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Trends in Access and Success at Gert Sibande Technical and Vocational Education and Training (TVET) College

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Abstract
The aim of this study was to assess trends in access and success at the Gert Sibande TVET College during the sample period 2010-2020. Secondary data on headcount enrolments and completions used in the study was obtained from the college's management information system. Total enrolments grew by an average annual growth of 8.4%, and mainly consisted of Black Africans and female students during the period under review. The total gross enrolment ratio generally increased, while the gross enrolment ratio for females predominantly remained higher than the gross enrolment ratio for males. Certification rates in the Report 191 N3 programme demonstrated good progress regarding student success during 2016-2018. Despite the decline in 2017, certification rates in Report 191 N6 business studies recorded good performance over the period under review, while certification rates in Report 191 N6 engineering studies programme was considerably poor. Certification rates in NC(V) level 4 programme waned during 2012-2016, despite recoveries during 2017-2019. In general, student success at the College was quite volatile, suggesting the need to implement measures for improvement.
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1. INTRODUCTION

Expanded access to the education and training towards the production of suitable skills required in the labour market is a necessary condition for stimulating inclusive economic growth and development in the economy. Since the genesis of post-apartheid in 1994, South Africa's democratic Government pursued many efforts to increase access to education and training and attaining student success with the aim to bridge gaps between skills supply and labour market needs. The goals of expanded access and success are contained in the country's National Development Plan (NDP) (National Planning Commission, 2012) which envisages a post-school system that delivers quality-learning opportunities to young people and adults aiming to change careers or upgrade skills, people who left school before completing secondary education, and unemployed people who wish to start a career.

The White Paper for Post-School Education and Training (DHET, 2013) notes that "although South Africa has put in place ambitious measures to improve skills planning, the system has however neither produced good information about skills needs, nor increased the quality of provision in areas needed by the economy". This policy instrument endorses the need for the education and training system to respond properly to the skills needs of the labour market and economy and promote collaboration between employers in private and public sectors towards the creation of a skilled labour force.

It is against this background that the NDP articulates that TVET colleges have a critical role to play in the development of intermediate, practical, and employable vocational skills with the aim of reducing skills shortages and youth unemployment in the economy (DHET, 2019). These colleges offer courses that are vocational or occupational in nature, implying that students receive education and training targeted at jobs, employment, or entrepreneurial prospects. Hence, skills taught in such programmes have direct relevance to the workplace (DHET, 2021). The colleges are intended to provide technical and vocational knowledge and skills that are vital for national, social, and economic development. The NDP expects that TVET colleges shall become institutions of choice for training of artisans and producing mid-level skills in response to the needs of the economy and the labour market.

1.1. Government financing of the TVET sector

To expand opportunities and access to post-school education and training at public TVET colleges and universities, government designed and implemented a funding mechanism which includes bursaries and loans.

The DHET formed a funding scheme managed by the National Student Financial Aid Scheme (NSFAS) for learners who want to pursue studies at public institutions of higher learning. The scheme is an income-contingent scheme designed to cater for students from poor- and working-class families that have a joint household income of up to R350 000 per year. To date, government has increased funds available for TVET student loans and bursaries through NSFAS to achieve the NDP goal of 2.5 million enrolments in TVET colleges by the year 2030.

Table 1: Number of student recipients of NSFAS loans or bursaries, and amount provided, 2011-2019

Year	Number of students	Amount provided (Rand)	Amount per student (Rand)
2011	114 956	1 116 590 548	9 713
2012	188 182	1 822 497 265	9 685
2013	220 978	1 953 253 361	8 839
2014	228 642	1 991 487 809	8 710
2015	235 988	2 095 129 942	8 878
2016	225 557	2 106 267 265	9 338
2017	200 339	2 012 107 916	10 044
2018	239 797	2 742 606 899	11 437
2019	346 270	5 101 438 986	14 733
Average annual growth rate	**17.0%**	**124.5%**	**105.9%**

Source: DHET (2021), Statistics on Post-School Education and Training in South Africa, 2019.

Table 1 indicates that the number of student beneficiaries of NSFAS loans or bursaries increased by 201.2% (231 314) from 114 956 students in 2011 to 346 270 students in 2019 and recorded an average annual growth of 17.0% during the period 2011-2019. This increase in the number of beneficiaries has been supported by the increase in NSFAS funding from about R1.1 billion in 2011 to R5.1 billion in 2019, and an average annual growth of 124.5% during the period under review. Concomitantly, the amount per student provided increased by an average annual growth of 105.9% over the same period.

1.2. Research objectives

- To assess trends in total headcount enrolments at Gert Sibande TVET College by programme or qualification category, gender, and race during 2010-2020.
- To assess trends in proportions of headcount enrolments at Gert Sibande TVET College by programme or qualification category, gender, and race during 2010-2020.
- To assess trends in completion or certification rates in Report 191 N3, Report 191 N6 and NC(V) Level 4 programmes during 2010-2020.

1.3. Research questions

- How has Gert Sibande TVET College performed in terms of total headcount enrolments by programme/qualification category, gender, and race during 2010-2020?
- How has Gert Sibande TVET College performed in terms of shares of headcount enrolments by programme/qualification category, gender, and race during 2010-2020?
- How has Gert Sibande TVET College performed in terms of completion or certification rates in Report 191 N3, Report 191 N6 and NC(V) Level 4 programmes during 2010-2020?

1.4. Significance of the study

The NDP's articulation for the TVET colleges' vital role in the development of intermediate, practical, and employable vocational skills and reducing youth unemployment (DHET, 2019) establishes a strong basis for the College to monitor and assess its performance towards achieving the national goal of increased access and success in programmes leading to intermediate and high-level learning. This study thus serves as a vital document which assesses the college's commitment in contributing toward reaching the national goals of expanded access and success in the country's TVET sector as articulated in the National Development Plan (NDP) and White Paper on Post-School Education and Training.

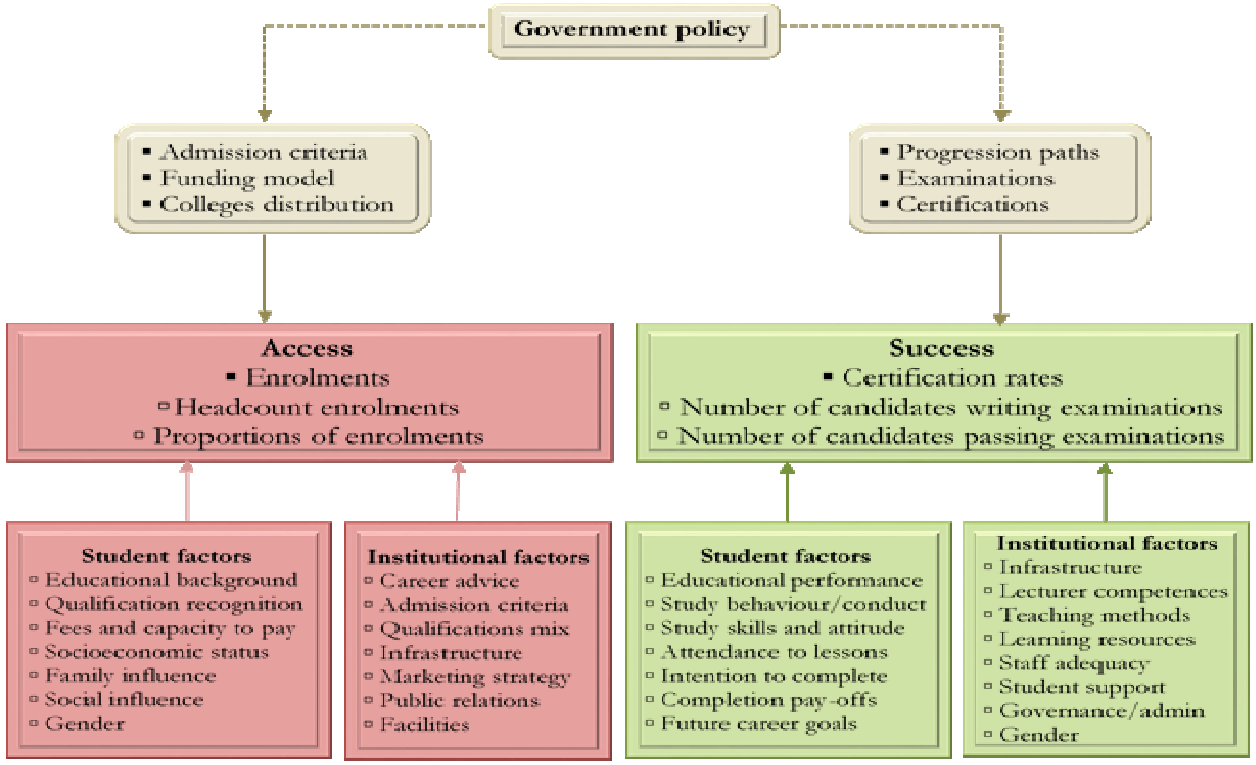
2. LITERATURE REVIEW

This discusses literature on factors influencing student access and success in the TVET sector. Section 2.1 presents the theoretical framework, section 2.2 discusses literature on factors influencing student access to TVET colleges, and section 2.3 discusses literature on factors influencing students' success.

2.1. Theoretical framework of factors influencing access and success in TVET colleges

The conceptual framework is presented Figure 1 below.

Figure 1: Theoretical framework



Source: Authors' compilation using numerous selected past studies

Studies that were reviewed and used in developing the theoretical framework of factors influencing students' access to TVET colleges include Kilpatrick & Allen (2001), Hoeckel, K. (2008), Biyo-Yara (2008), Simiyu (2009), Khaguya (2014), Ayiah-Mensah, Mettle & Coker-Ayimah (2014), Ayonmike (2014), NSW Department of Industry (2016), Gewer (2016), Blom (2016), Alishiri & Saadatmand (2016), Stratton et al. (2017), Nzembe (2018), Safarmamad (2019), Kiplangat (2020), Wasike & Maiyo (2020), Omar et al. (2020), Langat, Ngeno, Omboto & Ambuli (2021a), Langat, Ngeno, Omboto & Ambuli (2021b), and Zhi & Atan (2021). Concurrently, studies which examined factors influencing student success in TVET colleges include Hoeckel (2008), Fieger (2015a), Fieger (2015b), Kiplagat (2016), National Centre for Vocational Education Research (2017), Badenhorst & Radile (2018), Henriques (2018), Nzembe (2018), Gaffoor & van der Bijl (2019) and Magut & Kihara (2019).

2.2. Factors influencing student access and enrolment in TVET programme

Kilpatrick & Allen (2001) analysed factors influencing demand for vocational education and training (VET) courses by school students and their families. Factors cited as drivers of demand for VET and actual enrolment include the types of programmes or course offered by colleges, costs of education in terms of fees or tuition, availability of career advice and information for career decision making, and the influence of parents. Hoeckel (2008) analysed costs associated with enrolment in VET, and benefits realised after completion of studies. The study found that the levels of direct costs consisting of study fees and charges for equipment and material usually have direct positive effects on enrolment in VET. Individual-level short-term benefits that were found to influence student enrolment include employment opportunities, earnings levels, and job satisfaction. In addition, long-term benefits which individual students consider in making enrolment decisions include mobility and flexibility in pursuing studies and prospects for life-long learning regarding training and upgrading skills after completion.

Hoeckel (2008) also analysed how government policy and intervention influence enrolment in TVET programmes by students. The study noted that systems and structures in which the provision of TVET occurs in countries varies markedly from one state to another. In some nations, systems of provision are characterised by highly regulated structures, while in some countries, systems are highly fragmented to the extent that provision varies greatly from one institution to another. To correct for such failures in training markets, government intervention mechanisms are implemented to ensure that training occurs in an efficient manner. The degrees and

forms of intervention vary markedly from one country to the other, and such interventions may consist of a mix of funding models and regulations pertaining to admission, curricula, examination, and duration and completion of programmes (Steedman, 2001).

Biyo-Yara (2008) assessed factors determining gender inequality and explored internal and external factors influencing female access to vocational education. Consistent with Glick & Sahn (2000), Biyo-Yara (2008) defined access to education and training as students' ability to enter institutions of learning or education and training. External factors identified in the study include government responsibilities, parents, and students before and after schooling, while internal factors include institutional factors, infrastructure factors and schooling system. The data used was collected from interviews and desktop study. Findings show that government's lack of implementation of policy on student recruitment and allocation of scholarships to improve access of female students to TVET studies hindered access by female students. In addition, parent-related factors negatively affecting access of female students to certain TVET programmes include low levels of educational attainment, low earnings and income, location of residence and large household sizes. Students from small families were found to have more access to TVET than students from large families, and parents residing in rural areas are more likely to encourage their children to enrol for TVET than parents in urban areas.

Student-related factors influencing access to TVET include difficulties experienced during secondary education, expectations of employment prospects in the sectors which require qualifications and skills of TVET programmes offered and living conditions at places around learning venues. Institutional factors that were analysed relate to institutional organisation and infrastructure facilities. The study found that poor infrastructure negatively influenced female students' enrolment to programmes offered in the TVET sector. Costs of studying certain programmes, curricula, and academic calendar additionally limit access of female students. Biyo-Yara (2008) additionally found poor infrastructure in terms of limited numbers of classrooms, lack of sufficient pedagogical materials and long distance to venues of learning and remoteness of areas of residence as inhibitors of enrolment. Gaidzanwa (2008) reported that social and cultural factors in terms of parents' choices regarding their children's enrolment into certain TVET programme studies influenced student enrolment at TVET institutions. In addition, enrolments were reported to be additionally influenced by economic factors in terms of socioeconomic status, poverty, direct and indirect costs of education and training (tuition, transport, college living expenses), and family factors such as parents' educational attainment and literacy levels.

Simiyu (2009) examined factors that influence the attractiveness of a selected technical and vocational education and training centre in Kenya. The study analysed both quantitative and qualitative data collected using interviews, questionnaires, and observations. Major findings show that the variety of programme courses offered by the institution attracted many prospective students, and enrolments were high accordingly. In addition, high enrolment levels were realised due to the institution's effective marketing and information dissemination approach which involved advertising programmes through several channels, platforms and modes of the media, teaching of courses by qualified, competent and committed lecturers, consistent provision of student support services in an efficient manner, machines and equipment that were continuously serviced, provision of adequate and up-to-date study materials and learning resources. The morale of the staff at the institution also contributed to high enrolments.

Ebersold (2012) explored issues and challenges affecting access to vocational training in Europe. The study found that limited access to apprenticeship and vocational courses was caused by individual prospects to find employment and lack of support provided to employers during student internships. Ayiah-Mensah, Mettle & Coker-Ayimah (2014) assessed factors that influence polytechnic students' career choices of technical and vocational courses in Ghana. The three salient constructs that were found to have influence on students' career choices in TVET courses include job security, financial and societal influence, and gender and close family relations. Results on factor structures show that items that were grouped under the job security factor include personal interest, career opportunities, expected earnings, job availability, talent, prestige allied with the programme or course, and possibility of self-employment. The gender and close family factor comprised gender of the student, ethnicity, and siblings influence, while the financial and societal influence factor consisted of peer influence, financial constraints, role model influence, teacher influence and difficulty of the programme.

Ayonmike (2014) identified factors influencing female students' participation in technical education at Delta University in Abraka, Nigeria. The study selected one hundred and fifty undergraduate student participants. Survey data was analysed using parametric methods. Results show that factors that affected female student enrolment are government, institutional and societal factors. Government–related factors included poor cost-sharing, high education costs, structural adjustment policies, inadequate monitoring of gender equality, poor infrastructure facilities which include libraries, workshops, laboratories, classrooms and recreational facilities, poor funding, lack of qualified lecturers and gender-biased curricula. Findings were consistent with Coombs (1985), Bishop (1989), Meena (1991), Handa (1996), Nikoi (1998), Ayonmike (2010), Wallace-Bruce (2010), and Edu & Edu (2012).

Khaguya (2014) analysed factors influencing female students' enrolment in technical courses at Matili

technical training institute in Kenya. The factors analysed include role models of female students' enrolment in technical courses, financial factors, cultural factors, and sociological factors. Using a case study design, findings obtained from analysis of data gathered through interviews from two hundred and nineteen show that cultural factors such as time spent by females doing household chores leaving less time for them to attend to their studies, female genital maiming and early marriage contributed to low female students' enrolments. Financial factors which similarly contributed to low female students' enrolments include costs for studies in terms of fees for studying technical courses and costly learning materials. Lack of information about future career prospects and incomes caused low motivation among students to enrol for technical courses. Psychological factors found as drivers of low female students' enrolment include the perception that technical courses are masculine and suitable for males even though females perform equally well on technical skills and technical courses.

Kitui (2015) investigated factors influencing student access to technical and vocational education and training in in Bungoma East sub-county, Kenya. The factors whose effects on access were analysed include career prospects, income levels of parents and sufficiency of physical facilities and human resources. Survey data collected using a questionnaire via a cluster sampling approach was analysed using descriptive quantitative methods. Main findings from the study show that, at an individual level, career prospects were the primary factor influencing student choices for enrolment, while lack of information and advice about career choices and advancements were the key factors hindering student access. At institutional level, poor infrastructure, inadequate facilities, lack of qualified and competent lecturers, and low quality and inadequate training among lecturers were found as key contributors to limited student access or enrolment in technical and vocational education and training programmes.

Alishiri & Saadatmand (2016) investigated factors that affect students' lack of interest in technical and vocational education courses in Iran using a descriptive research survey design. Survey data collected from participants using the simple random sampling method was analysed using sample t-tests. Results show that personal, education background, family, social and economic factors contributed to students' lack of interest in enrolling in TVET colleges. The individual factors found as the drivers of low student enrolment include lack of access to desired programmes from programme qualification mixes offered by institutions, low income, lack of employment opportunities, costs of studying courses, lack of confidence in future career founded on TVET qualifications, discouragement by peers and friends, and low awareness of families about TVET programmes or qualifications.

Blom (2016) analysed barriers faced by South African vocational teachers in becoming competent educators and noted that a mix of qualifications offered by TVET colleges that is difficult for students and parents to understand contributes to low demand for TVET courses, resulting in low students' enrolments. Blom (2006) emphasized that "funding influences everything in public TVET colleges in South Africa", and that poor funding additionally contributes to low enrolment levels. Gewer (2016) indicated that courses that are easily understood by both students and the industry help to increase enrolments in TVET programmes in the country. However, poor funding and governance were cited as some of the key factors hindering high student enrolments in technical and vocational courses. The NSW Department of Industry (2016) analysed factors contributing towards low enrolments in vocational education and training (VET) courses. The study found that negative public image about VET courses, ill-defined youth desires, socioeconomic status, perceived and actual academic ability, job prospects, and cultural stereotyping were the major factors negatively impacting enrolments.

Stratton, Gupta, Reimer & Holm (2017) modelled the effects of cognitive and non-cognitive skills on enrolment in vocational education using data consisting of two nine-year panels of youth who completed compulsory education in Denmark. The three programmes on which enrolments were analysed include technical, education and health, and business. Results from the study show that both cognitive and non-cognitive skills were inversely related to enrolment in VET programmes. Nzembe (2018) analysed academic factors that influence access and participation in a South African technical and vocational education and training college. The study used a qualitative research design to examine academic factors which inhibit or stimulate student access to TVET colleges based on participants' experiences. Findings indicate that factors which influence student access include student factors and institutional factors. Institutional factors include poor pedagogical practices by educators, lack of teaching competences by teachers, poor provision of academic resources and assessment methods.

Magut & Kihara (2019) evaluated the effects of student retention strategies on performance of TVET institutions in Nairobi, Kenya. While performance of institutions was measured based on enrolment levels, student retention strategies that were evaluated include student support programs, orientation and induction, student participation and involvement, and customer relations management. The study used a descriptive research design and collected quantitative data from fifty-nine respondents using a structured questionnaire distributed across seventy institutions through stratified sampling. Findings indicate that student orientation, student support, and student involvement and participation all had strong and positive correlations with performance of the institutions in terms of enrolment levels.

Safarmamad (2019) examined factors influencing students' decisions to enrol in initial vocational education and training (IVET) lyceums in Tajikistan. Using a descriptive design, a stratified random sampling method was used, and data was collected from a sample comprising five hundred and forty-one using a researcher administered paper-based instrument. Results from descriptive analysis indicate existence of strong association between gender and programme enrolment. Parents and opportunities of finding jobs after completion were found as the major factors which influenced student enrolment, while competences of lecturing staff and marketing strategies at institutional level had the minimal influence on student enrolment in vocational education and training programmes.

Kiplangat (2020) assessed factors influencing enrolment in vocational training centres in Elgeyo-Marakwet county in Kenya. The study was motivated by low levels of enrolment in the centres over a period of five years. Factors that were analysed include costs of education and training in public vocational training centres, youth's levels of awareness on funding for enrolment, and government policy. Results indicate that costs of vocational education and training beyond the ability of parents to pay for their children's education, poor government policy on funding and low levels of awareness on government financing led to low student enrolments in public vocational training institutions. Higher education costs in terms of the actual tuition fees to be paid vis-à-vis parents' ability to pay, transport costs and poor government policies on facilitating student recruitment, admission criteria, progression pathways and investment in infrastructure contributed to low enrolment by students.

Kiplangat & Muthima (2020) examined whether levels of awareness on existing sources of education financing contribute towards student enrolment in public vocational training centres in Elgeyo-Marakwet, Kenya. The study used a descriptive research design, and questionnaires and interviews were used to collect primary data from three hundred and ninety-four participants comprising eleven principals, fifty-two tutors and three hundred and twelve students. Major findings from the study show that low levels of awareness by most current and former students and their parents on existing sources of financing vocational education and training contributed to low enrolments in public vocational training centres. The existing sources of financing identified in the study include national government allocation and support, scholarships, donors, bursaries, private businesses, and religious institutions.

Omar et al. (2020) investigated factors influencing students' choices and decisions on enrolling into TVET programmes. Factors analysed include student demographic factors, information sources, knowledge possessed, motivation and interest in TVET courses. Survey data was collected from participants using a questionnaire, while descriptive and inferential statistical analysis methods were used to analyse data. Results reveal that distribution and availability of information on various sources and channels like peers, parents, teachers, institutions' websites, and credible internet platforms had a significant and positive influence on student enrolment in TVET institutions.

Wasike & Maiyo (2020) analysed the utility of government initiatives in technical and vocational training institutions on student enrolment in Bungoma county, Kenya. The study was conducted across sixty-five TVET institutions from which seven hundred and fourteen lecturers, and nine thousand and ninety-eight students selected using stratified random sampling. Findings from the study show low enrolment levels include high dropouts, small class sizes, scrapping of courses due to lack of adequate student numbers, availability of lecturers and teaching materials and resources but with no students. Consistent with Puyate (2019) and Nanjoli (2019), the primary factors which influenced low student enrolment in technical and vocational education and training programmes include gender preferences and prior poor student academic performance in science subjects at secondary education. Wasike and Maiyo (2020) concluded that the type and number of programme courses offered by TVET institutions and adequacy of government funding and budgets determine student enrolments.

Langat, Ngeno, Omboto & Ambuli (2021a) assessed the influence of the distribution of accredited TVET institutions on student access to quality training in technical and vocational programmes in Kenya. A census method and questionnaires were used to collect survey data from accredited TVET institutions across the country. Findings from the research study indicate that the uneven distribution of TVET institutions in the country had a negative impact on equitable access to education and training in technical and vocational programmes in the country. The higher concentration of TVET institutions in urban areas compared to rural areas contributed towards low levels of enrolment and inequitable access to education and training opportunities.

Langat, Ngeno, Omboto & Ambuli (2021b) analysed enrolment trends in public TEVT institutions in Kenya during 2014 to 2018. Data was collected from one hundred and nineteen public TVET institutions and eleven national polytechnics in the country, where a response of 98.3% was deemed sufficient to generalize findings. Results show that enrolments in TVET institutions and national polytechnics were on an upward trend. Though enrolments were generally rising in both science and engineering, and business courses, enrolments in science and engineering programmes were higher than enrolments in business programmes in public TVET institutions. The research study concluded that improved increases in student enrolments were enhanced by

increases in the number of public TVET institutions in the country, though newly constructed institutions were not operating optimally.

Wasike (2021) analysed the implications of the programme qualifications mix offered in technical and vocational education and training institutions for student enrolment in Bungoma county, Kenya. The study was conducted across sixty-five TVET institutions from which seven hundred and fourteen lecturers, and nine thousand and ninety-eight students selected using stratified random sampling. Results show that the type and the number of courses had substantial influence on student enrolment.

Zhi & Atan (2021) investigated factors that influence students' attitude towards enrolment to study technical and vocational education and training programmes in Malaysia. Results indicates that participants agreed that parents, teachers, peers, grades levels completed, and pass marks obtained in schools and future career prospects affect students' attitude towards enrolment in TVET institutions.

2.2. Factors influencing students' success in TVET colleges

Fieger (2015a) examined factors determining completion rates in vocational education and training (VET) programmes in Australia. The study sought to investigate whether students' original intentions at the time of enrolment along with satisfaction during training and the benefits that were expected to be obtained or realised from completion influenced patterns in course completion. The probability of intending to complete the programme was modelled using data from the 2011 Student Intentions Survey (SIS) and performed an out-of-sample prediction to 2011 Student Outcomes Survey (SOS). Afterwards, a logistic regression model was applied to predict actual completion rates using student intentions data, and several modules of satisfaction, educational and demographic variables, and completion pay-offs. Findings reveal that students' intentions to complete their programmes increased actual completion probabilities and high numbers of study hours, while satisfaction during training and benefits from completion had minor contributions on programmes completion patterns.

In a comparable study, Fieger (2015b) analysed factors determining completion deficits in Australian VET by examining whether students' original intentions at the time of enrolment and satisfaction during training and benefits that could be realised from completion influenced patterns in course completion. Main findings from the analysis indicate that most part-time students enrolled in lower VET qualifications and had high deficit rates, completion pay-offs with regards to salaries and improved employment prospects led to increased completion rates and reduced completion deficits, while satisfaction insignificantly influenced completion patterns.

Kiplagat (2016) examined factors that influence completion rates of students or trainees in vocational training centres in Kenya. Factors whose effects on trainee completion rates were analysed include the trainee-based attributes, family attributes, institutional factors, and community-based factors. Results from the study show that factors which contributed to poor programme completion rates by students include early marriages and pregnancies, drug abuse, low entry qualifications of trainees, destabilised family structures, low socioeconomic status of trainees' families measured by low incomes, education, and occupations of family members. Institutional factors which contributed to low completion rates include insufficient teaching and learning resources, lack of sufficient qualified instructors, highly demanding curricula which additionally lack certification, inadequate and poor handling of counselling issues, and negative community perception and attitude towards technical and vocational courses.

Maimane (2016) analysed the effect of student support services on success of students who studied the National Certificate Vocational (NC(V) in Motheo district, Free State province, South Africa in 2017. The study noted that the entry requirement for the respective qualification is Grade 9, but the qualification attracted students with school qualifications ranging between Grades 9 and 12. A mixed-method research design was used, and data was collected from one hundred and twenty participants. Results show that well-coordinated student support contributed to student academic achievement and high completion rates. Gwala (2017) studied factors influencing student attrition at uMgungundlovu technical and vocational education and training college in South Africa. A structured questionnaire was used to gather data from three hundred and seventy students at Msunduzi and Midlands campuses of uMgungundlovu TVET College, and data was analysed using descriptive and inferential methods. Results show that academic integration reduces student dropout and enhances student success.

Stratton, Gupta, Reimer & Holm (2017) modelled the effects of cognitive and non-cognitive skills on completion in vocational education using data comprising two 9-year panels of youth who completed compulsory education in Denmark. Mathematics and language examination scores constituted key measures of the cognitive skills, while teacher-allocated grades were used as measures of non-cognitive skills. Results show substantial variation in completion by programme type. Mathematics scores were positively related to certification rates for all VET courses, while language skills positively influenced completion rates in non-technical programmes, and non-cognitive skills positively influenced completion rates in business courses. The National Centre for Vocational Education Research (2017) stressed that the number of subjects to be completed per each qualification influence completion rates.

Nzembe (2018) analyse academic factors that influence student success in a South African technical and vocational education and training college. Using a qualitative research design, student factors that were explored as determinants of poor programme completion rates include under-preparedness by students for TVET programmes curricula, poor class attendance and prior academic performance. In the context of South Africa, Nzembe (2018) notes that the Department of Higher Education and Training (DHET, 2013) developed a Public Further Education and Training College Attendance and Punctuality Policy to enforce high attendance and punctuality levels to ensure improvement in success. However, since the policy does not specify penalties for non-compliance, low class attendance and punctuality remain as a challenge to achieving student success in their programmes.

The key reasons stated by students for their low and non-attendance include poor delivery of lessons, assessment pressure and poor timing of lectures (Newman-Ford et al., 2009). Institutional factors which were reported as the major causes of poor completion rates include poor pedagogical practices by educators, lack of teaching competences by teaching staff, poor provision of academic resources and assessment approaches. Language of instruction was also found as another factor causing low completion rates against the backdrop that most TVET students struggle to communicate in English and prefer being taught in their mother tongues or indigenous languages (Rammala, 2009).

Gaffoor & van der Bijl (2019) analysed factors that influence the intention of students at a certain TVET college in Western Cape to complete their National Certificate (Vocational) business studies programme. Findings from the study found that the major factors negatively affecting student success or programme completion rates include individual and social factors, institutional policies, structures and systems, and friendliness of instructors and peers at the institutions. Magut & Kihara (2019) found that student induction strategy, which comprised introduction to the institution's culture, provision of learning course materials and outline of expectations from students, influenced student success.

Munyaradzi & Addae (2019) explored the effectiveness of psychological support services provided to students at a certain technical and vocational education and training college in South Africa. The study used the systems theory of psychology, and postulates that students at TVET colleges encounter several psychological challenges which can detrimentally affect their academic success. A sample of thirty students was purposively selected and participated in focus group interviews based on the interpretivist paradigm. Findings from the study reveal that psychological support services improved students' attendance, retention, academic performance, and overall college certification rates.

3. METHODOLOGY

3.1. Data sources and variable descriptions

The data used in the report is expected to cover the period 2010-2020. The main source of data used is Gert Sibande TVET College's Management Information System (MIS). Specific raw data obtained from the college's MIS includes headcounts of students who enrolled and headcounts of students who wrote examinations and those who completed the programmes they studied during 2010–2020. Data on other variables was obtained from StatsSA, and reports and factsheets published by the DHET. Table 2 describes the variables and indicators measuring access and success used in this report.

Table 2: Indicator description and measurement

Indicator	Unit	Description	Data source
Total headcount enrolment	No	Number of students who enrolled	Gert Sibande TVET college MIS
Gross enrolment ratio	Ratio	Number of students enrolled in each education level, regardless of age, expressed as a percentage of the official school-age population analogous to the same education level	Gert Sibande TVET college MIS; and StatsSA *(author's calculation)*
Headcount enrolment in NC(V) programme levels 2-4	No	Number of students who enrolled in the NC(V) programme, i.e., levels 2, 3 and 4	Gert Sibande TVET college MIS
Headcount enrolment in Report 191 programme	No	Number of students who enrolled in each of the Report 191 programme level of study/part qualification, i.e., N1, N2, N3, N4, N5 and N6	Gert Sibande TVET college MIS
Headcount enrolment by race	No	Number of students in each race group who enrolled at the college	Gert Sibande TVET college MIS
Share of enrolment in by race	%	Share of students in each race group who enrolled at the college relative to total headcount who enrolled at college	Gert Sibande TVET college MIS *(author's calculation)*
Headcount enrolment by gender	No	Number of students in each gender group who enrolled across programmes offered	Gert Sibande TVET college MIS
Share of enrolment in by gender	%	Share of students in each gender group who enrolled at the college relative to the total headcount who enrolled at college	Gert Sibande TVET college MIS *(author's calculation)*

3.2. Research design

A descriptive approach was applied in this research study, and data was analysed mainly using trend analysis of headcounts over time and descriptive statistics, particularly average annual growth rates.

3.3. Data analysis

Since the data used in this report is quantitative in nature, Microsoft Excel was used as the main tool for data processing and data analysis. Tables and suitable graphs were produced and presented, either and/or in absolute values and relative shares. Descriptive statistics calculated are the average annual growth rates, while participation rates calculated are the gross enrolment ratios (GERs).

4. RESULTS

4.1. Overview of programmes offered

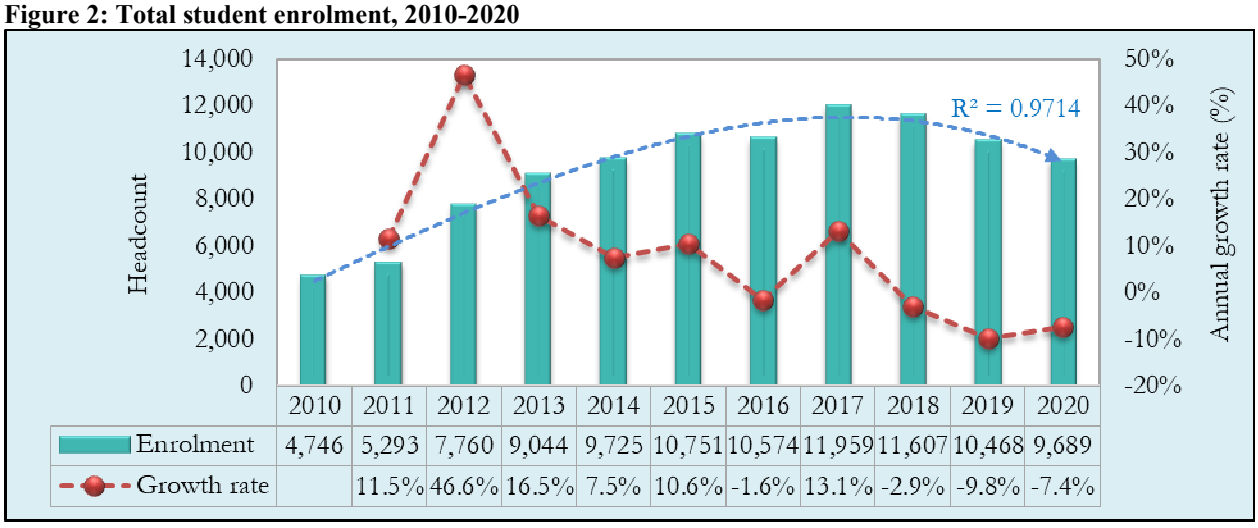
Gert Sibande TVET College provides a mix of qualifications under NC(V) and Report 191/NATED programmes in Business and Science & Engineering-related fields. The Report 191/NATED business courses are offered from levels N1 to N6, while Report 191/NATED National Certificates in Civil, Electrical and Mechanical courses are offered across levels N1 to N6.

4.2. Trends in access

4.2.1. Total headcount enrolments

The total student enrolment trend provides as a crucial indicator of the overall performance of the institution in terms of providing access to education and training opportunities to persons who satisfy the entry requirements for the programmes they desire to pursue. Figure 2 depicts the total student enrolment trend at Gert Sibande TVET College during the period 2010-2020.

Figure 2: Total student enrolment, 2010-2020



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Enrolment	4,746	5,293	7,760	9,044	9,725	10,751	10,574	11,959	11,607	10,468	9,689
Growth rate		11.5%	46.6%	16.5%	7.5%	10.6%	-1.6%	13.1%	-2.9%	-9.8%	-7.4%

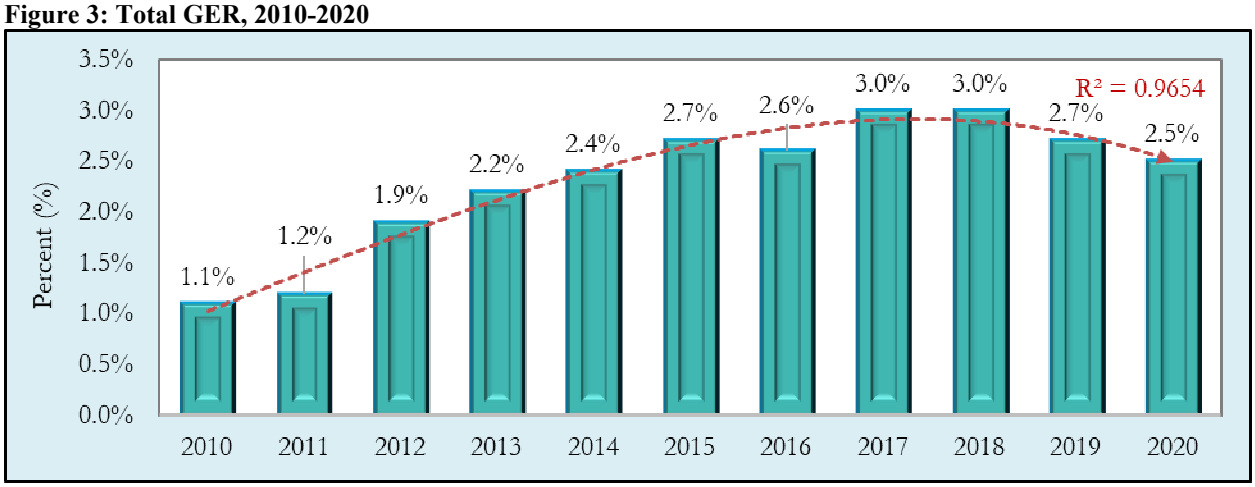
Source: Gert Sibande TVET College (2021) - Management Information System

Figure 2 shows that total enrolments at the College constantly increased between 2010 and 2015 from 4 746 students in 2010 to 10 751 students in 2015. During this period, the largest annual growth rate in enrolment equal to 46.6% (2 467 students) was recorded between 2011 (5 293 students) and 2012 (9 044 students). Total enrolments decreased by 9.8% (1 139 students) from 11 607 students in 2018 to 10 468 students in 2019 and waned further by 7.4% (779 students) to 9 689 students in 2020.

4.2.2. Gross enrolment ratio

The gross enrolment ratio (GER), similarly known as the participation rate, serves as crucial indicator reflecting the degree of access and participation by students in each education and training system. The indicator is calculated by dividing the number of students enrolled in a defined education level regardless of age by the population of the age group which officially corresponds to same education level, multiplied by 100. Figure 3 presents total GER at the College over the period 2010-2020.

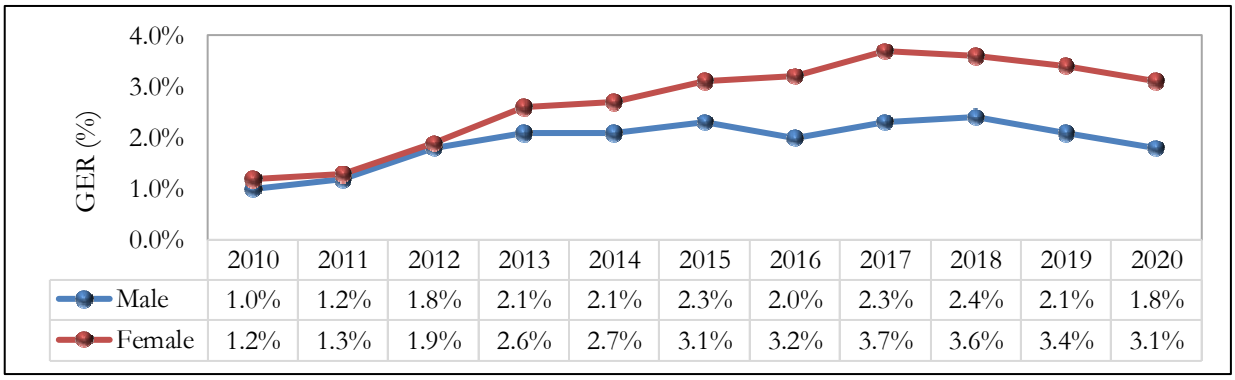
Figure 3: Total GER, 2010-2020



Source: Authors' calculations using data from Gert Sibande TVET College (2021) – Management Information System, and StatsSA (2021a)

The DHET (2021b) indicates that the age group 16-20 years is the revised official age group targeted for enrolment and participation in the country's TVET sector. The DHET's current policy objective targets the age groups 16-18 years for NC(V) programmes and 19-20 years for N4-N6 programmes, against the backdrop that completion of matric is a requisite for entry into N-level programmes. Given the background that the population data available from StatsSA (2021a) is disaggregated at age group 15-19 years, the GER was calculated using population estimates for the age group 15-19 years as the denominator, which are akin to the recent revised official age group 16-20 years. Figure 3 shows that the GER at Gert Sibande TVET College consistently increased from 1.1% in 2010 to 3.0% in 2017 and 2018, before successive steady declines to 2.7% and 2.5% in 2019 and 2020, respectively. A further disaggregation of GER by gender at Gert Sibande TVET College is depicted in Figure 4.

Figure 4: GER by gender, 2010-2021



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Male	1.0%	1.2%	1.8%	2.1%	2.1%	2.3%	2.0%	2.3%	2.4%	2.1%	1.8%
Female	1.2%	1.3%	1.9%	2.6%	2.7%	3.1%	3.2%	3.7%	3.6%	3.4%	3.1%

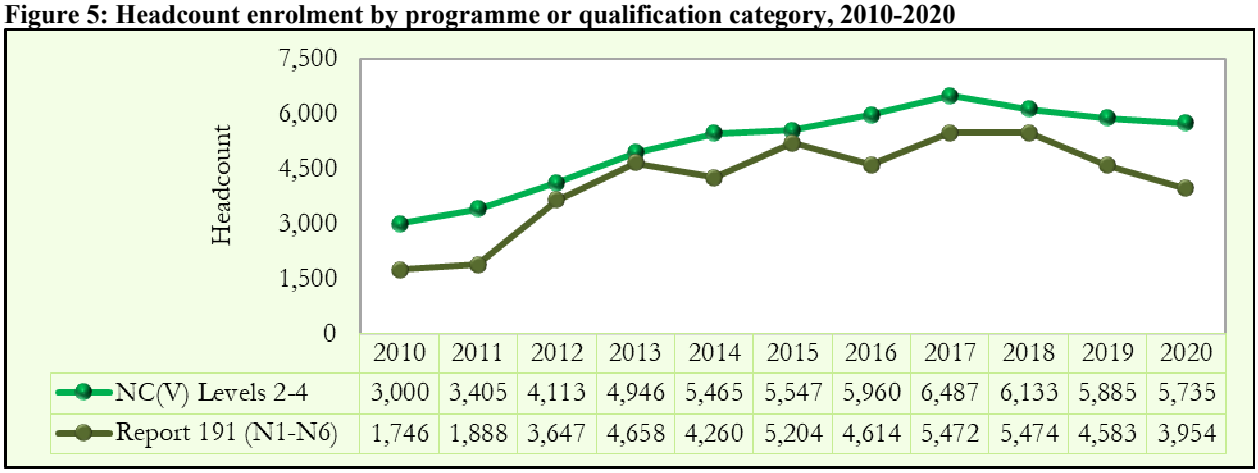
Source: Authors' calculations using data from Gert Sibande TVET College (2021) – Management Information System

The GER for females was marginally higher than the GER for males by 0.2 of a percentage point and 0.1 of a percentage point in 2010 and 2011, respectively (Figure 4). In 2020, the GER for females stood at 3.1%, higher than the 1.8% GER for males during the same year. This trend suggests constant increase in participation at the College by females than by male counterparts.

4.2.3. Enrolments by programme or qualification category

In this section, Figure 5 depicts trends in student enrolments by programme category, namely NC(V) levels 2 to 4, and Report 191/NATED (N1-N6).

Figure 5: Headcount enrolment by programme or qualification category, 2010-2020

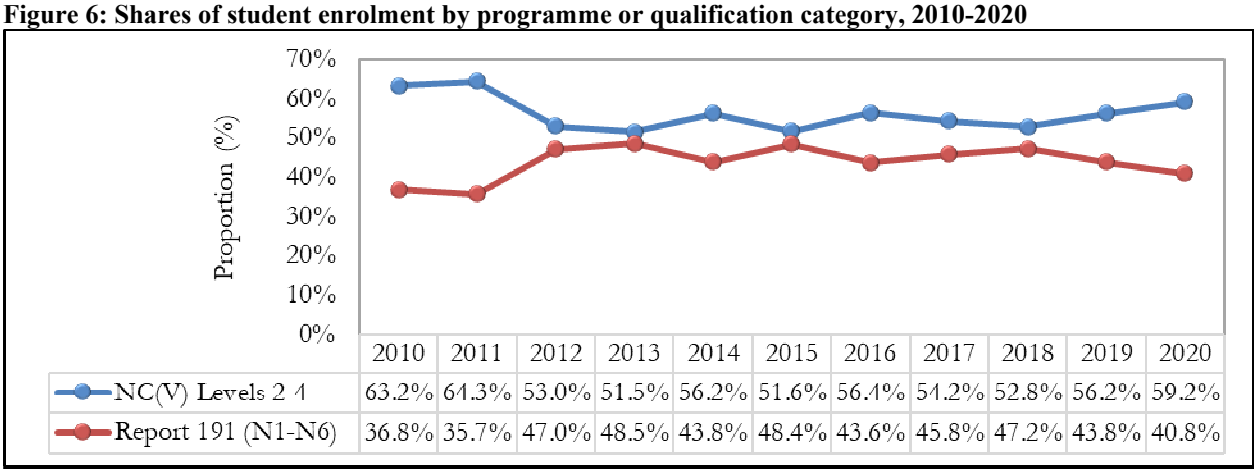


	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
NC(V) Levels 2-4	3,000	3,405	4,113	4,946	5,465	5,547	5,960	6,487	6,133	5,885	5,735
Report 191 (N1-N6)	1,746	1,888	3,647	4,658	4,260	5,204	4,614	5,472	5,474	4,583	3,954

Source: Gert Sibande TVET College (2021) – Management Information System

Figure 5 shows that total headcount enrolments in the NC(V) Levels 2-4 programme remained higher than total student enrolments in Report 191 N1-N6 levels. Headcount enrolments in NC(V) Levels 2-4 programme improved by 116.2% (3 487 students) from 3000 students in 2010 to 6 487 students in 2017, before successive declines by 5.5% (354 students) to 6 1 33 students in 2018 and by 6.5% (398 students) to 5 735 students in 2020. Similarly, enrolments in Report 191 (N1-N6) grew relatively higher by 213.5% (3 728 students) from 1 746 students in 2010 to 5 474 students in 2018 and declined at a relatively higher degree by 27.8% (1 520 students) to 3 954 students in 2020.

Figure 6: Shares of student enrolment by programme or qualification category, 2010-2020



Source: Authors' calculations using data from Gert Sibande TVET College (2021) – Management Information System

Figure 6 indicates that the share of the NC(V) Levels 2-4 programme to total enrolments remained higher than the share of Report 191 (N1-N6). Between 2010 and 2020, the share of enrolments in the NC(V) programme to total enrolments fluctuated from a lowest of 51.5% in 2013 to a highest of 64.3% in 2011. The share of Report 191 enrolments improved by 10.4 percentage points from 36.8% in 2010 to 47.2% in 2018 but declined by 3.4 percentage points to 43.8% in 2019 and further by 3 percentage points to 40.8% in 2020.

4.2.4. Enrolments by race

Students' enrolments at the College were further analysed by race to understand the uptake of technical and vocational programmes. Table 3 presents total student headcount enrolments by race, while Figure 16 presents the share of student enrolment by race during the period 2010-2020.

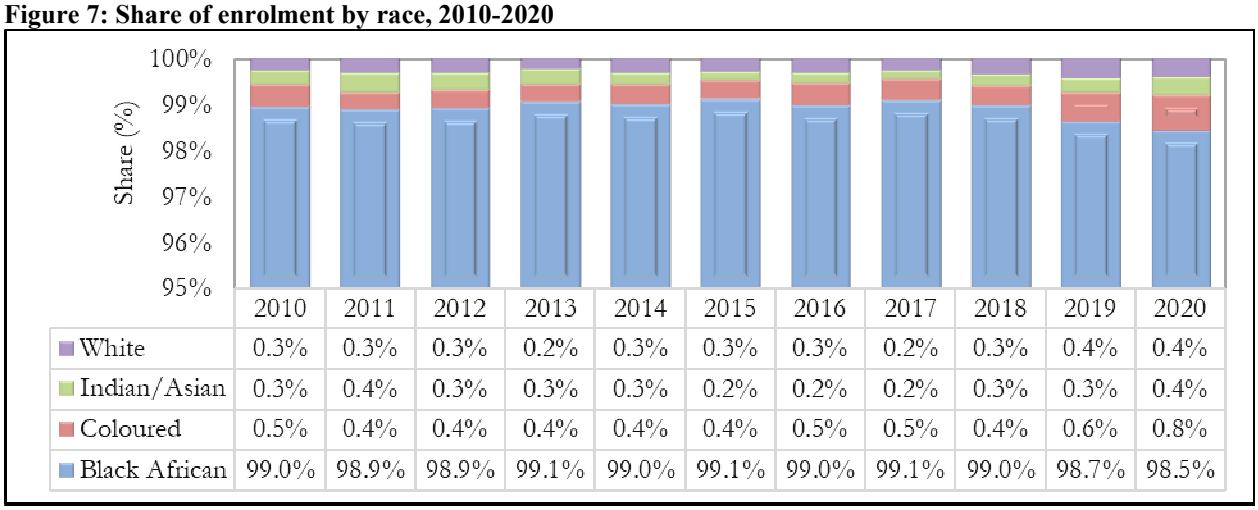
Table 3: Headcount student enrolment by race, 2010-2020

Year	Black African	Coloured	Indian/Asian	White	Total
2010	4 697	23	14	12	4 746
2011	5 236	19	21	17	5 293
2012	7 678	31	27	24	7 760
2013	8 961	33	29	21	9 044
2014	9 631	39	26	29	9 725
2015	10 657	44	19	31	10 751
2016	10 467	52	23	32	10 574
2017	11 852	54	24	29	11 959
2018	11 489	49	31	38	11 607
2019	10 329	62	34	43	10 468
2020	9 540	73	37	39	9 689
Average annual growth rate	**8.4%**	**14.0%**	**12.2%**	**14.4%**	**8.4%**

Source: Authors' calculations using data from Gert Sibande TVET College (2021) – Management Information System

Table 3 indicates that the largest number of students who enrolled at the college are Black Africans, whose enrolment recorded an average annual growth rate of 8.4% during 2010-2020. Coloured students accounted for the second largest numbers of enrolment, which recorded an average annual growth rate of 14.0% during 2010-2020. Despite having the lowest headcounts, enrolments by White and Indian/Asian students grew by average annual growth rates of 14.4% and 12.2%, respectively.

Figure 7: Share of enrolment by race, 2010-2020



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
White	0.3%	0.3%	0.3%	0.2%	0.3%	0.3%	0.3%	0.2%	0.3%	0.4%	0.4%
Indian/Asian	0.3%	0.4%	0.3%	0.3%	0.3%	0.2%	0.2%	0.2%	0.3%	0.3%	0.4%
Coloured	0.5%	0.4%	0.4%	0.4%	0.4%	0.4%	0.5%	0.5%	0.4%	0.6%	0.8%
Black African	99.0%	98.9%	98.9%	99.1%	99.0%	99.1%	99.0%	99.1%	99.0%	98.7%	98.5%

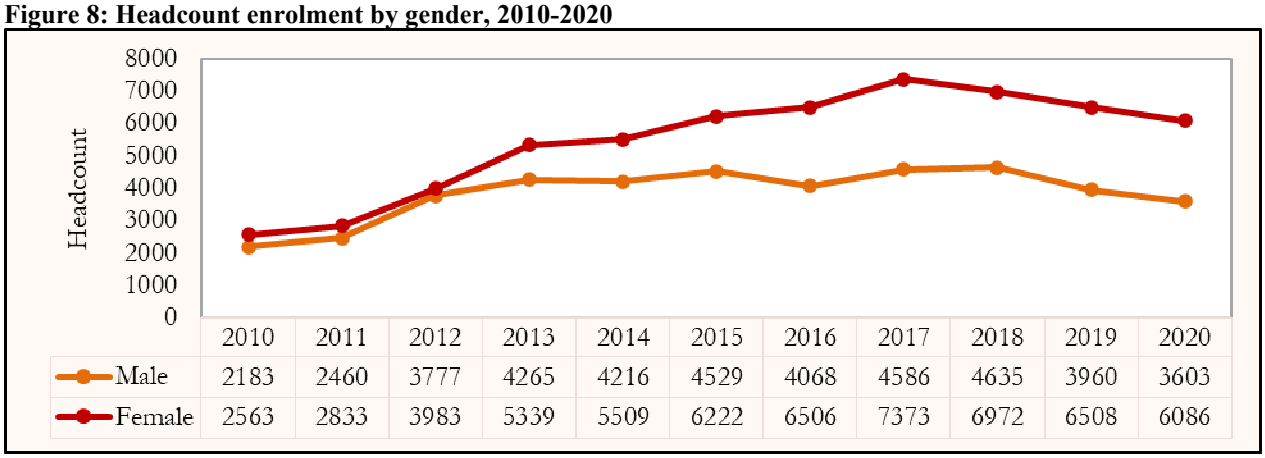
Source: Authors' calculations using data from Gert Sibande TVET College (2021) – Management Information System

Figure 7 indicates that Black African students consistently accounted for about 99.0% of total student enrolments during tAAhe entire period 20102010-2020, while students in each of other remaining racial groups accounted for less than 1% throughout the entire period under review.

4.2.5. Enrolment by gender

Headcount enrolments at the college were similarly analysed to understand the distribution of students by gender over the period 2010-2020. Figure 8 shows total student headcount enrolments by gender, while Figure 9 presents the share of student enrolment by gender during the same period 2010-2020.

Figure 8: Headcount enrolment by gender, 2010-2020

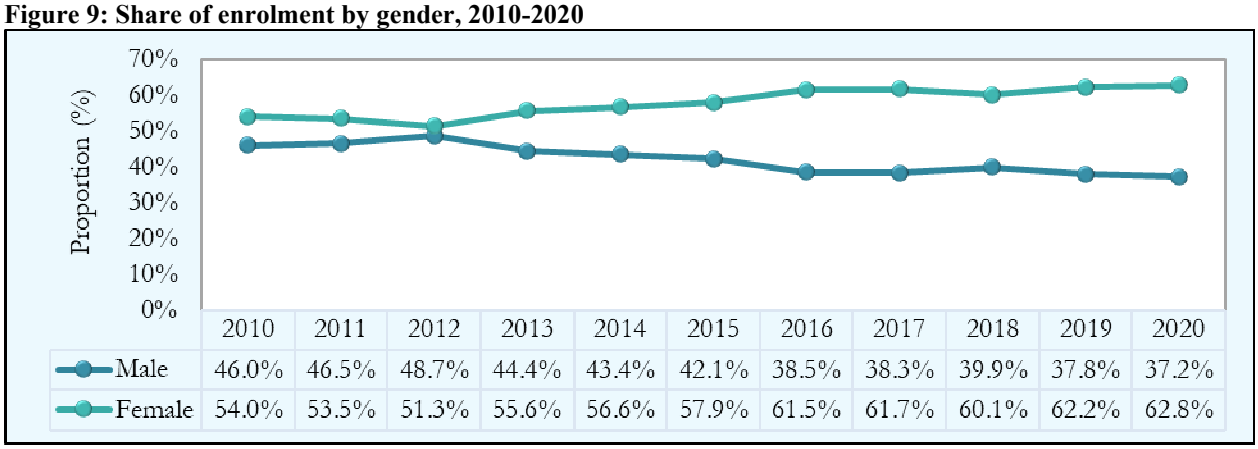


	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Male	2183	2460	3777	4265	4216	4529	4068	4586	4635	3960	3603
Female	2563	2833	3983	5339	5509	6222	6506	7373	6972	6508	6086

Source: Gert Sibande TVET College (2021) – Management Information System

Most students who enrolled at the college over the period 2010-2020 were females, whose number generally increased by 187.7% (4 810 students) from 2 563 students in 2010 to 7 373 students in 2017, before declining gradually by 17.5% (1 287 students) to 6 086 students in 2020. Enrolments by male students increased by 112.3% (2 452 students) from 2 183 students in 2010 to 4 635 students in 2018, but steadily declined by 22.3% (1 032 students) to 3 603 students in 2020.

Figure 9: Share of enrolment by gender, 2010-2020



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Male	46.0%	46.5%	48.7%	44.4%	43.4%	42.1%	38.5%	38.3%	39.9%	37.8%	37.2%
Female	54.0%	53.5%	51.3%	55.6%	56.6%	57.9%	61.5%	61.7%	60.1%	62.2%	62.8%

Source: Authors' calculations using data from Gert Sibande TVET College (2021) – Management Information System

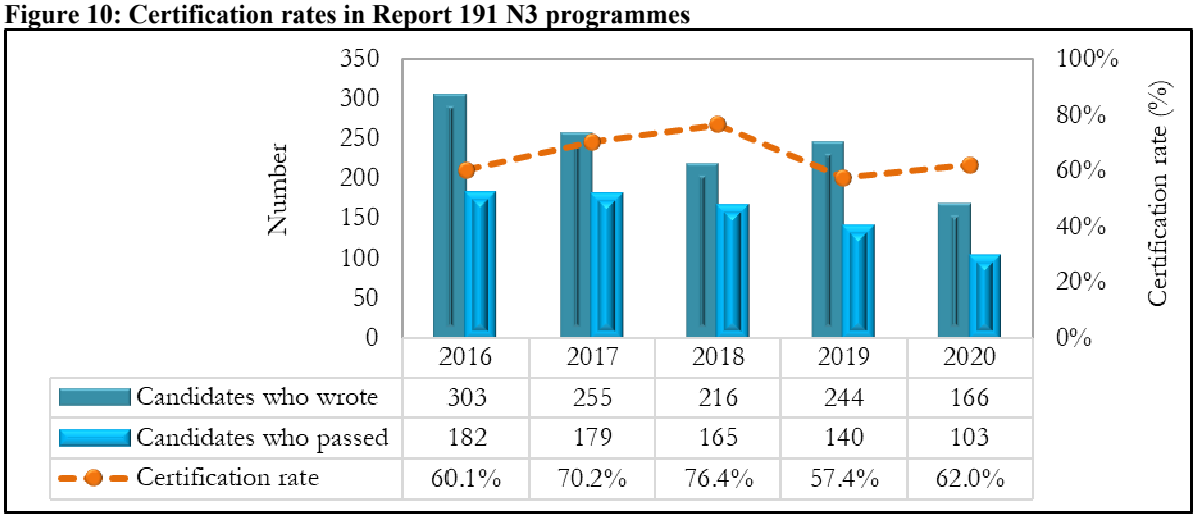
Figure 9 indicates that the largest share of students who enrolled were females. After a decline from 54.0% in 2010 to 51.3% in 2012, the share of female students increased consistently from 55.6% in 2013 to 62.8% in 2020. On the other side, male student enrolments incessantly declined from 46.0% in 2010 to 37.2% in 2020. The widening gap in enrolment shares between male and female students shows increasing disparities in access to education and training at the college.

4.3. Trends in success

This section presents certification rates in programmes completed by students during periods which examinations data was available. Certification rates are the percentage of the number of candidates who passed examinations in a particular programme relative the total number of students who wrote examinations of the respective programme.

4.3.1. Certification rate in Report 191 N3 programmes

Figure 10: Certification rates in Report 191 N3 programmes



	2016	2017	2018	2019	2020
Candidates who wrote	303	255	216	244	166
Candidates who passed	182	179	165	140	103
Certification rate	60.1%	70.2%	76.4%	57.4%	62.0%

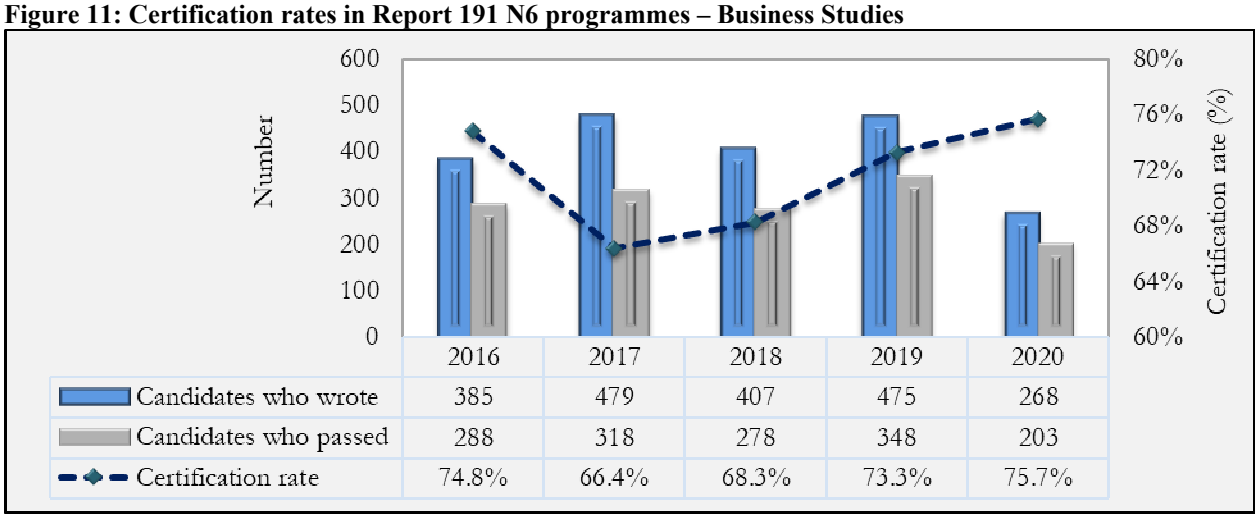
Source: Authors' calculations using data from Gert Sibande TVET College (2021) – Management Information System

Figure 10 shows that the certification rate in Report 191 N3 programme consistently improved from 60.1% in 2016 to 70.2% in 2017 and 76.4% in 2018. The certification rate, however, declined by 19 percentage points to 57.4% in 2019, but recovered by 4.6 percentage points to 62.0% in 2020.

4.3.2. Certification rates in Report 191 N6 programmes

Certification rates in the Report 191 N6 business studies and engineering studies programmes. Figure 11 presents certification rates in Report 191 N6 programmes – business studies, and Figure 12 presents certification rates in Report 191 N6 programme – engineering studies during 2010-2020.

Figure 11: Certification rates in Report 191 N6 programmes – Business Studies

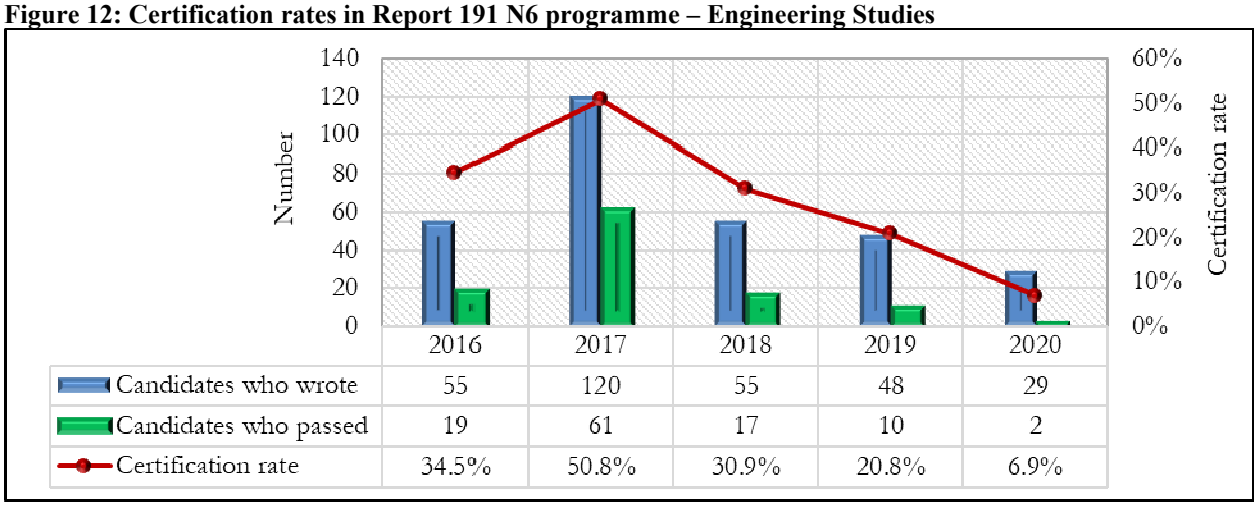


	2016	2017	2018	2019	2020
Candidates who wrote	385	479	407	475	268
Candidates who passed	288	318	278	348	203
Certification rate	74.8%	66.4%	68.3%	73.3%	75.7%

Source: Authors' calculations using data from Gert Sibande TVET College (2021) – Management Information System

Figure 11 shows that the certification rate in Report 191 N6 business studies programme declined by 8.4 percentage points to 66.4% in 2017 from 74.8% in 2016. On a positive note, the certificate rate consistently improved to 68.3% in 2018, 73.3% in 2019 and 75.7% in 2020.

Figure 12: Certification rates in Report 191 N6 programme – Engineering Studies



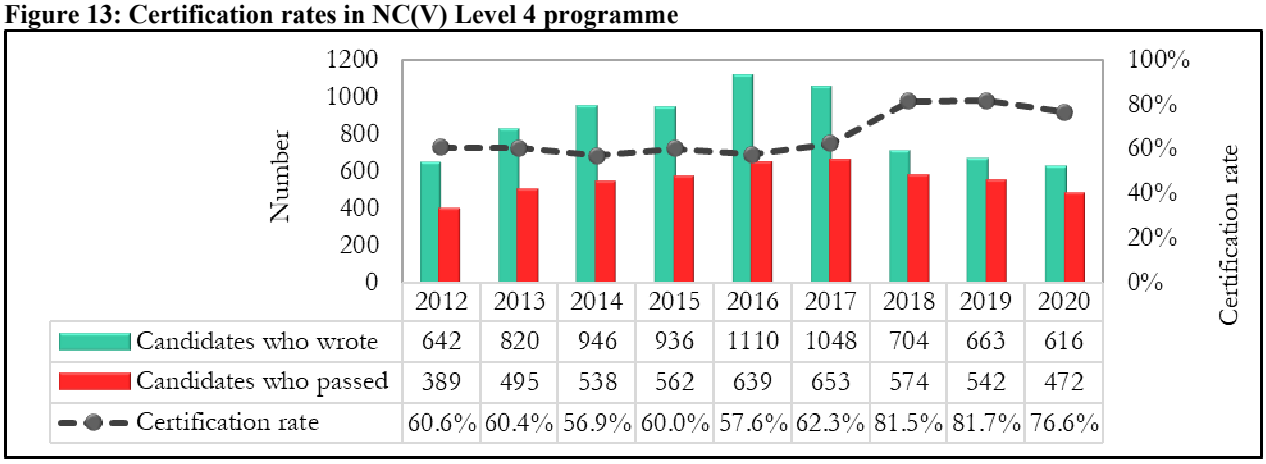
	2016	2017	2018	2019	2020
Candidates who wrote	55	120	55	48	29
Candidates who passed	19	61	17	10	2
Certification rate	34.5%	50.8%	30.9%	20.8%	6.9%

Source: Authors' calculations using data from Gert Sibande TVET College (2021) – Management Information System

Figure 12 shows that the certification rate in Report 191 N6 engineering studies programme drastically increased by 16.3 percentage points to 50.8% in 2017 from 34.5% in 2016. However, the certificate rate consistently declined significantly to 30.9% in 2018, 20.8% in 2018 and merely 6.9% in 2020.

4.3.3. Certification rates in NC(V) Level 4 programme

Figure 13: Certification rates in NC(V) Level 4 programme



	2012	2013	2014	2015	2016	2017	2018	2019	2020
Candidates who wrote	642	820	946	936	1110	1048	704	663	616
Candidates who passed	389	495	538	562	639	653	574	542	472
Certification rate	60.6%	60.4%	56.9%	60.0%	57.6%	62.3%	81.5%	81.7%	76.6%

Source: Authors' calculations using data from Gert Sibande TVET College (2021) – Management Information System

Figure 13 shows that the certification rate in NC(V) Level 4 programme declined consistently from 60.6% in 2012 to 57.6% in 2016. On a positive note, the certification rate rebounded and constantly improved from 62.3% in 2017 to 81.7% 2019 but declined by 5.1 percentage points to 76.6% in 2020.

5. CONCLUSION AND RECOMMENDATIONS

5.1. Conclusion

Major findings from the study show that total headcount enrolments increased during 2010-2015, and waned thereafter until 2020, signifying the need to restore the uptake of the College's programmes. Participation at the college, based on the gross enrolment ratio (GER), consistently increased between 2010 and 2018, despite declining in 2019 and 2020. Female GER generally remained higher than male GER, suggesting higher participation by females than by males. Although enrolments in NC(V) levels 2-4 programme remained higher than enrolments in Report 191 N1-N6 levels, enrolments in both programmes generally improved between 2010 and 2017. Based on race, enrolments largely consist of Black African students, whose share constantly remained around 99.0% of total enrolments. In terms of gender distribution, the largest share of students were females during 2013-2020.

Certification rates in the Report 191 N3 programme demonstrated good progress regarding student success during 2016-2018. Despite the decline in 2017, certification rates in Report 191 N6 business studies recorded good performance over the period under review, while certification rates in Report 191 N6 engineering studies programme was considerably poor. Certification rates in NC(V) level 4 programme waned during 2012-2016, despite the recoveries during 2017-2019.

5.2. Recommendations

5.2.1. Recommendations for access

a) Infrastructure improvement

The TVET sub-system generally has a record of under-funding of physical infrastructure maintenance. To address this challenge, the DHET should support the college with financial and technical support to address all the critical infrastructure improvement and development backlogs to improve the College's capacity to improve student enrolment.

b) Improved programme and qualification mix

The College should review and develop a programme and qualification mix (PQM) with curricula that are aligned with the needs of workplace. To ensure relevance of programme qualifications, the review and development of the PQM should be done in collaboration with employers' inputs through the relevant Quality Council. In addition, lessons learnt from Centres of Specialisation should be used as well to inform interventions for improving the responsiveness of College's programmes qualifications.

c) Enrolment planning, career advice and marketing strategy

Considering the varying nature of the programme qualifications offered by the College diverse campuses, the College should develop customised enrolment plans and marketing strategies which ensure that large numbers of prospective students are timeously reached out to with sufficient information they may require in making informed programmes and qualification choices. The staff who provide career advice to students must be knowledgeable and trained to convey accurate career advice to learners.

5.2.2. Recommendations for success

a) Teaching and learning improvement strategy

The college should develop and implement a teaching and learning improvement strategy focusing on teaching, learning and curriculum delivery. Such a strategy can encompass student support, lecturer development and partnerships with employers in relevant industries whose committed collaboration can markedly contribute towards improving student success rates.

b) Student support services

The demand for services within the TVET sector largely outstrips the available staff, whose conditions of service are usually not favourable. In that regard, student support services should be provided to address the challenges faced by learners from underprivileged backgrounds. Such support services should address articulation gaps caused by poor schooling, lack of career direction, and other psycho-social problems faced by learners from diverse socio-economic and educational backgrounds.

c) Lecturer development

Most lecturers in TVET colleges are either academically qualified, but not professionally qualified or vice versa. To close the gap between qualifications and required experience, the College should provide appropriate training to the lecturers who are already teaching at the college. Lecturers who have relevant qualifications but lack the required experience should be provided with the suitable training to improve their competencies in teaching. Concomitantly, lecturers who have the teaching experience but lack the relevant qualifications should enrol for and successfully complete higher qualifications at universities to ensure that they become fully qualified and competent to teach.

d) Modes of delivery and technology

The delivery modalities of programmes are still predominantly traditionally lecturer-centred, and there is limited use of technology for blended learning approaches. The few colleges making use of distance provision still use the traditional correspondence paper-based model, which does very little to support student success, and that has been associated with poor success rates. The college should conduct an evaluation of the current state of its ICT infrastructure and determine the areas where improvements or upgrades need to be made to ensure efficient delivery of the teaching and student success.

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