

**International SAPCO-IVETA Conference**  
**Tsogo Sun Hotel, Cape Town. 13-16 August 2018**

**Paper Title:** Making Technical and Vocational Education and Training an Appealing Choice for the Youth in South Africa

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“Our intention is to ensure that TVET colleges become institutions of choice for millions of young people.”

South African Minister of Higher Education and Development, Naledi Pandor, delivering her Department’s Budget Vote in Parliament, 17 May 2018.

## **1. INTRODUCTION**

‘World over TVET is increasingly becoming more important in helping economies create and generate employment, yet its position among the youths as a career choice remains that of the last option. Countries are designing programmes and setting up various skills training institutions in order to capitalize on the returns that come with TVET. The investment that is going into TVET would be a waste if youths that are earmarked to uptake the skills training continue to look at TVET as a last resort in career pathways.’

The above quote is the motivation in the Call for Papers to this Conference. The aim of this paper is to assist in achieving the main theme of the Conference, namely ‘Making Technical and Vocational Education and Training the First Choice’. Its focus is how this can be achieved in South Africa, but it could obtain valuable lessons for other countries as well.

The paper does so by presenting three existing TVET systems that succeed in achieving this objective, namely the Singapore Institute of Technical Education (ITE) and Polytechs, Germany’s Dual Education and Thailand’s Cooperative and Work-Integrated Education. None of these systems were achieved without much effort and hard struggle. Two of them were also not achieved overnight. It took a long time, decades in the case of Singapore and more than a century in the case of Germany, to reach their goals. They also had to make adaptations and changes along the way as circumstances dictated.

This paper presents an historical overview of how it was achieved in Singapore and Thailand, but in the case of Germany only the current system is presented. It is based on research I conducted in Singapore and Germany. In Germany I was fortunate to be a guest of the German Federal Foreign Office (Auswärtiges Amt) that took me and other international guests from all round the world to a wide range of institutions in Berlin, Bonn and Cologne. The institutions we visited included, amongst others, a senior vocational high school centre for technical informatics, a vocational training centre in the construction industry, and the Federal Institute for Vocational Education and Training at the BIBB (Bundesinstitut für Berufsbildung) in Bonn. In Singapore I was taken round ITE College East and Nanyang Polytechnic as well as the Ministry of Education Heritage Centre.

The argument put forward in this paper is that each country has to develop a TVET system that fits into the conditions that prevail in that country. It is not possible for one country to

simply adopt a system that works well in another country. This is because each country has its own unique characteristics that have to be taken into consideration. These characteristics often entail powerful political, economic, social, cultural and geographic forces that impact on the TVET system. Some of them are even beyond the power of the government to change. The TVET system therefore has to adapt to them and do the best it can under the circumstances and conditions that it is operating.

To demonstrate this, the paper moves on to a survey of South Africa's TVET system focussing on its public TVET Colleges and the reasons for their under-performance. It ends off with proposals of which aspects of the TVET systems in Singapore, Germany and Thailand TVET Colleges in South Africa could strive to emulate in order to become the institutions of choice for millions of young people in the country.

## **2. SINGAPORE**

### **2.1 Brief Historical Background of Technical Education in Singapore**

Singapore was under British colonial rule from 1819 to 1955. The colonial rulers showed little inclination to provide technical education for Asiatic children. Towards the end of colonial rule – in 1954 - the Singapore Polytechnic was established. When it opened 2800 students registered and enrolled for 58 courses in 5 departments (Varaprasad 2016:3 and 7).

Full independence of Singapore only came in 1965. The first stage of independence was characterised by rapid labour-intensive industrialisation, and became skill intensive during the 1970s.

Technical and vocational education was not popular among school-goers. More than 90% of secondary school leavers proceeded on an academic route while less than 10% went the technical or commercial route (Varaprasad 2016:20).

### **2.2 Commencing the Task of Upgrading Technical and Vocational Education**

In order to increase the popularity and availability of technical and vocational education a number of steps were taken at the secondary school level. Between 1969 and 1971 nine vocational institutions were created. They generally offered two-year craft courses. The Technical Education Department (TED) made it compulsory for all secondary school students to take workshop-based subjects in their first two years. In addition more technical secondary schools were opened with a 20% technical curriculum.

In spite of these measures there was still an imbalance in favour of the academic path at secondary school level. This bias was not aligned with the job-creation-through-industrialisation strategy. A new statutory body, the Industrial Training Board (ITB) was created in 1973. One of its first tasks was to determine a new service scheme for its staff to make it attractive enough to execute its expansion plans (Varaprasad 2016:27-29). The Board's other main priority was to develop more training capacity through workshops, equipment and classrooms. It also made some key decisions:

- The principal vehicle for skills training to the craftsman level would be the apprenticeship system;
- The Trade Certificate course would make provision for a sound theoretical knowledge and basic skills in each major trade area suitable for upgrading to a full craftsman (Varaprasad 2016:29).

The ITB focused on more industry-relevant and industry-specific training. School leavers started being trained for specific companies and industries. One of the most successful

innovations of the ITB was the establishment of Joint Training Centres with companies, with the government sharing the costs. The first two of these were the Tata-Government Training Centre in 1972 and the Rollei-Government Training Centre in 1973 (Varaprasad 2016:30).

### **2.3 Transformation of TVET in Singapore: Setting up the Institute of Technical Education (ITE)**

By 1990 Singapore had emerged as a Newly Industrialised Economy and was one of the Asian tigers along with South Korea, Taiwan and Hong Kong. A new Strategic Plan was unveiled in 1991. It aimed at making the nation a centre of high-tech manufacturing industries and international business hub. A turning point came in 1992 when the government decided to restructure the economy and education system.

The restructuring of the TVET system entailed merging the Industrial Training Board (ITB) with the Adult Education Board (AEB) in 1979 to become the Vocational and Industrial Training Board (VITB). The AEB was constituted in 1960 to give thousands of poorly educated and low-skilled adult workers a second chance. A key part of educational restructuring in 1992 entailed removing the word “vocational” from the title of the VITB and to rebrand it as the Institute of Technical Education (ITE) (Varaprasad 2016:23-24, 35, 85-86).

The reason why the word “vocational” was removed from the title was, to quote Dr Law, Director of the VITB, ‘because of the deeply-rooted perception that “vocational training” and, hence, VITB, was the last place of resort for those who had failed in schools.’ Dr Law recalled later that the task of rebranding the VITB was daunting as it had long suffered from a poor image and was shunned by society. It required changing the societal mindset and attitudes towards vocational training (Varaprasad 2016:86 and 89).

The ITE’s mission and functions were set out as follows:

- Expanding higher level technical training courses for secondary school leavers;
- Upgrading technical skills of the workforce through continuing education and training. This was to afford the majority of mature workers who had little formal education a second chance for training;
- Further promoting industry-based training by (i) expanding the scope of apprenticeships and (ii) encouraging companies to set up In-house Training Centres (Varaprasad 2016:87-88).

#### The first five-year Strategic Plan

The development of ITE has gone through four five-year Strategic Plans and is presently in its fifth Plan. The first one over the period 1995-1999 was called ITE 2000. Its aim was to build the ITE into an established post-secondary technical institution by the year 2000. It recognised that its training needed to cater to two key groups, school leavers and workers. Promoting its image was done in two key ways: (i) to proactively target secondary school students with a positive image and values of technical and skills training; and (ii) to target and change public misperceptions (Varaprasad 2016:90-91).

The need was recognised for staff to become professionally qualified by upgrading their pedagogic and professional competencies and qualifications so as to meet the needs of post-secondary students. It was viewed as critical to imbue staff with an intrinsic spirit of care and concern for their students, along with a training approach that was more interactive, questioning, probing and challenging as well as consultative rather than purely instructor-centred.

### The second and third five-year Strategic Plans

The second five-year Plan (2000-2004) was formulated with a vision to make ITE a world-class institution. Singapore was rapidly transforming into a knowledge-based economy. Students therefore had to be able to apply their knowledge. To enhance competencies ITE teachers were re-designated as “lecturers”. They were required to participate in industry projects to enable them to stay abreast with industry developments (Varaprasad 2016:93-95).

The vision for the third Strategic blueprint (2005-2009) was for ITE to become a global leader in Technical Education. The blueprint focussed on 4 goals:

1. Students must be made ready for a global environment with more competition;
2. Lifelong employability must be ensured;
3. Expanding ITE’s global presence in strategic alliance with global players;
4. Enhance staff capabilities and competencies (Varaprasad 2016:96-97).

Up to this time, ITE had established itself on 10 small campuses. It was decided to regroup and consolidate them into three regional Campuses and rename them ITE Colleges. Each College was empowered to develop its own niche areas of excellence to enhance the flexibility and innovativeness of ITE Education. The “Three Colleges” system was a game changer in the perception of ITE. Instead of small institutions serving a local population, ITE became a major league player with mega-campus. ITE College East started operations in 2005, ITE College West started operations in 2010, and ITE College Central started in 2013. These Colleges were equipped with a comprehensive range of facilities, such as modern workshops, laboratories, smart IT classrooms, sports and recreational centres (Varaprasad 2016:97-98).

### ITE College East

On 9 March 2017 I and a few fellow-South Africans were taken on a guided tour of ITE College East. The first impression was how impressive the institution is. It has three imposing and attractive curved buildings that sweep together to form a lovely green courtyard. For a student just to attend and walk around the campus is enough to instil a sense of pride and self-worth. The training facilities were excellent and we passed a hair dresser saloon that was being run by the students. After being shown the health and beauty training centre we were taken to the sound and light studio. There we were literally blown out of our minds. When we entered the students were experimenting with different colours and shades of stage lighting to see what effect it had on television transmissions. Then they put on two sound and light performances, one with lasers and the other with beams and stroboscopes, especially prepared for us. The lights performance music was strategically chosen: it was "Waka Waka -This Time for Africa", the official song of the FIFA World Cup staged in South Africa in 2010. The students often contracted to do the stage and lighting for real live stage performances, thereby gaining professional work experience.

### The fourth and fifth five-year Strategic Plan

The fourth Strategic Plan (2010-2014) was based on innovation. The vision was for ITE to be recognised as a “Global leader for Innovations in Technical Education”. It realised that in a borderless world it is important to stay ahead of the game.

By the end of 2014 ITE had inked over 100 Memoranda of Understanding (MOUs) with industry and global partners, such as Rolls Royce, Marina Bay Sands, Bosch Rexroth, L’Oreal, Huawei International, Adobe, and McDonald’s Restaurants, just to name a few.

These MOUs enhanced ITE's global standing and provided many authentic learning and development opportunities for ITE staff and students (Varaprasad 2016:100-101).

The fifth Strategic Plan which is currently in operation was launched in 2015. It was named the ITE Trailblazer as its aim is to chart new ground. Its two key elements are innovation in order to open up new career and life pathways for graduates, and a shift from vocational skills-for-a-trade focus to a skills-for-careers emphasis. This entails equipping students with a holistic foundation in technical skills, supplemented by workplace skills gained through working (Varaprasad 2016:103).

In 2017 the Minister of Education in charge of Higher Education and Skills, Ong Ye Kung, spelled out the following five requirements to implement the strategy:

'First, besides being a pathway into good jobs and lifelong employability, education also needs to be a journey to fulfil hopes and aspirations.

'Second, education and learning need to be lifelong. Adult training needs to be bite-sized, relevant, concise, convenient, and to the point.

'Third, education must impart skills, not just information and knowledge. This is for a simple reason – because information can be 'Googled', skills cannot. Whether you are performing surgery, coding a complex IT programme, cooking for your customers, or repairing a car – all these are skills.

'Fourth, 'learning by doing'. Technical and cognitive abilities can also be gained through actual experience. This method has underlined centuries of European apprenticeship and craftsmanship the world over. It is more important and relevant than ever today.

'Fifth, help Singaporeans adapt to a data-rich and digital working environment. We must all be comfortable and competent working in a digitally-enabled environment. In other words, we must be data-enabled as a workforce' (Minister Kung 2017).

#### **2.4 Developments at the Tertiary Level: Polytechnics come of age**

In 1954 Singapore Polytechnic was the only post-secondary institution in Engineering and Technology covering trade skills and technical education. Since then polytechnics have expanded to become the primary providers of highly trained para-professionals to fill mid-tier positions in industry, business and services. Currently there are five Polytechnics . (Varaprasad 2016:53)

As Singapore moved from a low labour cost and labour-intensive economy to a high technology and high skill economy, the demand for skilled and trained technicians continued to grow. In 1978 Singapore Polytechnic moved to a new 37 hectares campus. In 1982 a second Polytechnic, the Ngee Ann Polytechnic came into being on a 20 hectares site. This brought the total capacity of polytechnic education to 18,000 students (Varaprasad 2016:57-58).

Two new-generation polytechnics were established during the 1990s, effectively doubling the national capacity of technician training, Temasek Polytechnic in 1990 and Nanyang Polytechnic in 1992. They were designed to accommodate 12,000 students each and established only a few Schools instead of many departments. Temasek opened new programmes such as tourism and hospitality, retail management and design to fill the rapidly expanding skills needs of the service sector (Varaprasad 2016:58-59).

In 2002 the fifth polytechnic was established. With 5 polytechnics, each approaching a student enrolment of 15,000, a cohort participation rate of 45% of school leavers has been achieved. The ITEs, equivalent to South Africa's TVET colleges, contribute another 25% of

each cohort, bringing to 70% the cohort that takes the TVET route to education and careers. At least 50% of enrolments are females (Varaprasad 2016:61-62).

### Nanyang Polytechnic (NYP)

The NYP established its niche and specialisation with its “teaching factory”. The laboratories and classes were designed to be as close as possible to an actual work environment. Teaching staff work very closely with business and industry to bring real-life problems into the Polytechnic. Students are assigned into groups to create solutions. NYP charges market rates and signs contracts on quality, etc. as in the real world (Varaprasad 2016:61).

The author had the good fortune of visiting the NYP on 10 March 2017 as the guest of the CEO, Mr Foong Tze Foon. He showed me around the School of Business Management and School of Engineering. At the School of Business Management was a reasonably large convenience store that was entirely run by students. In this way they learned all the requirements of running a retail store and gained the experience of actually doing so.

The School of Engineering contained the latest technology currently in use by industry. He explained that one of the ways in which the Polytechnic trains its engineering students is to approach local and international state departments and corporations to find out what innovative technology they would like to be invented in order to take them forward to the next level of innovation. The Polytechnic then undertakes to invent it and build a prototype for the client. The desired invention thereupon becomes a project of a staff member with a group of students who set about collectively inventing and producing a prototype. The government or corporation makes sure that Nanyang Polytechnic is provided with all the necessary technology and machinery to fulfil its quest. Once the invention has been designed a prototype is built by the Polytechnic. This entails the practical co-operation of a range of departments which also trains the students in co-operative teamwork.

To a question of mine on what happens to Nanyang Polytechnic students after they qualify, the answer was that they are highly sought after, not only in Singapore, but also internationally.

## **3. GERMANY**

### **3.1 Contemporary TVET in Germany: Dual Education**

A central contemporary feature of skills development in Germany is the dual vocational education and training (DVET) system. There are many variants of it, but essentially it consists of simultaneous theoretical education and practical work. Part of the time of a young apprentice is spent at a vocational school learning the theory of his or her trade and occupation, the other part is spent at work gaining practical experience under the watchful eye of a master craftsman.

The details of DVET vary, but typically a young apprentice would have spent 10 to 13 years at school, going to either a *Haupt* or *Realschule* after completing elementary school. He or she would then simultaneously be employed as an apprentice by a firm and enrol at a vocational school. The firm pays the apprentice a set wage, enough to cover her or his expenses, while the vocational school is free (Book 2015). The average monthly apprenticeship wage ranged between 708 and 768 Euros in 2013 (BIBB 2015a:41). The apprentice then spends 70% of her or his time at work and 30% at school. After 2 to 3.5 years the youth will qualify as a craftsman and stand a 60% chance of being taken into employment by the firm where she or he received training (GOVET 2015:2 & 5). If not, the chances of

being placed at another firm are very good. In 2015 the youth unemployment rate of 8% was not much higher than the national average of 6% (Book 2015).

In December 2012 there were 1.43 million apprentices receiving Dual VET in 344 officially recognised occupations in Germany. Of these, 557,000 or 39% were women. There is great gender variation between the different trades and occupations with women completely dominating independent professions (95%) and home economics (92%), two-thirds majority in public service (65%) and clear minorities in “skilled trades”<sup>1</sup> (23%) and agriculture (22%) (BIBB 2015a:24-26). More than half (55.7%) of the youth enter Dual VET while 44% graduate from it (GOVET 2015:2).

Of the 2.1 million firms in Germany approximately 447,700, participated in vocational education and training of young people in 2012. Thus just over one in five firms taken on young apprentices. Of all the companies training apprentices 50.4% are micro (1-9 employees), 34.6% are small (10-49 employees) while 12,3% are medium and only 2.7% are large (250 and more employees).<sup>2</sup> However micro firms train only 18.6% of all apprentices while small, medium and large each train about 27% (26.2%, 27.1% and 28.1% respectively). (BIBB 2015a:35-36).

Like most industrialised countries in the world the service sector of the German economy has grown much larger than the manufacturing sector. In 2016 the service sector contributed around 70% of the total GDP while manufacturing industry’s share was slightly below 30%. Partly as a result of this employers increasingly prefer to take on youth with higher education levels, right up to university degree level. There has thus been a trend for higher level *Technische Hochschule* (universities focusing on engineering sciences), colleges and universities to adopt a dual education system. Two contemporary examples are the *Hochschule für Wirtschaft, Technik und Kultur* (HWTK) in Baden-Baden and Berlin and the Baden-Württemberg Cooperative State University (*Duale Hochschule Baden-Württemberg – DHBW*) in Stuttgart.

The HWTK is a private, state recognised university of applied sciences that was founded in 2011. It offers three bachelor’s degree programmes in a range of specialisation in business and master’s degree programmes in business and cultural innovation studies. In 2015 it had 398 students enrolled in the bachelors programmes of which 59% were in a dual study model, 36% were full-time students and 5% in distant learning. The dual study students split their week equally between learning theory at the HWTK and gaining practice at their companies that usually pay their tuition fees (HWTK 2018).

The Baden-Württemberg Cooperative State University (DHBW), founded 1 March 2009, claims to be the first higher education institution in Germany to integrate academic studies with workplace training, thereby providing dual studies. It is one of the largest universities in the Federal State of Baden-Württemberg with 34,000 undergraduate students and over 9,000 partner companies and institutions. It runs three campuses and nine offices in different

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<sup>1</sup> “Skilled trades” in Germany includes over 100 occupations in the following areas:

- Building and interior finishes trades
- Electrical and metalworking trades
- Woodcrafts and plastic trades
- Clothing, textiles and leather crafts and trades
- Food crafts and trades
- Health and body care trades as well as the chemical and cleaning sector
- Graphic design (Source: <https://www.zdh.de/en/occupations/> 27 Jan 2018)

<sup>2</sup> Using European Union classification of firm sizes.

locations with the head office in Stuttgart. In the course of their three-year studies, students regularly switch between the university and the company or social institution that provides the workplace training. It offers degree programs in business, engineering and social work (DHBW 2015).

Germany now promotes its dual education system as an important export to other countries. The promotion is being driven by BIBB which, in September 2013, established the Central Office for International Vocational Education and Training Cooperation. 'Its purpose is to help improve the position of German vocational education and training at international level' (BIBB 2015b:2). By 2014 Germany had concluded 40 bilateral cooperation agreements in vocational training (Schayan 2015:26).

In spite of this, quite a different TVET system that is also working very well has developed in Thailand. Like Singapore, Thailand also decided not to attempt to duplicate the German dual education system.

#### **4. THAILAND**

##### The Cooperative and Work-Integrated Education system

A TVET system that Thailand has been implementing for the last 23 years is called Cooperative and Work-Integrated Education (CWIE). It commenced operating in 1995 at the Suranaree University of Technology (SUT). Instead of adopting the German simultaneous vocational education and workplace experience from the outset, undergraduate students at the UOTs first complete three years of study and in the fourth year spend four months gaining experience at a workplace by working at a firm in an appropriate industry. The placement and work are carefully monitored. The work has to be in line with the studies of the student and the occupation for which the student is qualifying. There has to be a suitably qualified and experienced person at the firm to mentor the student, and an academic from the UOT has to monitor the student's progress and performance. In the words of Professor Wichit Srisa-an 'Both the university, and the company have to agree on the work that the student will do, in line with the needs of the company and the student's field of specialisation. The company should have someone who is qualified to the right standard to serve as a mentor because this is very important. The job of the mentor is to assign work to the student and to assess the quality of the work and guide and support the student. Then, in addition, students will be visited during the four months by a faculty member of the university who is the academic supervisor' (Wichit Srisa-an, 2017)

This cooperative and work-integrated education system caught on very quickly and firmly in Thailand and has grown into an international movement. In its first year (1995) at SUT 123 students from 7 disciplines were taken on in 84 workplaces. By 1999 the student numbers had grown to 697 in 17 disciplines located in 516 workplaces. In 2008 the Office of Higher Education Commission of the Thai government drew up a five-year strategic plan to expand and consolidate Cooperative and Work-Integrated Education not only nationally, but also internationally. The uptake was extremely strong. By 2012 no fewer than 26,048 students from 103 universities in Thailand were accommodated at 12,962 workplaces. There were 139 public and private universities in the country at the time, hence 74% of all universities had adopted CWIE (Wichit Srisa-an 2014:5-9, 15).

There are good reasons why the cooperative and work-integrated education system caught on so quickly and extensively in Thailand. The first is that all three parties, the students, UOTs, and firms, all benefit from it. The students benefit by receiving valuable work experience, getting exposed to more diverse cultures, and increase their employment opportunities even

before graduation. Workplaces benefit by having a supplementary supply of workforce, are provided with the opportunity to select and recruit new staff from among the trainees and creating collaboration opportunities with the UOTs. The UOTs also benefit from the opportunities for collaborating with companies and gaining insights into industries' practices as well as receiving feedback on curriculum and teaching-learning improvement (SUT n.d.; Wichit Srisa-an 2014:7).

The second reason why CWIE caught on so quickly and extensively is because there is not a cost for participating firms. There is rather a net financial benefit for the firms. When it was initiated 23 years ago the government paid 10,000 Thai Baht per student placed at a firm. As Professor Wichit Srisa-an explained, 'It is very important not to let industry feel it is a burden to accept the students. They must benefit from the outcome of the programme. There must be a return on investment. Then they use it as a tool for hiring, for identifying talent. It is called "talent acquisition." With this programme we can see how students perform for four months. They have an incentive to do well to get a job. At the same time the students develop a loyalty to the company. So it is a win/win/win programme' (Wichit Srisa-an 2017).

CWIE is being advocated internationally by Thailand. It has been stressed that it is important to ensure the quality of the workplace experience of students. To this end it is necessary for government to specify the quality criteria that have to be met by companies. The Thai Office for Higher Education Commission asked the Thai Association for Cooperative Education (TACE) to develop a standard framework (TACE n.d.). 'This,' explained Professor Wichit Srisa-an, 'is essential for quality control. If you do not have standards you cannot ensure quality' (Wichit Srisa-an 2017).

Might the CWIE system of Thailand hold lessons for South Africa's TVET system and be implemented in a suitably modified form? In order to answer the question, it is first necessary to analyse the TVET system in South Africa. The next section accordingly presents an exposition of the main institutions implementing TVET in South Africa, namely the public TVET Colleges.

## **5. SOUTH AFRICA**

In South Africa the most extensive technical and vocational education and training is provided by public TVET Colleges. There are also other institutions that provide TVET. They include private TVET Colleges and training centres, SETAs (Sector Education and Training Authorities), numerous NPOs, and international agencies of which GIZ, the German Corporation for International Cooperation, and SSACI, the Swiss-South African Cooperation Initiative, provide the most extensive support. Universities of Technology also provide TVET at a higher tertiary level.

### **5.1 Public TVET Colleges in South Africa**

Currently there are 50 public TVET Colleges spread around the country on 266 campus sites (DHET 2015:1). The spread of Colleges across numerous campuses is a result of the Colleges' origin. In the early 1990s there were 123 technical colleges that were racially segregated: 67 were White, 3 Indian, 8 Coloured, and 45 African of which 22 were in the then-Republic and 23 in the former 'African homelands'. In 2001 they were restructured into 50 FET Colleges as the TVET Colleges were then called. The rationale behind the restructuring was to join smaller and weaker colleges with stronger institutions and create the institutional capacity to meet a wider range of social and economic demands (Fisher et al 2003:330-332).

Due to a strong commitment on the part of the government to grow technical and vocation education and training in South Africa over the past nine years, student enrolment at TVET Colleges has increased rapidly. It more than doubled from 358,393 in 2010 to 737,880 in 2015 (DHET 2017:28).

But while the TVET Colleges have grown in terms of quantity of students their quality in terms of delivery have generally remained low and even deteriorated. For instance, the lecturer-student ratio declined from 1:20 in 2002 to a national average ratio of 1:55 in 2012 (HSRC 2014:v).

### Poor Performance of TVET Colleges

There is a general perception in South Africa that the TVET Colleges are mediocre. This is not far off the mark as TVET Colleges tend to have three problems in common: (1) Poor teachers, (2) Dated machinery no longer in use in industry, and (3) low placements of their students in firms while being trained (Gafieldien 2016).

This is to a large extent due to the fact that TVET has been the stepchild of education in the eyes of the state until a decade ago. The proportion of the state's overall education (including primary and secondary schooling) budget spent on TVET hovered around 2.3% over 2010-2012, dropped to 1.1% in 2013, but returned to 2.3% in 2017 (National Treasury 2015:34; National Treasury 2018:59). Even in 2018 when TVET has been prioritised by the government as being of prime importance, the proportion of the total higher education budget allocated to TVET was only 11.9%, but it had at least increased from 9.2% in 2017 (Minister Pandor 2018).

But there has also been extremely shoddy administration of the TVET Colleges by the Department of Higher Education and Training (DHET). It was only a matter of time before TVET students started protesting about the poor service. On 19 January 2017 the students shut down 15 public (TVET) colleges. South African Further Education and Training Student Association (SAFETSA) president Yonke Twani gave the following reasons for the shutdown: Tens of thousands of graduates were still waiting for their certificates — some since 2010. As it turned out, this was an understatement. The full extent of the shocking backlog on issuing certificates became apparent in April 2017 when the DHET released no less than 233,000 National Certificates (Vocational) [NC(V)], a backlog that dated back to 2007. It was still sitting on a further backlog of 16,574 National N Diplomas. The Department lamely attributed the delays to a number of operational issues (Business Day, 2017).

The then Minister of Higher Education and Development, Minister Blade Nzimande, stated that the complaints of protesting TVET college students were "very valid". He told reporters that "Unfortunately we as South Africans have in recent times often focused disproportionately on our universities, instead of giving appropriate attention to the entire post-school education and training sector, and TVET colleges in particular" (News 24 2017).

In addition, there were unqualified lecturers, mismanagement of the Colleges, inadequate funding for students from the National Student Financial Aid Scheme (NSFAS), and late payment of allowances for accommodation and transport. (Harmse 2017).

All these factors contribute to the poor performance of TVET Colleges with regards to student throughput and success rate. A Ministerial Commission that reported to the Minister of Higher Education and Training found that, in 2010, of the 404 679 who wrote examinations, only 90 252 (or 22.3%) successfully completed a full qualification. In 2011, of the 126 491 who wrote examinations, 51 790 (or 40.9%) successfully completed a full

qualification. Despite the improved completion rate from 2010 to 2011, it still remained low, well below half of the students who wrote exams. (Ministerial Commission 2017:94).

More contemporary and more detailed statistics have been provided by the DHET as is indicated in Table 1 below.

**Table 1. Number of students in public and private TVET Colleges who wrote and completed qualifications, by qualification type, 2012 and 2015.**

| Year | NC(V) Level 4 |                  |                     | Report 190/1 N3 |                  |                     | Report 190/1 N6 |                  |                     |
|------|---------------|------------------|---------------------|-----------------|------------------|---------------------|-----------------|------------------|---------------------|
|      | Number wrote  | Number completed | Completion rate (%) | Number wrote    | Number completed | Completion rate (%) | Number wrote    | Number completed | Completion rate (%) |
| 2012 | 15 334        | 6 018            | 39.3                | 9 928           | 3 724            | 37.5                | 8 735           | 2 902            | 33.2                |
| 2015 | 26 144        | 10 465           | 40.0                | 73 650          | 43 259           | 58.7                | 89 454          | 53 125           | 59.4                |

Source: DHET 2015: Table 1, p.2.

Table 1 shows significant improvements in the completion rates for Report 190/1 N3 and N6 to almost 60%, while NC(V) only showed a very marginal improvement to 40%. However, even 60% is still a low pass rate and indicates a considerable waste of resources and loss of qualified apprentices. What is noteworthy and positive is the immense increase in students writing and completing Report 190/1 N3 and N6 qualifications. The number that completed N3 went up more than 11-fold to 43,259 while N6 went up more than 18-fold to 53,125. The increase is due to reversing the decision to phase out all Report 190/1 programmes and to reinstate them instead (DHET 2015:2).

#### Positive Developments at TVET Colleges

Another positive recent development for public TVET Colleges has been the introduction of Centres of Specialisation in the Colleges by the DHET in 2016. Part of the logic behind it was to do away with the duplication of training in the same occupation by different Colleges in a city or region. Instead only one of the Colleges in the city or region would offer high quality training in a particular occupation. Another was to focus on providing the thirteen priority occupational trades that had been identified as being in strong demand for developing the country's infrastructure. These trades are bricklayer; electrician; millwright; boilermaker; plumber; mechanic; diesel mechanic; carpenter and joiner; welder; rigger; fitter and turner; mechanical fitter and pipe fitter. They would be based on the new Quality Council for Trades and Occupation's (QCTO) specifications. A strong drive on quality is emphasized by the DHET. It has determined that the QCTO itself would play a central role in setting the standard for the accreditation of the Centres and for moderating the trade test assessments undertaken (DHET 2016:3.)

Several Centres have already been established. In Cape Town the False Bay TVET College has been awarded the establishment of two Centres of Specialisation (CoS) in Mechanical Fitting and Rigging. Speaking at the launch of the CoS Karin Hendricks, Principal (Acting) at False Bay College, said, "The CoS will see industry in partnership with TVET colleges drive a strategy to increase the pool of available artisans to meet the needs of the major 18 Strategic Integrated Projects (SIPS) across 13 priority trades in engineering fields, which have been selected for the CoS project" (Cape Business News 2018). In addition, the College of Cape Town for TVET, in association with the Retail Motor Industry (RMI) and the Institute of

Plumbing South Africa (IOPSA), launched the Centres of Specialisation for Automotive Motor Mechanics and Plumbing in February 2018 (College of Cape Town 2018). Not to be outdone, Northlink College in Cape Town announced in March 2018 that its Wingfield Campus had been identified as the Centre of Specialisation for the Fitting and Turning trade. It has commenced building the new Centre and expects to recruit the first group of students for the new QCTO qualification in 2019 (Northlink College 2018).

The performance of TVET Colleges differ from one another and there are a few that stand out as good Colleges. Included amongst them are False Bay College in Cape Town which caters for students with disabilities and has a Centre for Entrepreneurship at its Westlake campus, West Coast College in Malmesbury which performs well in agriculture, and Vhembe College in Limpopo which manages to place students in work in spite of the sparsity of large firms in the vicinity (Taylor 2017).

In spite of the limitations of TVET Colleges, efforts to implement the German dual education system have been tried for many years in South Africa. A recent attempt to do so by means of pilot projects was launched under the management of the Swiss-South African Cooperation Initiative (SSACI) at the request of the DHET. These pilot projects are discussed next.

## **5.2 The A21 Dual Education Pilot Projects in South African TVET Colleges**

German dual education has been implemented by German firms operating in South Africa in collaboration with the Southern African-German Chamber of Commerce and Industry (SAGCI) for many years. Upon completion the apprentices obtain actual German qualifications (Boddenberg 2016), but it has only been German firms that participated. In an effort to extend the German and Swiss dual education system in South Africa, four pilot projects involving national firms have been launched over the past five years. SSACI has played a key role in the planning and management of the project.<sup>3</sup>

The first pilot project commenced in 2013. It was a mechatronics project in Port Elizabeth and Uitenhage. But in March 2015 the project had to be deregistered for various reasons, one of which was that there was no trade test in place for mechatronics. In addition, one employer did not allow the apprentices onto the factory floor as the employer regarded their basic (hand) skills lacking. The second project was a welders' pilot project at the Saldanha and Vredenburg campuses of the West Coast TVET College. It commenced with 24 apprentices. Over the duration of the project there was an attrition of 10 apprentices mainly due to the fact that they could not pass mathematics after several attempts. Eventually 13 successfully passed the trade test. The third project was with 24 Vehicle Body Builder apprentices and commenced in April 2015. The Randfontein Campus of Western TVET College Campus provided the theory and Busmark was the employer. Twenty three active apprentices were due to take their trade tests in September 2017 (SSACI 2017:5-6).

The fourth dual system pilot project was for 25 electrician apprentices who were being trained at the Brickfields TVET Campus of the Eastcape Midlands College (EMC). I visited it on 2 March 2017 at the invitation of Dr Florus Prinsloo, former Technical Advisor to the

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<sup>3</sup> From SSACI Website: <http://www.ssaci.org.za/programme/current-projects> Accessed 5 March 2017.

SSACI has been mandated by the national Department of Higher Education and Training (DHET) to pilot a new approach to artisan apprenticeships based on the Swiss and German 'dual-system'. A main objective of this pilot project was to test the value of dual-system apprenticeships for South Africa, i.e. their practicality for local conditions, their effectiveness, their costs and benefits, and their appeal to local employers.

Department of Higher Education and Training on the Artisan Development System in South Africa and currently Manager of the Apprenticeship Game Changer in the Western Cape Provincial Government, who played an important role in getting the project off the ground. There were three major hurdles that had to be overcome: finding funding for the project, getting buy-in from firms in Uitenhage after their unfortunate experience with the mechatronics project, and obtaining cooperation between SSACI and GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit).

Mr Claassen, Registrar of Brickfields Campus, gave the presentation. He listed numerous problems getting the pilot scheme off the ground and running it. Funding was the biggest issue they had to battle with. It was also not easy to place the apprentices. Employers did not agree with the model of one day theory and four days work (one of the ways it is allegedly done in Germany). The West Coast TVET College had a ten day –ten days approach. In the end it was decided that, for the electricians, there would be 12 weeks at College, then 12 weeks at the company, followed by 8 weeks at the College and 12 weeks at work. The next round would have even less time at the College (Maree 2017b).

SSACI acted as the Lead Employer, a concern for the College as it added to the overall costs of the pilot project. The single most critical challenge remained the sourcing and involvement of host employers. The companies were more production orientated and hence reluctant to take on apprentices. Early indications were that the A21 process was very expensive and that the EMC might have had to draw on money from the National Skills Fund (NSF) (Prinsloo 2017:1 and 5).

GIZ played a very valuable supporting role. Experts visited on monthly basis but a challenge emerged as different GIZ staff and German experts offered contradictory technical advice. This caused confusion for the College staff as well as apprentices (Prinsloo 2017:2).

Each college was doing its own formative assessment since no standardised assessments had been developed. None of the workplaces were accredited for the new QCTO qualifications. Confusion exists between SETAs and QCTO as to who was responsible for workplace approval for occupational qualifications. There was a lack of qualified artisans at workplaces and hence those who were qualified did not have enough time to mentor the apprentices (Prinsloo 2017:3).

Although Grade 9 was a sufficient qualification for an apprentice to be accepted, workplaces did not want students with only Grade 9 due to their poor maths. They preferred apprentices with Grade 12. EMC selected NC(V) Level 4 students and NATED N3 learners from among their own students.<sup>4</sup>

Report 191 students were stronger theoretically while NC(V) students were stronger in practical application. Feedback from learners after the first rotation indicated that learners

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<sup>4</sup> NC(V) [National Certificate (Vocational)] programmes are delivered under the auspices of the DHET and quality assured by Umalusi. The programmes integrate theory and practice and provide students with a broad range of knowledge and practical skills within specific industry fields. The duration is 3 Years (1 year per level) and the qualification Full Certificates on NQF Level 2, 3 and 4 with NC(V) Level 4 Certificate being equivalent to National Senior Certificate (matric).

NATED, the National Accredited Technical Diploma, contains Report 191 engineering studies programmes which are delivered under the auspices of the DHET and quality assured by Umalusi. Engineering studies range from N1 – N6 while Business and Utility Studies range from N4 – N6. The duration is 1 Year for N1 – N3 Engineering Studies, 1 Year for N4 – N6 Engineering Studies, and 3 Years (18 months theoretical studies plus 18 months workplace application) for N4 – N6 Business and Utility Studies (TVET Colleges 2018).

with small companies were gaining more competencies than those with large companies (Prinsloo 2017:4).

Delegates were given a tour of the occupational school workshops that had been designed with apprenticeship programmes in mind and found to be highly suitable for the A21 dual system process (Prinsloo 2017:6). The workshops were located right opposite the lecture rooms and were well equipped with modern technology, although it seemed rather sparse in places, such as the motor vehicle service workshop where there was only one hydraulic lift (Maree 2017b).

#### Assessment of A21 Dual System Pilot Projects

It is very commendable that these dual system pilot projects have been launched as it takes an enormous amount of initiative and energy to get them off the ground.

However, it seems as if the South African apprenticeship system is not yet geared and ready for the dual system. Proper institutional and procedural arrangements are not in place to facilitate dual education. The system has become over-complicated and complex and QCTO is not operating efficiently. An indication thereof is that, according to John Arneson, by December 2016 the QCTO had only managed to register about 70 trade and occupational qualifications with the South African Qualifications Authority (SAQA) out of the roughly 1,500 qualifications formerly copied from the United States and still needing to be reformulated and registered with SAQA (Arneson 2016).

The streamlining to remove unnecessary blockages and to streamline procedures therefore needs to be accelerated. However, the devil lies in the detail and it will require people who are really in the know to help revise and streamline the system effectively.

It is clear that at present many obstacles are standing in the way. One of the major obstacles is the low level of literacy and numeracy of the apprentices. The major reasons for this is discussed next.

### **5.3 Poor school education: A major obstacle to high quality TVET in South Africa**

The first major obstacle is the extremely poor school education that the majority of South African children receive, particularly those from poor and disadvantaged communities. The internationally accepted TIMSS (Trends in International Mathematics and Science Study) and PIRLS (Progress in International Reading Literacy Study) studies by the IEA (International Association for the Evaluation of Educational Achievement) have come up with extremely negative findings for South Africa. In their 2015 TIMSS survey of school learners' mathematical ability South Africa came 48<sup>th</sup> out of 49 countries for Grade 4 students and 38<sup>th</sup> out of 39 countries for Grade 8 students. In Science South Africa came last out of 39 countries for Grade 8 students (TIMSS and PIRLS 2018). In the 2016 PIRLS study South Africa was the lowest performing country out of 50 countries. It was found that around 78% of South African Grade 4 learners did not reach the international benchmarks and therefore do not have basic reading skills by the end of their Grade 4 school year (Howie et al 2017:11). By way of contrast, in all of these surveys Singapore came first.

The reason for the extremely poor school education lies in the poor quality of the education provided at the great majority of South Africa schools. Four of the main causes for this are poorly qualified and unqualified teachers, inadequate time spent on teaching at schools in the African townships, weak and corrupt administration of school education in six of the nine provinces, and the actions of the largest and most powerful teachers union in the country, SADTU, the South African Democratic Teachers' Union. SADTU blocks almost every effort to improve the quality of the teaching at these schools. There are nevertheless notable and

very praiseworthy schools in disadvantaged communities that perform extremely well, but they are few and far between.

In 2017 the Department of Basic Education revealed that 5,139 teachers were either unqualified or under-qualified. However, this is only a small proportion of the roughly 435,000 teachers across the country (Times Live 2017). But it is not only un- or underqualified teachers who perform badly. In a study conducted in 2007 maths teachers of 11- and 12-year-olds sat tests similar to those taken by their class; questions included simple calculations of fractions and ratios. An overwhelming 79% of the teachers scored below the level expected of the pupils (Economist 2017).

Pupils lose about 40% of learning time every year in South African schools because teachers habitually skip classes, according to a study by the Centre for Development and Enterprise. Amongst other things, they go shopping on paydays and are doing extra jobs even though they are full-time teachers (City Press 2017).

But it is particularly SADTU that has played a major role in holding back the improvement of teachers, principals and schools in poor African communities. In a previous publication the author has written extensively on the wide range of steps SADTU has taken to obstruct raising the quality of education at African schools (Maree 2017a:203-210). SADTU's actions fall into three categories: First, opposing measures put forward by educational authorities to improve the performance of teachers, principals and schools; second, by its members engaging in corrupt measures to appoint inferior quality and underqualified SADTU members or friends to teaching posts, headships (principals) and as educational authorities in at least six provinces; and third, by going on strikes at critical times such as when matric students are preparing for their final exams.

Briefly, an example of each category of action by SADTU's members is presented. It firmly opposes linking teachers' remuneration to the performance at school as measured by how their students are performing. It is also against the annual evaluation of pupils in Grades 3, 6 and 9 on the grounds that it takes time away from teaching. SADTU members even went as far as disrupting systemic tests in language and mathematics of Grades 3, 6 and 9 learners in 2016 that the Western Cape Education Department was conducting in order to identify schools that require additional assistance. A NEEDU (National Education Evaluation and Development Unit) report in 2013 stated that SADTU has wielded its power to have unqualified teachers appointed to positions of authority in education. Subsequently *City Press* revealed that SADTU members were routinely selling plum posts, including those of principal and deputy principal, for upwards of R30,000 in KwaZulu-Natal. Finally, SADTU has repeatedly shown itself willing to strike at critical times when final-year students are preparing to write their matric exams. For instance, in September 2013 60,000 SADTU members in KwaZulu-Natal went on a strike that disrupted the crucial matric trial examinations. The reasons advanced for the strike were unpaid strike pay, unfilled posts, and the province's failure to implement grade adjustments since 2009 (Maree, 2017: 203, 204, 208 and 209).

Without a good sound basic education, especially in literacy, maths and science, it is extremely difficult and challenging to deliver a proper technical and vocational education. The poor quality of basic school education is thus a major challenge that has to be overcome to make TVET in South Africa world class as it is in Singapore.

## **6. MAKING TVET APPEALING TO SCHOOL LEAVERS IN SOUTH AFRICA**

The TVET systems in Singapore, Germany, Thailand and South Africa have been presented above. Each country has a distinct system that serves the country very well. The German dual education system has already been propagated by Germany as a model right across the world including South Africa for many years. I was told in Singapore that they had taken a very good look at the German TVET system and decided that it could not be implemented in Singapore. Instead they decided to develop a system that suited conditions in Singapore. The same logic drove Thailand to devise a different TVET model that is also successful.

All three models, Singaporean, German and Thai have highly commendable features. The Thai model where students first receive two or three years post-school vocational education before working at firms, the Singapore model for its world class ITE campuses and Polytechnics, and the German model for the hundreds of thousands of firms – large and small - that take on youthful apprentices who, from the outset, attend classes at vocational schools and work at firms because they are well enough educated at school to be productive from day one. All three systems provide the youth with skills that enable them to enter into occupations afterwards that have good career prospects and ensure the wellbeing of them and their families.

### **6.1 Why Singapore and Germany’s TVET systems cannot be implemented in South Africa**

However, South Africa’s realities make it impossible to duplicate either the Singaporean or the German TVET models at present. The TVET Colleges in South Africa are under-financed and the money is simply not available to upgrade the facilities and equipment at the 50 TVET Colleges and their 266 campuses to the world class of Singapore’s three ITEs and Polytechnics. Establishing Centres of Specialisation is a good move in the right direction, but they constitute only a small proportion of TVET Colleges’ offerings and still have a long way to go.

With regards to implementing the German dual education model in South Africa, the A21 Dual Education Pilot Projects presented above clearly demonstrate the extensive and almost overwhelming challenges that have to be overcome. A major challenge, if not the major challenge, is the reluctance of South African firms to take on apprentices from the Colleges and pay them a sufficient stipend to afford their living costs and other necessary expenses. Obtaining funding from the SETAs is a complicated and long drawn out process. Nor is there enough finance available in SETAs to finance the roughly 740,000 students registered at TVET Colleges minus the 149 000 whose household income is less than R350,000 per year and applied for NSFAS grants (Citizen 2018).

However, South African TVET Colleges can and should emulate the Cooperative Work-Integrated Education (CWIE) system of Thailand.

### **6.2 Thailand’s CWIE can and should be implemented in South Africa’s TVET Colleges**

The reason why South Africa should seek to emulate the Thai CWIE system is because of the similarity of the challenge faced by TVET Colleges and the Suranaree University of Technology (SUT) in Thailand. SUT discovered that what industrial employers wanted above all else was “ready graduates”, that is, those who could be productive right away in the workplace. They complained about employing students they first had to train for a year before they became productive. They did not want to take such students on board. Secondly, they wanted the students to have better English language skills. The solution that SUT came up with was to first let their students complete at least two years of academic training before getting a workplace placement. ‘This was more acceptable to employers as the students could

start working productively straight away without requiring any training first' (Wichit Srisa-an 2017).

This is a model that TVET Colleges should emulate, but for different reasons. The school education of most of the students that enter TVET Colleges is extremely poor as has been shown above. As a result their literacy and numerical skills are far below the standard employers require. It therefore makes sense for all its students doing three-year or longer courses to spend the first two years improving their literary and numerical skills as well as doing technical and vocational courses at the same time. Only in their third year should students be placed at a workplace for four months or so in order to gain practical experience. An essential requirement will be that the student will be able to be productive straight away.

In addition, all students accepted at TVET Colleges should be given literacy and mathematical tests to establish their level of proficiency. The students should then be streamed into literacy and mathematical courses depending on their level of performance in the tests. If there are students registered for only one-year courses and their literacy and mathematical abilities are extremely low, their courses need to be extended in order to enable them to raise their literacy and numeracy skills to the requisite level first. What this proposal effectively boils down to is for the TVET Colleges to get their students to reach levels of proficiency that match the international norms. This is an essential requirement to provide first class vocational education and training.

### **6.3 Action that will contribute to making TVET the first choice of the youth of South Africa**

Additional action that can be taken to make TVET the first choice of the youth of South Africa is to establish close working relationships between TVET Colleges and enterprises from every sector of the economy, whether in the private or public sectors. This approach has already been strongly advocated by top politicians, the government, the DHET and TVET Colleges. At the opening of the 2<sup>nd</sup> Human Resource Development Council (HRDC) chair of the Council, then-Deputy President Cyril Ramaphosa, said:

‘The Department of Higher Education and Training is implementing the recommendations of the task team through its Turnaround Strategy for TVET Colleges. An essential part of this strategy is measures to bridge the divide between the process of training and employment, between the classroom and the workplace. To this end, the HRDC recently launched its Adopt-a-TVET College campaign to promote cooperation between industry and TVET colleges. To date, 24 out of 50 colleges have been adopted by a number of companies. We encourage local and international companies to adopt TVET colleges as we seek to build a successful model for vocational training. This adoption creates a beneficial relationship between the colleges and the private sector. It helps to improve the delivery of the curriculum, helps to improve the administration of the colleges, and helps to improve the outcomes’ (Ramaphosa 2016).

In Parliament he said on another occasion:

‘We expect that companies that adopt TVET colleges in areas near their operations will provide students with practical learning opportunities. They will also help to develop teaching-learning material and build the institutional management capacity of TVET colleges (Ramaphosa 2015).

It is not clear what exactly is entailed when a company ‘adopts’ a TVET College, but ideally it should entail a close partnership in which the college trains students in the skills that the company requires and that the company reciprocates by providing the necessary state-of-the-

art machinery, technology and equipment to enable the college to be able to do so properly. In addition, teaching staff from the College need to spend time at the company so that they can thoroughly acquaint themselves with the technology and work processes at the company while qualified employees from the company should give lectures and demonstrations to college students in order to ensure that they learn the finer and more sophisticated requirements of the company.

It seems as if 'adoption' often only goes as far as the company financing the training of a number of students in a particular occupation that is in short supply. While this is commendable it is very inadequate.

One example of a partnership that comes close to the ideal model spelled out above is the partnership between Sasol and Gert Sibande TVET College. Together they launched a pilot artisan skills development programme for young people in Secunda in June 2014. This is how the launch was reported in Business News:

'It is a tripartite partnership consisting of Sasol, Gert Sibande FET College and the relevant SETAs. The College will be responsible for the delivery of tuition and programme logistics, while the respective SETAs will be do the quality assurance and accreditation and Sasol will provide funding as well as on-the-job training at its Training Centre. This initiative will give 30 young people from the community the opportunity to enrol in a three-year artisan learnership programme in the fields of Electrical Engineering and Fitting. The aim of the programme is to equip the youngsters to successfully complete their trade tests in order to qualify as artisans. The successful candidates will then be fully employable in any industry that is relevant to their trade' (Business News 2014).

What is required in South Africa is for this form of adoption to be duplicated hundreds, if not thousands, of times over to ensure that South Africa's TVET Colleges, together with private and public enterprises, large and small, train the country's youth to be fully employable afterwards<sup>5</sup>. If the enterprises do not have their own training centres they need to take on the apprentices for suitably long periods to ensure that they obtain all the work-integrated experience they require to learn their skills properly. The German dual education model provides a sterling example as no less than 447,700 firms, large and small, take on apprentices until they qualify as artisans.

## 7 CONCLUSION

In this paper the TVET systems in Singapore, Germany and Thailand have been held up as systems that work extremely well in each of the countries. The South African TVET College was then presented and analysed. Its inadequacies and weaknesses were pointed out as well as some of the reasons for their shortcomings.

It is argued in this paper that it is not possible to graft a TVET system that works well in one country onto another country. This is because of the differences between the countries. The

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<sup>5</sup> There is another more complex example of a partnership between industry and TVET colleges spelled out in an HRDC Report entitled *Forging TVET Partnerships: Implications for the Post-School Education and Training System*. Human Resource Development Council of South Africa, July 2014, pp.20-24. South Africa was experiencing a critical shortage of technically skilled people in the tool, die and mould-making industry, so the Tool-Makers Association of South Africa (TASA) launched the National Tooling Initiative to put the industry on a new growth trajectory. It was rolled out to TVET Colleges in three provinces where its flagship skills programme, Lean Manufacturing, was offered to all companies in the industry. What is more, these programmes were offered by industry experts.

differences are due to powerful economic, political and social forces that operate in each country and cannot easily be changed. One of them, the poor quality of primary and secondary school education in schools located in historically disadvantaged communities, is completely beyond the power of the TVET Colleges to change.

There are other powerful, conditions, contexts and forces at work that are also completely beyond the power of the TVET Colleges to change. They have not been discussed as it would go well beyond the focus of this paper. It is, however, important to mention at least the most important one of all as it is of concern to all of us. It is the absence of a capable state that upholds the rule of law and ensures that its officials are accountable to the public they are meant to serve. This incapable state is due to cadre deployment, cronyism, corruption and state capture. All of these malpractices need to be eliminated if we want to ensure a bright future for the youth of South Africa.

## REFERENCES

- Arneson, John. 2016. ASDSA TC meeting #2 of 2016. Email from John Arneson to Association for Skills Development in South Africa (ASDSA) Technical Committee (TC) members sent on 8 December. Arneson was then chair of the TC and I was a member.
- BIBB. 2015a. VET Data Report Germany 2014. Bonn: Federal Institute for Vocational Education and Training (BIBB).
- BIBB. 2015b. Pathways to an attractive VET system. *Vocational Training in Research and Practice* 5.
- Boddenberg, Matthias. 2016. Chief Executive, Southern African-German Chamber of Commerce and Industry. Discussion with the author, PepperClub Hotel, Cape Town, 24 March.
- Book, Gerrit. 2015. Presentation, Bertolt Brecht Square, Berlin. 7 December.
- Business News. 2014. Sasol invests in skills development for the youth. <https://showme.co.za/secunda/news/business-news/sasol-invests-in-skills-development-for-the-youth/> Accessed 24 June 2018.
- Business Day. 2017. Department issues college certificates from backlog to 2007. 13 April, p.3.
- Cape Business News. 2018. Dual System Apprenticeships are putting employers in the driver's seat, 11 April. <https://www.cbn.co.za/news/dual-system-apprenticeships-are-putting-employers-in-the-driver-s-seat> Accessed 21 June 2018.
- Citizen, The. 2018. Nsfas receives 408 000 applications for full study funding: 258 000 from those wanting to study at universities, and 149 000 for study at TVET colleges. <https://citizen.co.za/news/1840087/1840087/> Accessed 23 June 2018.
- City Press. 2017. South African Teachers Skip Classes, 13 August. <https://www.news24.com/SouthAfrica/News/sa-teachers-skip-classes-20170812> Accessed 15 June 2018
- College of Cape Town. 2018. Centre of Specialisation. <http://www.cct.edu.za/general/center-of-specialisation/> Accessed 21 June 2018.

- DHBW. 2018. Dual Higher Education with a Bright Future. Baden-Württemberg Cooperative State University. <http://www.dhbw.de/english/dhbw/about-us.html> Accessed 28 January 2018.
- DHET. 2015. Statistics on Technical and Vocational Education and Training, Community Education and Training and Private Colleges Examination in south Africa: 2015. Department of Higher Education and Training: Republic of South Africa.
- DHET. 2016. Centres of Specialisation in the TVET Colleges Sector. Version 2, October. Department of Higher Education and Development: Republic of South Africa.
- DHET. 2017. Statistics on Post-School Education and Training in South Africa:2015. Department of Higher Education and Training: Republic of South Africa.
- Economist. 2017. South Africa has one of the world's worst education systems, 7 January.
- Fisher, Glen, Ros Jaff, Lesley Powell and Graham Hall. 2003. Public Further Education and Training Colleges, ch.14 in Andre Kraak and Helene Perold, eds. *Human Resource Development Review 2003: Education, Employment and Skills in South Africa*. Cape Town: HSRC Press, pp.326-451
- Gafieldien, Achmat. 2017. Vice Principal - Innovation Development and Strategic Planning, College of Cape Town. Discussion with author, 18 May.
- GOVET. 2015. Dual VET – Vocational Education and Training in Germany. German Office for International Cooperation in Vocational Education and Training. Bonn: BIBB.
- Harmse, Johann. 2017. Understanding the TVET College Crisis. March 1. <https://educonnect.co.za/understanding-tvet-college-crisis/> Accessed 11 June 2018.
- Howie, SJ, C Combrinck, K Roux, M Tshele, GM Mokoena, and N McLeod-Palane. 2017. *PIRLS LITERACY 2016: South African Highlights Report*. Pretoria: Centre for Evaluation and Assessment.
- HSRC. 2014. Synthesis Report of the TVET Colleges Technical Task Team: Strengthening and Supporting TVET Colleges for Expanded Access and Increased Programme Quality.
- HWTK. 2015. Powerpoint presentation, Hochschule für Wirtschaft, Technik und Kultur, Friedrichstrasse, Berlin, 8 December.
- Maree, Johann. 2017a. Are Cosatu's Public Sector Unions too Powerful? Ch.11 in Andries Bezuidenhout and Malehoko Tshoaedi, eds. *Labour beyond COSATU: Mapping the Rupture in South Africa's Labour Landscape*. Johannesburg: Wits University Press, pp.191-216.
- Maree, Johann. 2017b. Report on a visit to Eastcape Midlands College Brickfield Campus, Uitenhage to observe the A21 Electrician Dual System Pilot Project, 2 March.
- Minister Kung. 2017. Speech by Minister Ong Ye Kung (Higher Education and Skills) at the Committee of Supply Debate, 07 March. <https://www.gov.sg/microsites/budget2017/press-room/news/content/speech-by-minister-ong-ye-kung-for-moe-higher-education-and-skills-at-the-committee-of-supply-debate> Accessed 13 June 2018
- Minister Pandor. 2018. Higher Education and Training Department Budget Vote 2018/19. Cape Town: Houses of Parliament.

- Ministerial Committee. 2017. Review of the Funding Frameworks of TVET Colleges and CET Colleges: Information Report and Appendices for presentation to Minister B.E. Nzimande, M.P. Minister of Higher Education and Training.
- National Treasury. 2015. National Treasury Budget Review 2015. Republic of South Africa.
- National Treasury. 2018. National Treasury Budget Review 2018. Republic of South Africa.
- News 24. 2017. Protesting college students have valid complaints, 26 January.  
<https://www.news24.com/SouthAfrica/News/protesting-college-students-have-valid-complaints-nzimande-20170126> Accessed 11 June 2018.
- Northlink College. 2018. Centre of Specialisation, 7 March.  
<https://www.northlink.co.za/centre-of-specialisation-at-northlink-college-encouraging-industry-and-tvet-colleges-to-work-together/> Accessed 21 June 2018.
- Prinsloo, Florus. 2017. Report: Visit by Western Cape Government, DHET Regional Office and Colleges to Eastcape Midlands College – Brickfield Campus, Uitenhage, A21 Electrician Dual System Pilot Project Site, Thursday 2 March 2017.
- Ramaphosa, Cyril. 2015. Speech by Deputy President Cyril Ramaphosa in Parliament 12 August 2015. <http://www.thepresidency.gov.za/content/tvet-colleges-critical-business-growth%2C-says-deputy-president-cyril-ramaphosa> Accessed 24 June 2018.
- Ramaphosa, Cyril. 2016. Opening Address by Deputy President Cyril Ramaphosa at the 2<sup>nd</sup> Human Resource Development Council Summit, Gallageher Convention Centre, Midrand, 30 March 2016. <http://hrdcsa.org.za/opening-address-by-deputy-president-cyril-ramaphosa-at-the-2nd-human-resource-development-council-summit-gallagher-convention-centre-midrand/> Accessed 24 June 2018.
- SSACI. 2017. Dual System Apprenticeships Pilot Project: Summative Evaluation Report. Prepared by Mzabalazo Advisory Services for Swiss-South African Cooperation Initiative, April.
- Schayan, Janet. 2015. Education Made in Germany. *DE Magazin Deutschland 2*.
- (Stats SA. 2017. Education Series Volume III: Educational Enrolment and Achievement. Statistics South Africa Report 92-01-03.)
- SUT. n.d. Cooperative Education Guidebook. The Center for Cooperative Education and Career Development, Suranaree University of Technology, Thailand.
- TACE. n.d. Standard Framework for International Cooperative Education. Thai Association for Cooperative Education.
- Taylor, Vanessa. 2017. Project Manager, Swiss-South African Cooperation Initiative (SSACI). Discussion with author, 28 April.
- Times Live. 2018. South African schools have unqualified and under-qualified teachers. <https://www.timeslive.co.za/news/south-africa/2017-06-06-south-african-schools-have-5139-teachers-who-are-unqualified-or-under-qualified/> Accessed 15 June 2018.
- TIMMS and PIRLS. 2018. Student Achievement, <https://timssandpirls.bc.edu/timss2015/> Accessed 14 June 2018.
- TVET Colleges 2018. TVET Colleges South Africa: The official DHET TVET Colleges site. <http://www.tvetcolleges.co.za/Site/Courses.aspx> Accessed 17 June 2018.

- Varaprasad, N. 2016. *50 Years of Technical Education in Singapore: How to Build a World Class TVET System*. Singapore: World Scientific Publishing Co.
- Wichit Srisa-an. 2014. Development of Cooperative and Work-Integrated Education (CWIE) in Thailand and ASEAN. Workshop on Development of CWIE in Thailand presentation at Japan Forum for CWIE, 6 February. Thai Association for Cooperative Education.
- Wichit Srisa-an. 2017. Notes taken by Helen Zille during a talk by Professor Wichit Srisa-an, President of the Thai Association for Cooperative Education, in Bangkok on 9 September.