computer. The study analysed the specialised education and in particular a special school and its efficiency in meeting the needs of a visually impaired student.

Most of the people with visual impairment are by virtue of their disability educationally marginalised. The act of initiating them into the world of the unknown seems less sufficient. schooling per se does not seem to yield the acquisition of quality education indispensable for career and employment options. The effects of being educated have utility and serve other ends. It would be a surprising thing if an educated person could do nothing better or could not perform certain skills that might be employable and thus help to earn money for living. Unless education has some such demonstrable pay-off, it is a waste and not worthy of pursuit.

This study took educational inequality as its focal point since it

is a problem plaguing the education of the visually impaired people. As a result it strove to come to grips with the dynamics of the process of education in the classroom between the teacher and the visually impaired learner. The computer as the means to enable visually impaired pupils take subjects traditionally regarded impracticable, was the core of the research project. Further, the computer was used to enable pupils take Mathematics as well as gain control over their print-formwork in terms of format and spelling.

To cover a wider spectrum of the research problem, an attempt was made in this study to go beyond the interview data. This was an endeavour to look for explanations of the educational potential of the Black visually impaired pupils in the special school. This is where the process of development occurs. Therefore, both qualitative methods (such as interviews) and quantitative methods (such as the experiment) were used to enhance the validity of the outcome of this research.

Four groups of subjects were interviewed. The first group was that of teachers at Pioneer School, the principal and the executive director of the Institute for the Blind - all White. The second group was that of White students at Pioneer school. The third group was that of teachers at Filadelfia school - Black and White. The fourth group comprised students at Filadelfia school - all Black.

Ten subjects were available for experiment. The only eight subjects

were randomly selected because the facilities could cater for only eight subjects. Then, a group of eight visually impaired Standard Ten students was made available for the experiment.

The literature was perused to uncover the genesis of the education of people with visual impairment and how it has evolved through the mystifying years. Through literature, an in-depth study of the specialised education since 1785 revealed that a continued process of major quest initiatives was embarked upon. The remarkable achievement was the establishment of braille that is the medium of reading and writing used by visually impaired people. This success was followed by the introduction, in the late 1980's, of computers in schools for visually impaired in Europe. Further, it was revealed by this study how Bantu Education Act disadvantaged special schools as well.

The analysis of data and the findings of it revealed beyond any doubt that Black visually impaired pupils can do Mathematics and can improve their spelling as well. This serves to equalise the educational opportunities afforded them at the school level and helps the acquisition of another form of knowledge that enhances the instrumentality of education. It was a myth relayed that, particularly Black pupils cannot do Mathematics. The absence of Mathematics or the narrow scope of the subject choice at special schools for Blacks, particularly at the secondary level disadvantages some visually impaired pupils.

In view of the limitations of the study, one cannot absolutise the findings: The fact that the experiment was carried out on only one school out of three. However, the findings of this study remain significant in that they shed light in the potential endowed on visually impaired people in terms of development.

A priority area identified by the teachers involved in the research project as a major "deficit," is the unequal opportunities in both education and employment. An important aspect revealed in the interviews is the view that pupils prefer regular schools encompassing curriculum modifications. Teachers, however, prefer special schools.

The nitty-gritty of the matter is that teachers consider subjects offered at special schools to fall short of resulting into employment or career options for their pupils. This state of affairs is so crucial and decisive that it means a difference between getting a job and not getting one.

The visually impaired child unavailingly attempts to become educated by mastering subjects that are deliberately chosen because they lack complexity. This is done in spite of their lack of intrinsic instrumental use. Prejudice, stereotyping and theoreotyping count for these shortcomings.

In general, visually impaired pupils show enormous dissatisfaction with subject choice and the fact that their education does not result in either career of their choice or personally fulfilling employment.

It does not seem adequate to provide students with visual impairment just the same education as their able-bodied peers. Additional strategies and approaches as required additional provision must be embarked upon so that their individual needs can be met. In this regard, integration may be considered appropriate. These may include extra basic skills, typing, orientation and mobility and computer skills, with support service as the cornerstone.

As corroborated by this study, it remains comprehensively necessary to substantiate that the blind is capable of intellectual development. The untapped potential and education of every child must eventuate in the acquisition of knowledge and skills.

In RSA special schools have been established to cater for visually impaired children. Many of these children are classified as blind and have been taught using comprehensively braille as the reading and writing medium. Partially sighted children are no exception. The partially sighted are seldom classified as such to use the residual eyesight by using print as the medium of reading and writing. The base of their success in education depends on the fact of effective classroom management coupled with strategies intended

to benefit both groups in one classroom

The integrated education should integrate not merely in terms of the curriculum or of different groups of children learning alongside one another.

Sighted people ought to understand the potential and the difficulties of blind children. They should treat them as friends and colleagues: not as something that is either strange or miraculous. It must also be ensured that the widest possible range of information is made available about relevant changes in technology.

Whether blindness is a handicap or an inconvenience will depend on the educational opportunities. If there is no provision backup, support and equipment, and no understanding, then something that could be coped with, becomes a potential disaster.

If people are denied the education and training they need, they are denied the possibility of employment. Most important of all, they are denied the opportunities for personal development. About all this something can be done, and the fact that it is not always done is what is needed to be addressed now.

It would be naive to assert that this study is the absolute answer to the problem in the education of the visual impaired. The horizon

has been widened and broadened. Through acquired knowledge and skills, more researchers ought to perpetuate the quest to alleviate a burden that has been plaguing the education for people with visual impairment.

White pupils showed keen interest and immense curiosity during the briefing session, i.e., the session where the researcher explained the purpose and the procedure of the research. The fact that the researcher was also visually impaired and of another race fascinated them. The briefing session became interesting and informative moments. The researcher emerged from the session with the vivid picture of how much polarisation through racial policies visually impaired people have been disadvantaged.

The experience gained at the Pioneer school and the knowledge acquired at Filadelfia school was invaluable. It is indicative of the need to remove prejudice, stereotyping, theoreotyping and racial barriers built around the visually impaired people. This is a minority group, but it comprises the citizens of South-Africa like any able-bodied.

Carrying out this study has not been void of limitations. Facilities and finances have been the limiting factors in terms of a number of participants. It is anticipated that the divested misconceptions achieved by this study will serve as a safe and firm base to venture into the future. The success of this quest must be

harnessed and be taken a step further in an attempt to redress the imbalances in the educational opportunities for people with visual impairment.

5.2 RECOMMENDATIONS

The profundity and perusal in this study have brought it to surface that a rigorous, relentlessness and the intense search for strategies must be embarked upon. This will make education to remain accessible, worthwhile and instrumental.

* The elemental of good old education still hold true. It is serious indictment that a visually impaired pupil must type his classwork. By this, a visually impaired pupil is alienated from his classwork. He does not benefit from the remarks pen-written on his typed sheet. A pupil is immensely disadvantaged in terms of remediation and preparation for examinations. If a sighted pupil writes the examination by means that afford his access and control over his work, why refuse the same opportunity to the visually impaired pupil?

* In the present climate of political change, education can play a positive and constructive role. It is imperative for South Africa to adopt new approaches, and strategies to education. The apartheid policies have polarized the special school so that schools for Whites were a first-world and Black schools a

third-world. This phenomenon has resulted in prejudice, theoreotyping and stereotyping that Black pupils cannot do Mathematics, Physical Science and Computer Science. This myth must be dispelled on all fronts and Mathematics, Physical Science and Computer Science must be introduced in the schools catering for visually impaired pupils.

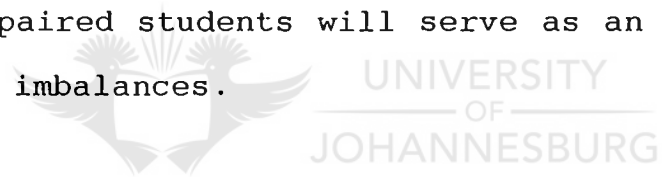
* The enthusiasm that characterised the computer sessions signifies a call for pedagogic intervention. The positive attitude towards venturing into the unknown: the world of the computers must be taken to educational fruition. All this must be done for the improvement and progress of the visually impaired persons.

* Placement of visually impaired students in the regular school encompassing integration must be given high consideration. This is because most visually impaired students need to develop alongside their sighted peers.

* It is imperative for the proponents of integration to take cognisance of the fact that curriculum modification is essential. It is vital that a two-pronged educational objective be attained. On one side, the visually impaired pupil must acquire the same education offered to his fellow sighted pupil. On the other side, a visually impaired pupil must acquire special skills, for example, mobility and

orientation skills. These special skills are indispensable for the independence and development of a visually impaired person.

- * Integration is an instrument in attempting to assist the blind children in South-Africa. The few residential schools cannot solve the problem. For most of these children it is a question of some education or none at all. Integration can offer them a chance in life. Simultaneously it educates the community. It operates at proximately one-tenth of the normal cost of educating a blind child in a specialised education institution.
- * The success of optimal participation in the education by visually impaired students will serve as an impetus that can redress the imbalances.
- * Technically oriented subjects must be introduced. This is building a bridge between education and employment. This type of education equips visually impaired students with employable skills, thus enhancing their employment opportunities.
- * Visual impairment should not be a negative decisive factor impeding visually impaired students from the acquisition of a particular skill. Impairment rather denotes specific needs that require strategies to be met in the promotion of sound education.



- * Braille remains the primary reading and writing medium and thus knowledge of braille is essential for the educators of the visually impaired students. The computer as secondary aid for facilitating optimal participation of students in their education must be profoundly considered. It is a tool for further education and employment opportunities.

- * It has become impelling to make a move towards the recognition of the other group of partially sighted students. The approach and strategies in their education should be differentiated from those of the blind. This will optimize their participation in the educational opportunities.

- * People with visual impairment are confronted with the problem that experiments always portray them to be the poorer performers. This eventuates in a cumulative effect in building prejudice, stereotyping, theoreotyping and a general a negative image of visual impairment. This adversely shapes the attitudes of those involved with the blind who are continually being subjected to this kind of information. A change is indispensable in method and approaches. Experiments must be done according to criteria dictated by visual impairment and not by sight. Often there exists; the guess that whatever has been found is promptly attributable to visual impairment. The conviction that visual impairment is the cause of all ills, obscures all other factors.

* A school catering for visually impaired children has a task to fulfil in the community. It must educate the students with visual impairment of the country to be able to meet the demand and challenges created by technological changes in life. This includes leading ordinary lives, learning in natural environments, growing into adults who have a range of options for their future.

5.3 CONCLUSION

If education aspires to teach people with visual impairment an adoration of the material success of cultural heritage, the methods and concepts of education must be reviewed. This will teach the visually impaired experience and skills instead of words and the emulated attitudes of the seeing. If this cannot happen, the blind must be left alone to uncover methods of expanding their own world of knowledge rooted in the experiential life. If the canon used to measure the performance of the visually impaired person, the norm being to be like a sighted person, axiomatically, findings must be negative and to the detriment of visually impaired people.

A child with visual impairment, like any other sighted child is endowed with potential: untapped power, dominant ability, hidden strength, unreleased energy and trapped success, which must be changed from what he is to what he ought to be. This proposition should serve as an impetus that propels educators to engage and

confront the visually impaired pupils with Mathematics, Physical Science, Music, Computer Science and many more.

Arguments for or against mainstreaming are the bones of contention. However, the flesh and blood of education for people with visual impairment are acquisition of all forms of knowledge in depth and breadth that characterize the educated person.

If a computer as a technological strategy proves to be the magic that equalizes the educational opportunities, then for the educators to do justice to education of people with visual impairment, computers are the core of education.



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