

Optimal demographic information for policy development in the South African education system

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After ten years of a democratic education system in South Africa, the demographic realities should be better understood in educational planning. The fragmented nature of the pre-democratic education system has led to undesirable perceptions about quality education and has subsequently influenced the demographic imperatives present in the South African school system of today. Further investigation is needed to understand the complexities of learner numbers and enhanced consideration of the components and elements of the concept of demography in educational planning is necessary.

Keywords: demography; determinant; educational planning; education system; educational policies; post provision; quartiles

Introductory remarks

Education system planners constantly have to deal with external determinants which present them with radical challenges. Because demography, as one such external determinant, is always changing, a variety of mechanisms are needed to deal with it. The South African education system is currently faced with many challenges with regard to dealing with demography and formulating an efficient policy based on it. The demographic dynamics in South Africa are characterised by tendencies such as the following:

- the drastic increase in learner numbers in urban areas,
- the migration of learners from their own residential areas to schools which are regarded as better than those in their own environment,
- the increased demand for parallel-medium schools,
- the depopulation of rural areas by both learners and educators,
- the alarming impact of HIV/AIDS on the education system,
- the increased demand of schools for appropriate educators,
- the shortage of mathematics and science teachers, and
- the general shortage of educators delivered by tertiary institutions.

Therefore, insight into the impact of demography on the education system must be regarded as a priority, to enable successful and adequate education system planning (at macro, meso and micro level). Demography in the education system not only involves numbers; there are many other factors which need to be taken into account so that proactive planning for the South African education system may be done. Government officials, education administrators and educators need insight into the nature of demography in order to adopt the correct approach towards the education system. Crisis management regarding demographic events in the education system should be replaced with a comprehensive new insight into demography, so as to facilitate extensive and insightful proactive education planning.

Description of the problem and method of investigation

Policy makers do not pay sufficient attention to demography in official documents. For instance

the Employment of Educators Act (No. 76 of 1988), which entails an employment distribution model, refers to eleven factors which must be kept in mind (by the provincial departments of education) for calculating the number of posts. These include the maximum ideal class size, period load of educators, the need to promote a certain learning area, the size of the school, the number of grades, etc. Two factors that underline the current tendencies in the demography of South Africa are the significant increase in learner numbers in certain areas and the relatively poor economic background of learners, which are changing from year to year and which are threatening to become a crisis. However, these factors are discussed insufficiently, or not at all, under the headings of the above-named factors.

Richard (1981:275) describes the influence of demography on the education system as follows:

Demography has obviously an immediate influence on the development of national economies, on the labour market and on the whole social system. Demographic patterns also have important implications for the development of educational systems, calling for considerable adjustment by those involved in policy-making, especially as regards the allocation of financial resources and the recruitment of teaching personnel.

This statement inevitably begs the question: How can optimal knowledge and insight into demography result in thorough and insightful education system planning and effective policy implementation?

Research method

In order to answer the above question, a conceptual framework is constructed. Thereafter, different facets of demography are addressed, particularly as they manifest in South Africa. Next, a brief overview is given of literature on the impact of demography on education system planning. Also a brief report is given on the empirical investigation, which was both qualitative probing and contextual in nature. By involving school principals or vice-principals in the investigation, it was attempted to determine how staff and management teams of schools experienced the way in which demography was handled in education. The investigation was also contextual in nature, because the experiences of a limited number of 20 schools in the Southern Region of the North West Province were investigated in-depth. Grades 1 to 7 in this region are served by 230 primary, 35 intermediary (77% of the total of 341 schools in the region) and 18 combined schools (North West Department of Education, 2004); therefore 15 primary and 5 secondary schools were chosen for the investigation, from those schools who had indicated that they would be willing to participate in the research during the period of the investigation and that they would be willing to make statistics available on their school population. Data were collected from school principals and vice-principals (where principals were not available) by means of structured interviews. The dimensions of the interviews focused on four aspects, namely, the demographic fluctuations to which schools are subjected, the appropriateness of the post provision model, the financial support model of schools and the guidance given to schools by the Department of Education regarding demographic challenges. The protocols of the interviews were transcribed and analysed so as to obtain a comprehensive picture of the experiences of these education managers. To increase the validity and reliability of the data, the protocols were coded to present a true reflection of reality. Through this qualitative method it was attempted to determine the insights into the handling of demography at the level of the school teacher. Knowledge of what is experienced at this level in schools is essential for

education system planners in respect of the planning of the entire education system, because the components and elements of the education system mutually influence one another.

Conceptual framework and overview of policy

Steyn and Wolhuter (2000:3) describe an education system as a structure or framework for effective education which provides in the education needs of the target group. An education system may also be regarded as the outcome of managing a set of education determinants. If these determinants are properly acknowledged, the education system should function more efficiently. Demography is one such determinant, and refers to the number, distribution and migration of the learner target group (Steyn *et al.*, 2002:142). Therefore, the manner in which demography manifests in a specific education system is decisive for how the education provider will act. If the view of demography in Mostert *et al.* (1998:1) is adopted (see Figure 1), the need for improved planning in relation to demography in the education system cannot be rejected.

POPULATION SIZE	POPULATION COMPOSITION		POPULATION CHANGE
		Marital status	
Absolute size		Education level	Mortality
Density	Gender	Career	Fertility
Relative size		Income	Migration
		Religion	
	Age	Language	
		Ethnic relation	
AT GIVEN POINT IN TIME			AT GIVEN POINT IN TIME

Figure 1 Schematic representation of demography (Mostert *et al.*, 1998:1-2)

Figure 1 indicates that demography cannot be viewed purely in terms of numbers. The three components which make up demography are in turn composed of a range of elements, each with its own implications for the education provider (Department of Education). All these components and elements manifest in a variety of ways in the target group and cause differentiated problems in schools.

Provision is made for addressing demography in the South African education system, through policies such as White Paper 1 (1995) Part 4, Chapter 11 "Budget Reform and Funding Requirements of the Education System", The South African Schools Act (1996), Norms and Standards for School Funding (1999), of which the principal goal is to establish a uniform system for the organisation, management and funding of schools (responsibilities of all role players at school level and in the provincial and national government are stipulated) and the

Amended Regulations for the Distribution of Educator Posts for Schools in a Provincial Department of Education (Government Gazette, 15 November 2002).

Whereas White Paper 1 (1995) was primarily a summary of the objectives for the new democratic education system at the advent of democracy in 1994, Norms and Standards for School Funding (1999) is focused on the funding of schools, and the Employment of Educators Act (76 of 1998) is concerned with the distribution of education posts in provincial departments of education, as well as the formula for allocating posts. These policy documents are in line with the current transforming and consolidating position of the South African education system, and take into account the institutional mismanagement of funding and distribution of resources by the previous dispensation. The policies are also in line with the ideal of equal quality education, but they have certain shortcomings in terms of the education practice. As mentioned in the description of the problem above, the amendment (Government Gazette, 2002) of the Employment of Educators Act (76 of 1998), which entails a post distribution model, for example, does not sufficiently address the demographic realities of the country.

Background of the consideration of demography in the South African education system

It would be short-sighted to view the current demographic demands of education outside the context of the previous (pre-democratic) South African education system. The artificial imbalance, which marked the South African education system in the past, is one of the determining factors which contributed towards the current complexities of demography as a determinant of the South African education system. For example, there was an unequal distribution of resources, and that has had an impact on the new education system since 1994. Many of the current demographic problems in the education system may be traced indirectly and sometimes directly to the unequal (primarily in terms of financing and resources), race-based management of demography and the consequent perceptions among the South African public about discrimination and injustice (Lion, 2003). The following two extracts from literature show how deep these inequalities went, as the discrimination was practised over decades. It puts the above conclusion in the context of how long a part of the target group was subjected to financial discrimination in the South African education system:

Since the number of pupils in African schools increased by 91% in the decade after the introduction of Bantu education, while the amount of financial means available increased only by 36%, a steady decline in the per capita expenditure on African pupils has been taking place. Statistics supplied by the Secretary for Bantu Education indicate that whereas per capita expenditure on African pupils was R17.08 in 1953–1954, it had declined to R12.46 in 1960–1961. The latest year for which comparable figures for other racial groups were available for the UNESCO Report on Apartheid was 1953 when per capita expenditure was R127.84 for European pupils and R40.43 for Coloured. The estimated education expenditures for the financial year 1966–1967 were: Bantu R27,156,500; "Coloured", R32,383,350; European, R168,000,000 (United Nations, 1968).

There has been no increase over the years in the proportion of African children going to secondary schools. The figure of 3.43% of school-going African children at secondary school in 1965 compares with 3.4% in 1953. One of the obvious reasons for such a low figure of secondary school enrolment is the very limited number of secondary schools available for African children. Another reason may be found in the following excerpt from

the UNESCO Report on Apartheid:

For the individual African, the cost of maintaining a child in secondary school must affect the parental decision as to whether or not the child proceeds to secondary school. The situation is unlikely to get better with time; on the contrary, if the Government grant remains pegged at the present level, an expanding school population will make education at all levels increasingly expensive for the African population. The low per capita income of Africans highlights the economic difficulties with which they are faced if they are to develop an efficient educational system (United Nations, 1968).

The events of the past, as illustrated in the above examples, undoubtedly had far-reaching implications for the South African education system, which in turn influenced the adequate development in terms of performance among the disadvantaged portion of the system. The above examples also illustrate the broader discriminating policies which characterised the South African society before 1994, and which prompted an influx to better quality schools after 1994, as manifested in the large-scale migration of learners. The direct or indirect results of this unequal handling of demography (target group) in the pre-democratic system have manifested since 1994, primarily because of the perception among residents of Soweto, for example, that previously advantaged schools offer better education. This perception is illustrated by the phenomenon that there were at least four schools in Soweto which did not open their doors at the beginning of 2004 due to insufficient enrolment, whilst hundreds of learners tried unsuccessfully to enrol in the Chris Botha Senior Secondary School in Bosmont (Van Eeden *et al.*, 2004:8). Colditz (in Van Eeden *et al.*, 2004:8) points out that as soon as an Afrikaans-medium school registers English learners, the school is obliged to appoint additional staff members. More teachers are necessary to present subjects in different languages and more administrative staff members are required to deal with the administration.

In the past few years there has been a tendency of migration from other provinces, particularly from the Eastern Cape to the Western Cape, as well as from rural to urban areas, but it is impossible to predict which schools will be affected (Drotsky, 2004). Statistics South Africa's 2004 publication provides statistics which give an indication of the extent of the migration patterns.

Kronenberg (as quoted by Van Eeden, 2004:8) describes migration from rural areas as a serious problem, particularly because people only decide during the Christmas holidays to send their children to family members in urban areas, in the hope that they will have access to better education and opportunities there. These children primarily end up in township schools. The problem is that with the so-called poverty index, the affected school is viewed in the same light as a school like Waterkloof High School, with no consideration for the fact that approximately 46% of the learners come from schools such as those in Eersterust and Mamelodi (Eybers, 2003).

In the post-1994 education situation, therefore, the effect of the pre-1994 dispensation is still being experienced intensely. In the investigation in the North West Province, referred to above, it was found that principals such as Jacobs (2003) feel that there are a number of shortcomings concerning his school's basic needs, despite Riekert's (2003) claim that the provincial department of education reconciles its budget and the number of learners, in order to keep education provision in the province within the appropriate educator:learner ratio. These shortcomings relate to the composition of the learner population and therefore to demography. The complexities of the demographic reality are not adequately addressed in provincial provision

of education. Issues, such as shortage of remedial language educators, leave replacement staff, permanent educators, the provision of the necessary demographic information to schools, etc. are identified as shortcomings. According to Lion (2003) the multilingual nature of schools is currently the biggest challenge. He regards this tendency as the biggest demographic challenge of our time, because there are not enough educators to convert schools from double to parallel medium. He also argues that this state of affairs has serious administrative, didactical and financial implications for his school and he ascribes the situation to the failure on the part of the Department of Education to launch adequate demographic investigations and to provide human resources in a particular region based on these investigations.

Therefore, the present national Department of Education now has the task of eliminating the inequality in the South African education system (see the Norms and Standards for School Funding, paragraph 20, p.2B-32, paragraph 35, p.2B-34 and paragraph 39, p.2B-34, 35, paragraph 91, p.2B-44), and determining new priorities for the system. Finding a balance between these two facets of education has complex consequences at grassroots level for education in South Africa.

Further findings based on the empirical investigation

Different factors contribute towards the drastic increase of learner numbers in certain areas. The general growth rate of the population, the migration of learners to more affluent schools, the migration of parents to certain provinces with more job opportunities (urbanisation), the migration of farm labourers (and learners) between farms and towns/cities, etc. all contribute towards the phenomenon of schools' learner numbers changing from year to year. In some urban areas it is completely impossible to predict learner numbers and as a result the provincial departments of education are often highly disillusioned at the beginning of each new school year.

Schools are placed in certain quartiles (according to the Norms and Standards of School Funding, 1999) which are based on the data obtained from the school registers for needs, the national census and the Department's own Education Management and Information System (EMIS). These sources, however, do not provide information about the economic background of learners in a specific school at a specific time. Lately, there is a tendency for learners in a certain residential area not to attend the school in that area (or in some cases there are no schools in a residential area, e.g. in a squatter camp) but to rather attend a school in another area which is considered more affluent. Various reasons are offered for this tendency, such as the increase in learner numbers, school fees that are too high at nearby schools, the fact that the previous dispensation favoured certain schools (especially economically) and the consequent perception that these schools provide better education. Schools which grow because of the large-scale migration therefore experience that the economic background of the learners does not correlate with the school's quartile placement. Schools in a relatively poor residential area, where learners come mainly from a squatter camp and have unemployed parents, are sometimes in the same quartile as a school in an area with economically active parents who can contribute school fees. As a result schools experience their funding by the Department of Education as totally insufficient, and the economic and pedagogic potential of some schools is suffocated in the process.

The policy goals (South African Schools Act, 1996) for personnel cost of provincial departments of education are as follows:

- (a) Schools must be supplied with an adequate number of educator and non-educator personnel;
- (b) such staff members must be equitably distributed according to the pedagogical requirements of the schools, and
- (c) the cost of personnel establishments must also be sustainable within provincial budgets.

According to the South African Schools Act (1996), provincial departments of education must rely on data from the school registers for their needs, census data, and departments' own EMIS in order to address the shortage of staff in schools and overcrowded classrooms. These sources provide useful data but primarily treat demography as pure numbers (population size), which is problematic in education system management because the target group introduces different demographic aspects into the education system (see Figure 1). In addition to data obtained from the EMIS information, the economic background of learners and schools should also be taken into account (as this directly influences funding), including the issue of learners who attend schools in other residential areas (with a different economic reality than that of the learners' own residential areas), the employment status of the parents (who can or cannot contribute towards paying educators appointed by the governing body), the economic background of the parents, the distance which learners must travel to schools, and economic tendencies (such as the closing of factories and mines, mechanisation of the agricultural sector, certain professions which are on the increase), all of which are examples that directly challenge the applicability of the funding model and the formula for the allocation of educators. All these particulars must be obtained in order to focus on the unique needs of schools. The crisis regarding learner numbers (Rademeyer, 2003:10) and the shortage of approximately 60 000 places for learners in the Gauteng Department of Education emphasise that the above strategies are not yet applied at district/regional and provincial level as they should be.

Schools are not satisfied with the current formula according to which educator posts are allocated to schools. Although the formula takes many factors into account, it does not always make provision for the real demographic changes at a school. Moeketsi (2004) indicates that schools are moving in the direction of "crowd control" (where educators must sometimes accommodate many more learners in a class than dictated by the department of education.

The formula for Grades 1–9 is as follows (Government Gazette, November 2002):

$$(w = c / m / 1 \times f)$$

where $c = 40$ (ideal maximum class size),
 $m =$ maximum class size per grade,
 $1 =$ period per weight, and
 $f =$ level of funding.

Phakedi (2004) argues that the proposed ideal maximum class size of 40 learners (see *c* above) does not manifest in schools. This state of affairs therefore influences the calculated weight per learner and it has an impact on the allocated number of educators. If certain schools do not appoint educators in governing body posts, they will therefore not be able to comply with the pedagogic demands of the school (De Beer, 2004). According to Phakedi (2004), most schools in informal settlements are not able to maintain governing body posts.

Educators also experience that the number of learners in subject streams differs from year to year, which makes the formula (based on the data of the previous year) irrelevant (Khumalo & De Beer, 2004).

Moeketsi (2004) is of the opinion that compulsory subjects/learning areas in high schools

(such as Languages, Mathematics, Biology) should carry more weight in the above formula, because these subjects have a different administrative impact on the school timetable and on the period weight of the educators who present it. The current weights of these subjects do not solve the administrative problem, amid the other demographic challenges.

A number of recommendations

- Provincial departments of education should have access to demographic particulars at least twice a year, in order to do adequate planning, because learner numbers differ from year to year as a result of social factors. The impact of the constantly changing demography may be relieved in that way, and schools need not be caught in a whirlpool of demographic chaos. Therefore, there is a need for mechanisms which can accurately predict the different aspects of demography in an education context. Examples of such mechanisms which must be considered include researched demographic measuring instruments and liaison or communication lines which can address urgent demographic problems within at least one quarter of the year.
- The following may be considered to overcome the problems concerning the formula for the allocation of education personnel:

The demographic circumstances of the current year should not always be regarded as sufficiently accurate for determining the educator allocation for the next school year. The Employment of Educators Act (Government Gazette, November 2002) specifies that schools must communicate their changing position in the current year and that the provincial department of education must allocate posts to the school for the next school year according to the adjusted calculations, on or before 30 September. This post allocation should therefore be managed in a more context-specific manner.

- The provincial departments of education should launch an investigation into a more context-based post allocation formula which can possibly be applied per school phase (for example, Foundation Phase, Intermediary Phase, Senior Phase, etc.), because pedagogic requirements differ from phase to phase, and so does the *c* value (in the current formula).
- School principals, Phakedi, Moeketsi, and De Beer (2004) agree that there should be input from school management to improve the applicability and efficiency of post allocation in practice. Education system planning (by the provincial departments of education) at micro level requires the involvement of school principals in an advisory capacity. It is clear that schools have a need for a kind of forum where unique needs may be communicated and addressed. Such a forum would create the opportunity to share expertise regarding successful planning. It should be representative of the diverse demographic realities of the education region and it should focus on communication with the Department of Education and on the solution to context-based challenges.
- Secondary school communities are experiencing a demand for more specialised schools which are attainable in certain communities. Such an initiative will also solve the problems of subject/learning area weights and the educator:learner ratio. An investigation into the viability and desirability of specialising schools should be a priority in certain areas, particularly in nearby schools with learner numbers of between 1 000 and 3 000.
- Because of the fluctuating demographic reality, school communities agree that there must be a mechanism which can determine or project community/regional tendencies with regard to migration. The big challenge for planning by the Department of Education can

therefore not be underestimated in this regard.

- Parallel medium schools have found that the current formula does not address the demand for educators sufficiently. Because different numbers of learners are taught in different classrooms, these schools can currently not function without educators appointed by the governing body. Specific attention should be given to parallel medium schools with reference to the Employment of Educators Act (1998).
- The diverse influence of demographic factors on the South African education system may be addressed according to the principle that all schools must become institutions of excellence in order to address the impact of the economic discriminatory education policy of the past. The empowerment of all school communities as well as the assurance that there will be quality educators in all schools will enable education providers to overcome even the most demanding demographic challenges.
- At the provincial (meso) level of education system planning the following initiatives may be investigated further:
 - The planning capacity of the provincial education departments must be increased and they should be moved in the direction of planning units. These planning units must have an extensive vision with regard to education system planning.
 - Research must be undertaken by expert academics both within and outside the provincial policy frameworks. A collaboration agreement must therefore be established with the province's academics/universities.
 - The industries in a specific province should play a role in provincial planning initiatives; because industries expect schooled employees from the education system, they cannot distance themselves from the education system.
- Liaison by the Department of Education with other provincial departments, such as Welfare, Safety and Security, Health, and Public Works, is essential for handling the demands of demography as a determinant of the education system. There is also a need for multi-departmental task teams which form part of the planning units of provincial departments of education.
- At regional and district level (micro level) more attention should be paid to providing in schools' specific demographic needs.
- School principals agree that their managerial teams need training. As a result of the divergent demands of demography, existing management practices need to be reconsidered (Maleta, Du Plessis, Mokgosi & Phakedi; 2004) .
- Schools are in need of the expertise of a diverse team of experts (education system experts and researchers) on schools' unique and specific planning challenges. These experts must have the capacity to determine tendencies at micro level and in the school context and be able to come up with context-specific solutions (Semoanadi, Maruping, Maleta & De Beer, 2004).

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