



Building on what works in education

Concise summaries of ongoing policy research aimed at helping to improve the national education system

Vocational education in South Africa

Strategies for improvement

This paper is based on research by Prof Rolf Stumpf and Dr Gustav Niebuhr for CDE on the international experience of vocationally-oriented education relevant to South Africa. It summarises what needs to be done to strengthen vocationally-oriented education in South Africa, where school leavers are exposed to engineering, technological, electrical, building related, agricultural and other occupations, but need further post-school training before they can enter the labour market. In the light of South Africa's critical need for technical and artisan skills, plus the apartheid legacy that stigmatised vocational education, the research indicates that the country should develop a policy framework for making vocationally-oriented education (through specialist 'focus schools' or through general secondary schools) a much more attractive option within a system of diversified education provision.

Improving learner success and throughput in secondary schools is one of South Africa's most challenging priorities. Most South African learners successfully complete Grade 9 and look to the National Senior Certificate (NSC) as a form of access to higher education. Unfortunately, the reality is quite different.

Many learners will repeat the senior grades, while others will drop out between Grades 10, 11, and 12. A recent study found that nearly one million young South Africans aged 18-24, who had at least a Grade 10 or equivalent education, did not complete their Grade 12 education and were unemployed and not studying.¹

One likely reason for the high drop out rate is that many believe that the available schooling will not assist them in finding a job. Another reason for drop out after Grade 9 could be that the requirements of general education do not suit many senior secondary learners. Would they cope better in vocationally-



oriented education? If so, how can Grade 9 learners make better choices about which learning path to follow when South Africa's schooling system lacks a diversity of appropriate and socially acceptable education pathways after Grade 9?

The three main categories of South African education are:

- **General education** which normally prepares a learner for life in a general sense, as well as for higher education studies in which knowledge theories play a prominent role.
- **Vocational education** which aims at producing someone who can 'hit the ground running' in a particular occupation. The intention here is that the school leaver is productive in the work place immediately.
- **Vocationally-oriented** education which normally does not deliver someone who can be productive immediately in a particular work situation, but who is well versed in the specific context and environment of a particular occupation. This learner requires further training before entering the workplace. Vocationally-oriented education can also prepare a learner for higher education of a more career preparatory kind.

In South Africa, general education presently forms the domain of school education. Vocational education forms the domain of further education and training (FET) colleges only, and vocationally-oriented education can form the domain of either the school system or the further education and training system.

In many countries school education systems are suitably diversified to help learners find their niche. Interestingly, these are also countries which have relatively low school drop-out rates, and low youth unemployment.

Research shows that worldwide, alternative educational opportunities are normally created in one of two ways:

- Specialist schools offer a focused range of subjects (e.g. art, engineering, technology, agriculture, business and enterprise, hospitality and tourism, and information technology or sports). South Africa currently has approximately 153 'focus schools': 110 technical schools and 43 agricultural schools.²
- Alternatively, ordinary high schools expose senior secondary learners to a slight degree of vocationally-oriented education as part of their general education. In South Africa many senior secondary schools offer subjects such as accounting, business studies, consumer studies, and information technology.

The key questions for South African policy makers include: Are these forms of provision adequate? Are they attractive to learners? Do they suit their learning needs and abilities? How accessible are they?

In the light of South Africa's critical need for technical and artisan skills, the country needs to develop the policy framework required to make focus schools an attractive option within a system of diversified education provision.

South Africa's schooling system lacks a diversity of appropriate and socially acceptable education pathways after Grade 9



This requires three areas of intervention:

- Treating education as a single, integrated, and cohesive, but dynamic, system in which the interactions between the diverse sub-systems are clearly understood and supported;
- Increasing the number of focus schools that respond more closely to new developments in the labour market and the economy, and extending their coverage of information and communications technology, hospitality and tourism, as well as other relevant fields;
- Strengthening learner exposure to forms of vocational orientation as part of general education in order to introduce learners to technological, agricultural and other fields.

Background to vocationally-oriented education in SA schools

The 19th and 20th centuries saw the establishment of technical colleges and formal apprenticeship training in response to the rapidly-growing needs of South Africa's mining industry, as well as the railways and other industries emerging at the time. The main focus was on artisan training, but these opportunities were largely reserved for white South Africans.

In response to a growing and increasingly diversified industrial base in South Africa, a number of industrial schools were established early in the 20th century. These fell under the national department of education, but were transferred in 1968 to the provincial education departments and incorporated into a differentiated school system as technical, agricultural, or home economics schools. This sowed the seed for the later development of these schools as so-called 'focus schools'.

For many parents and learners the educational avenue offered by the industrial or focus schools was preferable to technical college education. Some of their reasons are still relevant today:

- Technical colleges placed a strong emphasis on artisan training, which many parents viewed as unsuitable for the further education of their children;
- By offering a variety of educational programmes, technical colleges catered for learners from 15 years upwards. Many parents preferred their children to be in educational environments where they studied with learners their own age;
- For many parents the technical colleges carried an aura of being too 'non-academic'. Consequently the industrial or focus schools were academically more acceptable, being somewhat closer to a general school;
- Technical colleges often did not provide extra-curricular activities (culture and sport), which the industrial or focus schools did;
- Parents generally welcomed the fact that industrial or focus schools provided an immediate continuation of their children's primary education and enabled them to pursue their areas of interest whilst easing the transition into a new school environment.

A major differentiating characteristic in this system was the quality and extent of provision for vocationally-oriented and vocational education for whites compared to that for other race groups, which was much inferior. The infamous emphasis of the apartheid government on the desirability of work and labour in the education of blacks as against an academic orientation in the education

For many parents the technical colleges carried an aura of being too 'non-academic'



of whites did much to stigmatise vocationally-oriented education and vocational education amongst black South Africans – a legacy that haunts South Africa to this day.

Current situation in SA vocationally-oriented school education

Following the establishment of the democratic government in 1994, work started straight away on the development of a new school curriculum, which aimed to improve the quality of school-based education for all learners, but especially for black South Africans.

Current indicators in vocationally-oriented education

- More learners took engineering graphics and design from 2005-2009 (from about 20 000 to 25 000 taking technical drawing into account), but there was a slight drop in the numbers studying electrical technology and mechanical technology.
- There has been a substantial overall decline in the number of learners taking subjects in the field of agriculture (from about 120 000 to 90 000).
- Some subjects were discontinued in the new school curriculum (2008/9), curtailing the choices available to learners interested in vocationally-oriented school education. A number of these subjects can now only be taken at FET colleges, including bricklaying, motor mechanics and metalwork.
- The number of learners writing Grade 12 mathematics has declined by about 50 000 since 2007, while the number writing Grade 12 mathematics literacy has increased.
- Pass rates in Grade 12 mathematics are down from 55.7% in 2005 to 46% in 2009 with a marginal increase to 46.3% in 2011. This dismal performance may partly be attributed to learners at vocationally-oriented schools failing a subject that is academically-oriented.
- Mathematical literacy is not sufficient for learners studying engineering, technology, or agriculture.
- Larger numbers of learners are taking physical science, but its academic slant does not generally serve the learning needs of learners in vocationally-oriented education.

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The number of learners writing Grade 12 mathematics has declined by about 50 000 since 2007

Support factors

The new school curriculum (despite criticisms of the senior secondary phase) does provide a number of subjects which mix theoretical knowledge and applied or contextually-based knowledge (*see box above: Current indicators in vocationally-oriented education*). These support vocationally-oriented education to some extent. Examples of some of these subjects for the National Senior Certificate are: agricultural management practices, agricultural science, agricultural technology, dance studies, design, visual arts, accounting, civil technology, electrical technology, mechanical technology, engineering graphics and design, computer applications technology, consumer studies, hospitality studies, and tourism.



While such a list of vocationally-oriented subjects requires constant updating and revision to accommodate new vocational and occupational trends, a welcome basis has been established for breaking down falsely-held concepts of the so-called superiority of 'academic' subjects compared to more applied subjects. All the subjects mentioned above can contribute towards higher education admission. Admittedly, in some cases this applies only to study towards a vocationally-oriented higher certificate or diploma at a university of technology or a private higher education provider. However such students could always transfer to degree study if they so wished by acquiring any credits required towards degree study.

Constraining factors

As welcome as these developments are, the inception of the new national school curriculum represents a departure from the previous principles governing the differentiated approach in education provision. Curriculum differentiation only starts in Grade 10 and no longer in Grade 8, as was previously possible for learners wishing to enter vocationally-oriented education in a focus school. Furthermore, having chosen their subjects in Grade 9, learners cannot easily switch in Grades 10-12. Together with the demise of career guidance as a school subject, this has meant that learners tend to follow what their friends are doing and what their parents wish them to do, rather than being guided by informed advice and their own interests and abilities.

This particular change has had a negative impact on focus schools, which now have to offer only general education subjects in Grades 8 and 9, and for which they may not have the requisite teaching capacity. The outcome has been a gradual drift in curriculum emphasis for focus schools towards general education. As a result, some are fast becoming indistinguishable from general or ordinary schools.

A further constraint to expanding vocationally-oriented education is that focus schools normally expect their learners to take either mathematics or physical science, or preferably both, together with some of the other technologically-oriented subjects. However, at present the emphasis in mathematics and physical science is wholly general or academic, making these subjects largely unsuitable for use in focus schools.

In focus schools learners object to taking the two subjects, since much of the content is, in their view, irrelevant to their studies. As a consequence, such learners often fail these two subjects and then have to change to other subjects, which often prove to be equally unsuitable. This has proved particularly problematic for learners who wish to pursue artisan training and who need these two subjects in order to gain admission to industry-driven workplace training. It is difficult to understand why these learners and those who wish to become professionally registered engineers and engineering scientists are expected to follow the same mathematics and physical science syllabus.

The effectiveness of focus schools is further weakened at a policy level. Although the schooling system recognises the need for diversification or specialisation, which is partly catered for in the maintenance of focus schools, education policies for school-based education are not differentiated. This contrasts with the clear policy distinction for vocational education offered at FET colleges. For

Having chosen their subjects in Grade 9, learners cannot easily switch in Grades 10-12



example, although the qualifications and experience of staff teaching vocationally-oriented subjects at focus schools differ substantially from those required for the teaching of general education, no separate rules for staff appointments exist for focus schools. Similarly, although the cost of running focus schools is considerably higher than that of ordinary or general schools, no separate funding norms exist for these schools.

Challenges that require attention

Using the above information, three observations can be made about how the education sub-systems for general, vocationally-oriented and vocational education are treated and understood:

- There is insufficient subject choice differentiation. Learners are not able to choose subject packages that constitute specific vocational fields, such as the technological, hospitality and tourism, information technology and agricultural fields. This is partly because there are no requirements in terms of which schools should plan their curriculum. In addition, there are no technically-oriented mathematics and physical sciences subjects that address the needs of learners who choose vocationally-oriented subjects.
- While a limited differentiation is provided for in the new curriculum, there is a distinct lack of supporting policy to give meaningful effect to such differentiation in practice.
- There is a risk that separating the Department of Higher Education and Training (which now houses the FET colleges) from the Department of Basic Education will create a water-tight boundary between vocational education offered at FET colleges and school-based education. This may weaken the educational continuum that flows from general education into vocationally-oriented education and in turn into vocational education.³

Repositioning vocationally-oriented education

In many South African communities, certain types of education have come to be associated with accelerated upward mobility. This view usually works to the detriment of vocationally-oriented and vocational education, because, in the opinion of many black parents and learners, the apartheid legacy has stigmatised these types of education as 'poorer'. It is important for future development to change these attitudes.

The experience of other countries provides some insights into how these issues can be addressed.

Australia

Australian schools are permitted to offer some vocationally-oriented education subjects in addition to the normal school curriculum. The Australian experience shows that when ordinary schools are given the space to introduce vocational education or vocationally-oriented education as part of a responsive and flexible approach to meeting different learning needs, they are able to play an important role in eradicating long-standing, stereotyped views about the 'superiority' of academic learning compared to vocationally-oriented learning.

The apartheid legacy has stigmatised vocationally-oriented and vocational education as 'poorer'



However, it is important to contextualise this within the support and assistance offered to learners in making informed choices at the end of the compulsory school period. Australia has realised that merely creating opportunities for strengthening vocationally-oriented and vocational education is insufficient, unless accompanied by strong support, guidance and good decision-making information. The transition of learners wishing to move into technical and further education is facilitated by a national programme specifically designed for this purpose, the National Partnership on Youth Attainment and Transitions.

This includes:

- Funding for the provision of services through the Youth Connections Programme, which is available to young people who are most at risk of disengaging from education, or have already done so;
- The School Business Community Partnership Brokers Programme aimed at improving community and business engagement with schools to extend learning beyond the classroom;
- The Compact for Young Australians, which recognises their situation and includes an entitlement to education or training places for 15 to 24 year olds;
- A programme supporting a number of career development initiatives designed to equip learners with the career information necessary to make informed choices suited to their individual interests and abilities.

South Korea

In 2007, faced with decreasing numbers of learners enrolling in vocationally-oriented and vocational education, the South Korean government attempted to make this type of high school education more attractive by changing the name of 'vocational high schools' to that of 'professional high schools'. It is too soon to determine whether this name change has had any material effect on the numbers of learners enrolling for school-based vocationally-oriented and vocational education programmes.

What does emerge clearly from the South Korean experience is that educational reforms must always be contextualised within the values, norms and outlooks of the society in which they are being implemented. So, for example, South Korea's introduction of the German model of the *Berufsschule* (vocational school) may meet with only partial success, since the country lacks the strong social acceptance of the value of this type of education. In Germany, by contrast, vocationally-oriented and vocational education is based on extensive and highly-sophisticated partnership arrangements between government, education institutions, organised employer bodies and trade unions. For South Korea, the lack of regulated and organised involvement from industry (both employers and employees) poses an additional risk in that too much of its vocational education seeks to deliver outputs in the interests of a few local enterprises rather than national skills needs overall.

Switzerland and Germany

Switzerland and Germany are prime examples of a dual-track, vocational education system. At senior secondary level, learning at a vocationally-oriented or vocational education school is combined with

In Germany, vocationally-oriented and vocational education is based on extensive and highly-sophisticated partnership arrangements



apprenticeship training at a host company. The success of some of their world-famous companies may be partly attributed to this partnership between education and industry. What is notable about the Swiss dual-track system is its success, given that most of the host companies are small enterprises employing fewer than 10 people. (A remarkable 87.6% of all Swiss companies have 10 employees or less.) A related point of note is that public funding of vocationally-oriented and vocational education amounts to only about 55% of all funding of this sector, while private funding makes up the balance. This suggests considerable business confidence in the education provided.

Lessons for South Africa

Drawing on international best practice, it is possible to identify some of the key factors for successful vocational education:

- **Distinct and connecting aims**
Successful countries have distinct and connecting aims for general education, vocationally-oriented education and vocational education. These clarify the different and connecting pathways for learners entering higher education via these different education programmes;
- **Public private integration**
Successful countries achieve a high degree of collaboration between government and industry at the planning stage. They also require different but involved government departments to help each other in both policy development, and the design and delivery of educational programmes;
- **Appropriate national/local balance**
There is a good balance between nationally applicable policies and standards and committed involvement at local level;
- **Clear relationships between qualifications**
Qualifications awarded through vocationally-oriented and vocational education, and other qualifications have a clear exchange rate. These arrangements are normally supported by agreed criteria and well-functioning effective management information systems;
- **Partnerships to develop appropriate curricula**
Good vocationally-oriented education has been developed through education-industry partnerships. Effective partnerships combine the required mix of knowledge and skills, drawing on general education as well as vocationally-oriented and vocational education;
- **Quality teacher education**
The international experience is clear: Internationally effective vocationally-oriented and vocational education relies on high quality educators. The system also ensures that such teachers have adequate knowledge and orientation of the workplace and its demands;
- **Information to assist correct choice**
More successful results follow where there is a range of appropriate measures to help learners and their parents make informed choices about future education options at the end of their period of basic education. These measures are typically supported by education authorities and industry organisations;

Successful countries have distinct and connecting aims for general education, vocationally-oriented education and vocational education



- **Funding partnerships**

Success follows where funding is shared between government and industry. In some cases this is supplemented by local and community-based funding as an outcome of constructive and well-functioning government-industry partnerships (*see box below: Public-private partnerships in vocationally-oriented education in South Africa*).

It is unlikely that many of the key success factors listed above currently exist in South Africa. The main strategic decisions are where and how to start. However, it is clear that effective and appropriate vocational education cannot be implemented in isolation. It requires the co-operation and commitment of everyone involved, from the learner to government policy makers.

Public-private partnerships in vocationally-oriented education in SA

Middelburg Higher Technical School (MHTS), a former Model C school situated close to the industrial hub of eMalahleni (formerly Witbank) in Mpumalanga, has established successful partnerships with companies that invest heavily in the school, provide training after school hours and consider learners favourably for employment.

For example, Toyota Motor Company provides equipment for training motor vehicle mechanics, has developed a modular training course for interested learners and appoints teachers to provide training at MHTS outside school hours. Learners pay an additional fee for the training, and teachers are paid out of these funds.

The learners do the first modules in the series and once they complete their schooling, can apply for employment at Toyota, where they can complete the remaining modules as employees. Employment is not guaranteed by Toyota, but learners who achieve 80% or more, receive a certificate which states the modules completed and entitles certificate holders to apply for a position at any Toyota dealer across the country.

Toyota uses the school facilities for its own training as well. MHTS is one of 14 schools across the country where Toyota is involved in this way.

Another example of a company using the MHTS is Samancor (a ferrochrome mining company) which has contracted an agent who runs an after-school training programme at the school. The training is SETA-accredited and focuses on pre-artisan training of Grade 10-12 learners in welding, fitting and turning, and work as electricians. School teachers are contracted to do the training and are paid an additional salary by the agent. Learners who do the training are appointed by the company after leaving school and complete any outstanding training in order to qualify as artisans.

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Success follows where funding is shared between government and industry



Recommendations

In essence, two basic proposals emerge from the research and analysis. They are based on the vital assumption that the private sector (mainly represented through industry) will be given the opportunity for constructive and meaningful participation and engagement in strengthening and developing vocationally-oriented education in our school system.

- **Proposal 1: Develop, as a matter of urgency, a specific policy framework for expanding vocationally-oriented education in South Africa, particularly at clearly identified focus schools.** This requires that government reprioritise the role which this form of education can and should play in the South African school system. This task should be initiated by the Department of Basic Education.
- **Proposal 2: Schools and particularly focus schools should be allowed to offer designated forms of vocational education and training on a school-industry partnership basis, which also incorporates forms of workplace learning.** This would require certain conditions such as: the company involved should be an acknowledged leader in its field, and the schooling process should meet the norms and standards of that industry, to help the students become potentially preferred employees. These arrangements should however be initiated by the Department of Basic Education in conjunction with the Department of Higher Education and Training.

In order to achieve these proposals, the following would also have to be implemented:

1. Learners in focus schools should be able to make subject specialisation choices at the beginning of Grade 8.
2. The standing of vocationally-oriented education should be strengthened by developing a clear and unambiguous set of prescriptions to be met by general education schools wishing to offer vocationally-oriented education subjects.
3. Funds should be allocated from SETAs to support and enhance identified focus schools.
4. Appropriate mathematics and physical science syllabuses should be developed for more technically-oriented subjects.
5. Focus schools should be clearly defined and supported by policies and practices which will allow them to fulfill their potential as providers of vocationally-oriented education.
6. The rigid boundaries between school-based vocationally-oriented education and vocational education offered at FET colleges should be more flexible.
7. Partnerships between focus schools and industry should be encouraged. This will allow vocationally-oriented education to be complemented/supplemented with practical experience in appropriate companies.
8. There needs to be a policy which allows schools to pay teachers for the extra work they may have to do (as per the Middelburg example).
9. At the end of Grade 9 learners should be given well-researched, useful advice on career and job opportunities suitable to their identified aptitudes and abilities.

Develop a specific policy framework for expanding vocationally-oriented education in South Africa



10. There should be policy-connecting mechanisms established between the Departments of Basic Education and Higher Education and Training to ensure that vocationally-oriented and vocational education is properly supported and valued.
11. A carefully designed and well-maintained management information system in the Department of Higher Education and Training with inputs from the Department of Basic Education is necessary as a basis for developing policies and making decisions on enhancing the role of vocationally-oriented and vocational education.
12. There needs to be support for small and medium-sized enterprises to involve them in training linked to vocationally-oriented and vocational education.
13. There should be incentives to and encouragement for universities of technology and/or private service providers, to improve the training of teachers and trainers for vocationally-oriented and vocational education.



Endnotes

1. Cloete N, Needham S, Net H, Papier J, Shepard C and Stumpf R (2009). Responding to the Educational Needs of Post-school Youth, Centre for Higher Education Transformation and the Further Education and Training Institute, p40.
2. The lack of precise data on specialist schools in South Africa is a function of three factors: firstly, 'focus school' does not refer to a category of schools on the education department's data base; secondly, the concept of specialist schools is defined differently by the respective provinces, and thirdly, many technical schools (the typical focus schools) have become general secondary schools for reasons outlined in this document.
3. It could be argued that a fair amount of the education offered at FET colleges is in fact vocationally-oriented and does not represent pure vocational education.

This summary is based on a research report by **Professor Rolf Stumpf and Dr Gustav Niebuhr** 'International Best Practice on the Introduction of Vocationally Oriented Education in the Secondary School Sector', commissioned by CDE. The research report is available from CDE. Please send your request to info@cde.org.za



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