SOUTH AFRICA’S POLICY ON SERVICE DELIVERY: SOME REFLECTIONS ON THE DEVELOPMENTAL STATE AND NO GOOD NEWS FOR SKILLS BECAUSE THE 2014 MATHEMATICS AND SCIENCE PASS RATES MEANS LITTLE TO THE DEVELOPMENTAL STATE: A CLARION CALL TO GOVERNMENT TO UP THE ANTE

Anis Mahomed Karodia (PhD)
Senior Faculty Member and Researcher at the Regent Business School, Durban, South Africa
Dhiru Soni (PhD)
Director of Research at the Regent Business School, Durban, South Africa
Abe Seakamela (PhD)
Former Director General of Education, North West Province, South Africa

ABSTRACT
The paper attempts to explore very briefly South Africa’s policy on private sector involvement in terms of service delivery and its importance to the developmental state. In so doing the issue of the so – called developmental state is explained. It further elaborates upon the 2014 matriculation results for Mathematics and science in terms of pass rates achieved by learners. In so doing a brief analysis is undertaken of these results and outlines the negative consequences of the matriculation results in respect of the consequences for skills development and with particular reference to the mathematics and science pass rates and their negative consequences. The paper is not all encompassing and does not pretend to capture all aspects of these 2013 matriculation results. It however contributes to the ongoing discussion and debate in South Africa in respect of consolidating democracy and thus consolidating the development state.

Key Words: Service Delivery, Private and Public Sector, Matriculation Results, Mathematics, Science, Skills, Developmental State

INTRODUCTION
Public authorities are responsible for ensuring delivery of basic services to all citizens. In carrying out this responsibility, authorities face an enormous task. There is a legacy of inequitable distribution of resources and corrupt and inefficient practices in some areas. According to Gildenhuys and Knipe (2007: 75) “In order to carry out their responsibility, public authorities will need to transform public sector delivery through a process of restructuring a number of sectors and authorities, in order to achieve results. This has been an ongoing process in South Africa for nearly two decades and the entire education system comprising both basic and higher education requires urgent attention in terms of transformation and has to be restructured because of their dismal performances over the democratic period, post 1994, in order to secure the imperatives of the developmental state. Thus far the services have not been wholly geared to public service delivery because of policy errors, nepotism, patronage,
corruption and inefficiencies within the education system. This denies the historically marginalized learners who are essentially black pupils’ sound access to education and by implication affects their cognitive development and thus hampers economic development and maintains the apartheid status quo. The government pats itself on the back for so-called improved results year on year, but pays scant reference to the poor quality of results throughout the 12 year schooling programme. In order for public authorities to deliver public services effectively and efficiently. They will have to involve private organizations. However, poor service delivery affects almost all government departments in South Africa and, is a cause for serious concern. Therefore government departments should strive towards sound principles for service delivery in order for all public services to be of a certain agreed – upon standard and quality. There cannot be an acceptance of mediocrity, which is the case currently and decisive action against no – delivering public servants has to be taken, the bureaucracy requires to be reshaped on the basis of ethics and performance and those involved in corruption including politicians must also be dealt with decisively, in order to consolidate the developmental state.

**PRINCIPLES FOR SERVICE DELIVERY**

Given the existing problems and challenges facing public authorities in South Africa, in order to ensure that they meet their responsibilities, to ensure or facilitate this intervention, there must be a coordinated effort from all levels of government, in order to build the capacity of all forms of government within the three tiers of government. The principles of service delivery are therefore enshrined as follows According to Gildenhuys and Knipe (2007: 75)

- “Universal coverage;
- Sustainability;
- Life line amount of basic services;
- Cross – subsidization;
- Service standards;
- Democratic practices / accountability;
- Planning; and
- People first Principles.”

All of the above have been enshrined in various codes but, most of them have come to naught because of an inept public service, the lack of responsibility and lack of accountability because politicians including the President of the country have not led from the front and do not lead by example. It is therefore obvious that the broad objectives of restructuring government are to ensure that services are delivered in a way that is sustainable, equitable, efficient, effective and affordable, and consistent with the principles of service delivery. In twenty years of democracy much has been achieved, but in the main the principles outlined above have eluded democratic South Africa because of the rampant inefficiencies within government, poor politics, the lack of political will and indeed the self – serving agendas of the predatory elite.

In respect to all forms of education in South Africa, poor service delivery is exemplified by the lack of delivery of basic infrastructure, the shortage of adequately trained mathematics and science teachers. The basic education sector is further plagued by a lack of libraries, shortage of computer laboratories, very large classes in terms of the number of pupils per class. This is further exacerbated by the interference of trade unions in styming the emergence of education and often compromising the state. The state often panders to the whims of the unions and therefore its inability to set the education system into a trajectory of development and thus compromising the quality of education. The non – delivery of textbooks and learner support material year after year has lowered the education system to the lowest common denominator. In
addition to these manifest problems the state hampers the emergence of private schools and has not intervened decisively in respect of challenging the status quo from the apartheid era to look at good educational practices within the privileged former model C schools, which increasingly are absorbing black students denied access to these schools, were the quality of education is high, and the discipline very good. It has also failed to intervene decisively in respect of Afrikaans schools this allowing the maintenance of the apartheid status quo in these historically privileged schools. The entire basic education sector is fraught with great difficulties and challenges that stymie the emergence of all sectors of the South African education landscape. The fault has to be placed at the feet of the government because of its ineptitude to intervene and exacerbated by corruption and nepotism. Above all education is a public good and as such is therefore, the responsibility of the government. As long as the government does not accept this fact, not much will be achieved in respect of turning around education within so – called democratic South Africa. This analysis is only the tip of the iceberg.

This picture is also the same in higher education with the lack of universities to absorb successful matriculated students. On the other hand the government is shortsighted in not wanting to subsidize private higher education institutions, in order for these institutions to assist the state in turning around the higher education landscape when there is a dire need to do so. The state is fixated together with the Minister of Higher Education with regards invoking socialist agendas (For namesake and scoring points without any real conviction) which are clearly unworkable in a capitalist society and a mixed economy model that has not worked for the majority of the predominantly black population. In addition the lack of a sound industrialization policy the economy in the main is unable to absorb matriculates and university degree holders into the economy and is not capable of providing job opportunities. This has led to high unemployment rates of over 45 percent in South Africa. This is a recipe of disaster and could lead to very serious problems with a massive uprising and could cause racial tensions as blacks are excluded from education and the economy (Except the predatory black elite of Africans, Indians and Coloureds). The state has not been able to intervene decisively within the Further Education and Training band of education in terms of vocational studies. Students do not want to enter these institutions in large numbers because they want a university education given the poor infrastructure, the poor quality of lecturers in the main, poor courses that are offered by these institutions and technically a poor intervention strategy by government to make these institutions more attractive. In reality, the education system is so poor that people have generally lost confidence in the government and access is primarily, the privilege of both the black and white elite of the country, into the top universities. All of this has led to poor performance of South African students at mathematics and science and a host of other subjects.

Having delineated a few issues in respect of the challenges confronting South African education, it is important to discuss the following two issues in respect of the skills issue that is vital for the reconstruction of the country. These are the role of the private sectors involvement in service delivery, the options for improving infrastructure provision and, thirdly the thrust of the South African developmental state. These three issues are discussed hereunder, very briefly because they have a direct correlation in terms of the discussion undertaken in this paper.

**NEW TAKE ON POST – SCHOOL EDUCATION**

It has been reported in the New Age on the 17 January, 2014 by John Pampallis advisor to the Minister of Higher Education that the White Paper elaborates upon linking education and the workplace through the promotion of learnerships and training. The key points that Pampallis makes are as follows:
The White paper provides a vision for an integrated system, with all institutions playing their role as parts of a coherent but differentiated whole;

Until a few years ago, there was limited cooperation between universities, colleges and other post – school institutions;

There are currently about 3.4 million young people between the ages 15 and 24 who are not in education, training or employment;

The department and all its affiliated institutions need a rational and coherent framework that will enhance the benefit to individual citizens, institutions and the nation as a whole.

Pampallis believes that the White Paper provides such a framework.

He states that this is a definitive statement of the government’s vision for the post – school system for the period to 2030 and outlines the strategies to be utilized in achieving them.

It aims to set a framework for the creation of an expanded quality post – school education and training system that is responsive to the needs of individual citizens, employers in both public and private sectors as well as South Africa’s broader societal and developmental objectives.

The post – school institutions include universities, colleges and adult education institutions as well as those institutions that support the education and training process. The latter include the Sector Education and Training Authorities (Setas), the National Skills Fund (NSP) and the National Student Financial Aid Scheme (NSFAS) as well as advisory, regulatory and quality assurance bodies.

Although sub – sectors of the post – school system will grow, priority will be given to the Further Education and Training (FET) colleges, which are being renamed Vocational Education and Training (TVET) colleges. The universities will grow their headcount enrollments by about 67 percent to 1.6 million by 2030. The TVET colleges will increase their headcount enrollments from the current 650 000 to 2.5 million.

In addition, a new institutional type called Community Colleges will be established, with a projected headcount enrollment of one million by 2030. These will be multi – campus institutions which group together a number of existing public adult learning centers.

Full time staff will be employed and infrastructure improved and expanded. And supplemented by vocationally and community – oriented programmes.

The expansion of open and distance education opportunities and the greater use of information technology are identified as an important means of expanding access to both vocational and higher education.

Greater importance for the disabled.

The White Paper pays attention to improving quality by upgrading lecturer qualifications, the expansion of student support, the expansion of post – graduate studies and the expansion of high level knowledge and skills more generally.

Lastly, the White Paper elaborates upon policies linking education and the workplace through the promotion of apprenticeships, learnerships and other forms of work – integrated learning.

The Setas have an important role to play in promoting and facilitating the White Paper partnerships envisaged and the department needs a rational policy framework that will enhance the nation as a whole. The Question that arises is the White Paper a utopian ideal, the Ministers own vanity given the parlous nature of Higher Education in South Africa at the moment? Does it really provide a nuanced framework? Time will tell.
MINISTER OF HIGHER EDUCATION BANISHES QUALITY TO THE MARGINS
A corollary to John Pampallis’s arguments advanced above is undertaken by David Mcfarlane and Victoria John which appeared in the Mail and Guardian (2013: 7) states that “between the government’s releases of on post – school education and training, and its orgiastic celebration of the 2013 matriculation results, another document rather more modestly entered the public domain. Released by the statutory Independent Council on Higher Education, it presented latest audited data on universities which showed that about half of all students who enter university drop out before they complete their degrees or diplomas.” They further went on to state as follows:
- The patterns of university dropout, failure and graduation have remained essentially the same since data reliable enough to measure them first became available about 14 years ago.
- This puts the white paper’s subtitle – Building an Expanded, Effective and Integrated System, into especially sharp focus.
- Losing 50 percent of university entrants along points to a system that is neither effective nor expanded, regarding both students’ access to it and their success within it, and to one that is very poorly integrated with the schooling that supplies universities with their students.
- How will the marginalized millions be rescued is not adequately answered by the white paper.
- There will be community colleges that will enroll youth and adults who either never attended school or dropped out of schooling without a formal qualification.
- All of this is good talk, but the elephant in the white paper’s spacious room is basic education: There will not be anything like 3.4 million “neets” if schooling was any better and nowhere near a 50 percent dropout rate from universities.
- The Council of Higher Education’s (CHE) hard hitting but evidence based report in August of 2013 concluded that there is “no prospect” the schooling sector will be able to produce ‘in the foreseeable future” the numbers of adequately prepared matriculates that universities in South Africa require and this quality in respect of mathematics and science. This alone puts the white paper’s ambitious target of expanding university enrolment from 900 000 students now to 1.6 million by 2030 in question.

As opposed to Pampallis’s arguments there is no point in increasing access without also seriously improving success. But how the white paper intends to do that remains as radically unclear as the green paper was. It could all be utopian and indeed unworkable in the short, mid, and long terms of any envisaged transformation. It may be wishful thinking on the part of the Minister of Higher Education and perhaps a ploy to pull the will over the eyes of the public and his cabinet colleagues. No real emphasis is paid on the improvement of mathematics and skills for the purposes of economic growth and the consolidation of the development state.

MOTIVATION FOR PRIVATE SECTOR INVOLVEMENT IN SERVICE DELIVERY
According to Gildenhuys and Knipe (2007: 77) “The government plays an important role in making decisions and balancing different interests. Decisions have to be taken about prioritizing needs and allocating resources. These are political decisions which the government should be making on the basis of social needs and need to be made on the basis of social profit. It has to be understood that that there are many advantages to public sector delivery that cannot be added up as direct financial costs or benefits. Public sector planning approaches service delivery very
differently from the way a private organization would.” In this regard they further add that public sector planning should emphasize the following:

- Meeting social needs and providing services for particular groups who are expected to be in need;
- Improving and extending the level, quality and effectiveness of services;
- Democratic accountability, including the involvement of employees and users in planning and monitoring;
- Sustainable and legitimate planning, since it is democratically elected representatives of communities who are involved in planning;
- Minimizing direct costs to users;
- Improving social relations between employers and users;
- Implementing affirmative action (Legally).
- Protecting the environment; and
- Improving working conditions.”

However, South Africa as lived through four successive democratic governments in its first 20 years of democracy. The first government was the Government of National Unity under President Mandela, followed by two terms by the Mbeki presidency and the manner that he was recalled and removed by the African National Congress exemplifies the deep corruption, lack of accountability, the erosion of Constitutional democracy and the rule of law that has shaped the inefficiencies of the Zuma led government currently. Private sector involvement, if properly regulated and managed for the people and not the predatory current bureaucracy, the politicians and the predatory elite can assist governments to bring in greater investment and coverage and better quality services. It has to be clearly understood that the private sector must not be regarded as a panacea for all the problems confronting government but should play a complimentary role. In the main the government should play the developmental role. “Private sector involvement should be aimed primarily at achieving improved and greater levels of services and leveraging additional capacity and investment (http://www.local.gov.za, 2000). “When private sector involvement is considered, it should be consistent with the guidelines provided, and a full costing exercise should be undertaken to compare the costs and benefits of private and public sector delivery. The costing exercise (cost benefit analysis) should include social, health and environmental factors, and the costs to the consumer of private sector delivery. All of this should include the cost of consultants, the bid preparation and the drawing up of the request for proposals” (RSA Department of Constitutional Development, 1998: 3 – 4). Much of this has not been auctioned in respect of the education sector as was seen in the Eastern Cape and particularly the Limpopo Province were R2.6 Billion was stolen and misappropriated by senior bureaucrats, favoured elites probably in collusion with the Member of the Executive Council (MEC – Provincial Minister). In spite of a 43 page report presented to the Minister of Education and the National Council of Provinces, no legal sanctions were imposed on these culprits and most of them are still in office” (The Karodia Report, 2012). This situation persists in almost all provinces in South Africa and education has been hard hit as concerns non – service delivery.

OPTIONS FOR IMPROVING INFRASTRUCTURE PROVISION

According to the Department of Constitutional Development (1999a:2) “there are four broad options that cover a range of possibilities for improving infrastructure provision and performance and expanding the capacity to provide infrastructure services.” The four options represent different allocations of ownership, financing, operational and maintenance responsibilities, and also of risk between government and the private sector. “It must be remembered that in all cases
of private sector involvement the competitive process will allow for other public sector or parastatals organizations to bid for the service as well, hence creating the prospect of public – private partnerships. This aspect is often overlooked and leads to the appointment of unqualified contractors thus leading to poor quality of work, manipulation of tenders to favoured constituencies, corruption and patronage. This has occurred on a massive scale within education departments in South Africa” (The Karodia Report, 2012).

Firstly, public ownership and public operation describes infrastructure that is owned and operated by a public entity and controlled by the central, a regional or a local government. This can be successful when the public entity operates the infrastructure service on sound economic principles (This has eluded South Africa because of incompetent bureaucrats who generally have their fingers in the till and fail to see the bigger picture of serving the public, but serve themselves). Included in the public ownership and public operation option are commercialization and corporation. ‘The former involves allowing the public entity financial and managerial autonomy. In other words to be run like a government business (This cannot be achieved because self – interest of bureaucrats and politicians reign supreme in present day South African government services). The latter structures the public entity as an autonomous legal entity subject to company law, with formal separation of ownership and management responsibilities such as through a board of directors. Gildenhuys and Knipe, 2007: 79). Secondly, public ownership and private operation can be achieved through concessions and leases which allow government to delegate the operation of infrastructure facilities and the responsibility for new investment, along with the commercial risk to the private sector. (The issue of leases in respect of abuse and loss of large amounts of money and court appearances has been a major problem throughout the public service and has hampered service delivery). Third, private including cooperative ownership and operation are most attractive to the private sector where there is high potential for securing revenues from user charges when political and commercial risk are low. (However, this also abused tremendously by the both government and the private sector). Fourthly, for municipal and local services, user provision or community self – help arrangements that provide smaller – scale infrastructure can offer effective and affordable services in many areas when those who contribute are primary beneficiaries. This system has been manipulated in a large scale as was seen in the Ethekwini (Durban) Municipality as revealed in the Manase Corruption report that implicated politicians, private companies, government bureaucrats and the predatory elites in misappropriation of billions of rands. In reality, this is a feature of all three forms of government in South Africa, local, provincial and national governments. Such corruption has become a feature and characteristic of South African governance without accountability. All of this has a direct negative impact on the delivery of school infrastructure and thus clearly hampers education.

THE DEVELOPMENT STATE: A CATALYST FOR DEVELOPMENT
This is an important issue on the basis that the government offers refers to South Africa as a development state. What then is a development state? “Over the past few decades, debate about the ‘developmental state’ has resurfaced, largely due to the failure of neo – liberal policies in the developing world” (Meyns and Musamba, (2010). These neo – liberal prescriptions were applied universally without regard to the different conditions in each of these countries. As is well known, the neo – liberal response was premised upon the alleged failures of the ‘developmental state’ in which the state played a key role in organizing investments, apportioning credit through monetary and fiscal policies and in which the state cooperated with the ‘national capitalists’ to advance ‘national development in an increasingly globalizing world. This cushy relationship
with the neo–liberal capitalists and the government of South Africa has in many ways played into the hands of excessive greed by government politicians and its bureaucrats, who have cut lucrative deals with these capitalists and have derailed the developmental agenda of creating a developmental state for the promotion of the general welfare and reconstruction of the country from the apartheid legacy. This has marginalized the population and has increased poverty, inequality and unemployment in present day South Africa.

The implementation of the neo–liberal development agenda in countries of the south was therefore an attempt to readjust their economies to respond to the new dynamisms of global capitalism, especially in the centers of capitalism and to recognize national development to accord with the needs of a global economy. The ‘Consensus,’ as Joseph Stieglitz (1998) has pointed out was premised on a one–sided understanding of the crisis of import–substitution industrialization in countries of the south with no regard to regional differences. This had the effect of pushing the process of developmental into a corner, so it could be ‘reformed’ and made to assume new roles in the new global conjuncture, now commonly referred to as globalization. The demand for structural adjustment was based on the argument that the developmental state of the south had failed to generate growth and that the state had assumed too great a role that had to be curtailed if their economies had to embark on export–led industrialization to earn foreign exchange to service their debts. These structural adjustment programmes failed miserably and forced the major aid and finance agencies such as the International Monetary Fund (IMF) and the World Bank to reconsider their positions on the need for the development state in countries of the south.

The failure of the IMF and the World Bank approach to structural adjustment was admitted in a World Bank Report entitled: Sub–Saharan Africa: From Crisis to Sustainable Growth (1989), in which the World Bank argued that the state was an important institution in managing development and social change thereby brought back on the agenda the proactive role of the state in development. Thus, the debate about the development state is now squarely on the centre stage of the development dialogue, especially in countries of the south. It is also important to note that the role of the state in the economy does not belong merely to the recent global economic crisis which started with the advent of the financial meltdown of 2008, but far precedes it; as throughout ages nations have been grappling with the factors that are necessary for their development, throughout time, as well as the market, the state has played a critical role in the development of nations, or in their under-development (The latter is South Africa’s situation under the current government). As Evans (2010: 37) asserts “History and development theory support the proposition ‘no development state, no development.’ The idea of a developmental state puts robust, competent public institutions at the center of the development matrix.” This is the goal that South Africa must pursue given the all embracing fact that it has corrupted its entire Chapter Nine institutions that are vital to consolidating democracy and accompanying development. In addition the massive inefficiencies of government departments must be dealt with decisively and the cushy relationship of politicians and the bureaucracy with the capitalist class must be broken and the predatory elite must be kept at bay, if it really wants to secure delivery of services and thus serve the historically marginalized, deal with poverty, inequality and unemployment, in order to promote the general welfare of all citizens and; serve education and other sectors as drivers of the economy.

Whilst much of the recent literature on the developmental state has focused on the East–Asian and BRICS countries, Africa has been prevented from exercising its sovereign rights, especially in terms of using the principles of a state–inspired development trajectory. This has largely
been due to the fact that African states have been further weakened politically and economically during the neo–liberal period. Their economies were, and still are critically based on the export of raw materials. Mkhandawire (2010) affirms this view when he says that the time has come for Africa to put its development agenda on track. He goes on to note that the high growth rates and structural change are essential both to extricating Africa from the quagmire of its ‘lost decades’ and to meeting the aspirations of an increasingly vocal citizenry clamouring for a decent livelihood. Such a social agenda demands serious consideration by the South African government that has denied itself the opportunity to confront the realities of its all round inefficiencies. It has denied itself the opportunity to take a leadership role internally and within the Continent as a whole and particularly the role of the state in its own development and the development of Africa. To this end it has a major role to play in respect of all forms of education in South Africa and the continent.

NO GOOD NEWS FOR SKILLS

According to an array of experts as concerns the 2013 Matriculation pass rates in Mathematics and science, it has been revealed upon analysis that the pass rate means little for the country in terms of skills (Buthelezi, 2014: 1). It is therefore obvious that academics and economists did not celebrate the increase in the mathematics and pass rates released by the national ministry of education because it was not enough to get South Africa out of its scarce – skills shortage. The Minister of Basic Education announced an improvement in the mathematics and science pass rates, but the Department of Education did not provide a breakdown. According to Buthelezi (2014: 1) “However, the Department of Higher Education released more detailed figures, saying that half the learners who passed mathematics scored 50 percent or more.” This comes only four months after the 2012/13 Global Competitiveness report by the World Economic Forum ranked South Africa as the worst performer out of 148 countries for the quality of its mathematics and science education. For the quality of the education system the country was ranked in 146th place, below Brics peers Brazil, Russia, India and China. Buthelezi (2013: 1) further adds as follows:

- The mathematics pass rate for the class of 2013 improved to 59.1 percent from 54 percent the previous year. But the Department of Higher Education said less than half of the class of 2013 chose to do mathematics as a subject.
- A total of 142 666 learners passed mathematics and 282 270 passed mathematics literacy, compared with 254 611 in 2012.
- The pass rate for physical science increased by 6.1 percentage points to 67.4 percent.
- Until the numbers of As and Bs improve, South Africa will not be able to produce all the scarce skills it needs according to Jill Adler (Adler in Buthelezi).
- The problem is not the level of passes but the distribution of those passes. The country has to shift beyond passing mathematics with 30 percent. If this is not done and achieved South Africa will not be out of the woods. In the past couple of years, the vast majority of pupils got passes below 50 percent in mathematics, with most getting between 30 percent and 40 percent.
- Azar Jammine in (Buthelezi, 2013: 1) of Econometrix said the “bigger challenge was that scarce skills professions actually needed a 70 percent pass in mathematics for students to cope in their first year of training.” He said that “only about 51 000 of the class of 2013 got passes of more than 50 percent in mathematics.”
- The above means that a large portion of people are excluded from participating on the sections of the economy that remunerate best. It also holds back development and the
development state. The issue is simple and requires political will to do so in that, South Africa cannot get higher economic growth unless it imports skills.

- Professor Servaas van den Berg in Buthelezi (2013: 1) states that “change was needed in the accountability structures and in monitoring what went on in classrooms and not much has changed in the 2913 mathematics and science results.”

- It is not a case of resources, Kenya does much better than South Africa in areas but South Africa spends about five to seven times more than them on education.

- According to the University of Cape Town (in Buthelezi) only 10 percent of the 2013 matriculation learners who wrote the national benchmark tests were “proficient” in mathematics, meaning that they would be able to cope with the demands of the first year mathematics curricula. The university said that while 30.6 percent of matriculates got university exemption passes, it was not clear how many had mathematics and science proficiency required to participate in scarce – skills programmes.

- The internationally acceptable ratio of engineering professionals to the population was 6 per 100 000 inhabitants in a municipality according to Pillay the chief executive of the South African Institution of Civil Engineers (Pillay in Buthelezi, 2013:1). He further added that in South Africa the ratio was three per 100 000 in major cities.

CONCLUSION
The paper has set the record straight in respect of various variables in terms of the challenges confronting basic and higher education in South Africa. The government has to seriously look at these manifest challenges and set out to reconstruct the education sector for purposes of addressing the skills shortages in South Africa. Much attention has to be paid in respect to mathematics and science, in order to address the skills shortages facing a predominantly developing country for purposes of dealing decisively with poverty, economic growth, inequality and unemployment. The question in reality is not about whether South Africa trained enough professionals in mathematics and science, but about political will and more about the caliber of training.

BIBLIOGRAPHY


