REFLECTING ON STUDENT SUCCESS DURING COVID-19:

LESSONS TO TAKE FORWARD

CHE
COUNCIL ON HIGHER EDUCATION

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Glossary

Academic staff: Academic staff include instruction/research professionals occupying a position in which (a) at least 50% of time is spent on instruction and/or research activities, and (b) the position requires a higher education qualification equivalent to at least four years of higher education study.

CESM: Classification of Educational Subject Matter.

Enrolment growth by level (undergraduate, postgraduate, occasional, total): Percentage increase or decrease in headcount enrolments.

First-time entering undergraduate students: First-time entering undergraduate students are students that register for the first-time at a university in an undergraduate programme.

Full-time equivalent (FTE) staff member: A full-time equivalent staff member is equivalent to a staff member who works at the institution for a full year on a full-time basis. All full-time as well as part-time employed staff are converted to the equivalent of full-time employed staff members.

Full-time equivalent (FTE) student enrolments: To calculate full-time equivalent students, all subject enrolments in contact, distance, full-time and part time mode in a particular year are converted into full-time students that are enrolled for a full year curriculum.

First-time entering undergraduate student enrolment growth: Percentage increase or decrease in enrolments of first-time entering undergraduate students.

Major field of study:

- **Natural sciences,** including agriculture and agriculture operations, family ecology and consumer sciences, life sciences and physical sciences, mathematics, and statistics.
- **Engineering and technology,** made up of engineering, architecture and the built environment, and computer and information sciences.
- **Health sciences,** including health professions and related clinical sciences.
- **Business, economics and management,** including accounting, auditing, economics, finance, business administration, and various management programmes.
- **Education,** made up of studies in pre-primary, primary, secondary and post-school education, and the training of teachers at all levels.
- **Humanities and social sciences,** including fine arts, music and drama, communication and journalism studies, languages and literature, law, public management and services, psychology, sociology and anthropology, history, political sciences, military sciences, philosophy, and religious studies.

NSFAS: National Student Financial Aid Scheme.

Permanent academic staff with PhDs: The permanently appointed academic staff (instruction/ research staff) with a doctoral degree as highest qualification.

Permanent staff member: A person is a permanent staff member if they contribute to an approved retirement fund of the institution.

Retention from one year to the next: The percentage of students enrolled in year a specific year (n) that proceeded to register the following year (n+1), and who did not graduate in the original year of measurement (n).

School quintiles: South African public schools are divided into five quintile rankings. Quintiles one to three are non-fee-paying schools which are completely government subsidised, quintiles four and five are fee-paying schools which are partially government subsidised. Lower quintile schools are therefore also lower resourced. The Department of Basic Education looked at the income, literacy and unemployment levels in a community as the indices to determine a school's quintile ranking.

Student-staff full-time equivalent ratio: The ratio of full-time enrolled students to full-time equivalent academic staff members.

Success rate: Success rate is defined as the completed full-time equivalents expressed as a percentage of the enrolled full-time equivalents.

Teaching input units: Full-time equivalent enrolments, weighted according to the funding grid of the funding framework for funding group (based on CESMs), qualification level and mode of delivery.

Preface

The higher education (HE) system in South Africa faces interrelated challenges of socio-economic development, the contextual relevance of knowledge production and dissemination, rapid advances in technology, the continuing need for systematic, societal, and economic transformation, and the increasing fragility of the planetary ecosystem due to environmental degradation. The third industrial revolution had already precipitated a marked shift by some higher education institutions (HEIs) towards technology-enhanced online and blended forms of education provisioning and the advent of the fourth industrial revolution (4IR) has accelerated this, including through rapid advances in technologies such as artificial intelligence, robotics, blockchain, the internet of things and big data analytics. This is driving a more comprehensive approach to responding to both the opportunities and the challenges posed by technological advances across the system. The COVID-19 Pandemic accelerated the shift towards online and blended learning.

Higher education institutions are unlikely to revert fully to traditional and/or former ways of providing for learning and teaching now that the crisis caused by the pandemic is largely over. Important advances have been made, and important lessons have, and continue to be learned. New technologies continue to emerge and new futures for learning, teaching and assessment are being envisaged. These need to be researched and documented to draw together a consolidated and growing knowledge base that can inform equitable policy and practice going forward. Importantly, for the Council on Higher Education (CHE), the implications of the rapidly evolving learning, teaching and assessment environment for both external and internal quality assurance (QA) needs to be understood.

The REconceptualising LeArning and TEaching (RELATE) Project is an umbrella project that is being implemented by the CHE in collaboration with the higher education sector to understand and to contribute to sector responsiveness to some of the challenges and developments outlined above. The RELATE Project has the broad purpose of reimagining learning and teaching futures in higher education, post-pandemic, and post-disruption, and to develop some of the quality assurance artefacts that are required for these futures.

The RELATE Project is a meta-project consisting of several sub-projects focussed on specific aspects. The third report in this series was done by the Centre for Teaching and Learning at the University of the Free State and focuses on student success during the COVID-19 pandemic. The concept of student success in the South African literature is analysed and then supplemented by a qualitative analysis of two national surveys in 2020 and 2021. A significant contribution is the focus on lessons learned and possible ways of taking these lessons into the future in terms of re-imagining learning and teaching.

The CHE would like to thank Dr Charles Sheppard, Prof Francois Strydom, and Dr Sonja Loots for producing this integrated report.

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Executive summary

While South African higher education navigates the effects of longstanding societal and economic transformation and rapid advances in technology, the sector also plays a key role in determining the trajectory of these societal advances. The COVID-19 pandemic accelerated the need for the sector to become more technologically resilient. Consequently, there has been a need to reflect on the learning and teaching experiences during the pandemic to interrogate what quality blended learning should entail to advance student success. In building towards a more resilient higher education system, we also need to critically reflect on the state of an array of factors that impact student success, including the inflow and outflow of students, enrolment planning, funding, and capacitation at a sectoral level.

This report reflects on how student success features conceptually and empirically in South African literature. It draws on recent literature dedicated to student success or aspects thereof, to identify what factors scholars deem as important contributors to student success. Further, the report draws on large-scale quantitative data from the Higher Education Management Information System (HEMIS), and qualitative data from two national surveys conducted during 2020 and 2021, namely the *Students' Access to and Use of Learning Materials* (SAULM; Department of Higher Education and Training [DHET], 2020) and the *Staff Experience of and Perspectives on Teaching and Learning and its Future* (SEP-TLF; Council on Higher Education [CHE], 2021b). These two surveys have helped to identify the key factors that contribute to our understanding and advancement of student success.

Drawing on these data sources, the report reflects on the implications of the data for planning, funding, and quality in an environment that needs to intentionally leverage technology, and adequately prepare students to join the world of work. The following are some of the key findings and recommendations of this analysis.

1. **Findings and reflections related to student success in general:**
    - There is a diversity of theoretical viewpoints that enrich our understanding of the student success conversation. By broadening the definition of student success to include employability, the concept aligns with the social justice imperative of addressing poverty and inequality in South Africa. It also positions work in this field within global higher education debates around the role of higher education in society.
    - The literature on factors that contribute to student success is expanding. It especially informs the sector's understanding of the needs of first-year students and what support helps them to adjust to university and navigate their studies.
    - While most institutions show an upsurge in success rates for 2020, the qualitative experiences generally contradict this finding, with lecturers and students raising concerns about accessing content, a lack of engagement, the integrity of assessments, and quality of learning during this time. It is thus unlikely that the increased success rates were a direct response to better quality learning and teaching.
    - For most institutions, success rates generally subsided after 2020 to levels similar to 2019.
    - There were several changes to the student population between 2018 and 2021, including a 20% decline in first-time entering students accessing the public higher education sector, a 26% decline in international students, a 4% decline in postgraduate students, around 20% fewer Indian and White student enrolments, and 34% fewer male student enrolments than female student enrolments.
    - Regarding throughput, the sector showed a 3% graduate growth rate between 2018 and 2021, with universities of technology showing a graduate growth rate of more than 10% during this time. Postgraduates showed a 6% decline in graduate growth rate. Postgraduate studies are essential for developing the next cohort of researchers and university teachers.

1.1. General recommendations for student success scholarship

- More research is needed to explore trends in private higher education institutions, as well as tracking potential students with bachelor's passes. These explorations are necessary to

understand the decline in first-time entering enrolments and determine where/whether certain social groups are engaging in higher education, if not in the public sector.

- Research into the factors that contribute to the widening gap in enrolments and the success rates of females and males, with a focus on the two most at-risk groups, African and Coloured males, would be valuable to address equity gaps.
- Research into the reasons for the decline in postgraduate enrolments and graduate growth could assist in informing recommendations for interventions that can improve the growth of postgraduate enrolments.
- Research into the significant decline in international students is needed.
- There is a need to better articulate how higher education contributes to the personal and professional development of graduates as critical citizens and future leaders as they enter the workplace. More research is also needed on graduate employability, the alignment of attributes developed in higher education vs. the attributes desired by employers, and the potential of leveraging technology to simulate practical experience. Higher education institutions could also be more transparent about the attributes they are developing in students and how such attributes will contribute to the careers of graduates and broader national priorities.

2. **Key findings and recommendations to guide institutional and sectoral planning:**
   - Compared to international trends, most public sector institutions are understaffed, with student-staff ratios in universities of technology in particular, exceeding 30:1. In addition, the percentage of full-time academic staff with PhDs in the system ranged from 33% in universities of technology in 2021, to 61% in traditional universities during the same year. Without intentional interventions, it is unlikely that the sector will meet the 75% target of academic staff with PhDs by 2030, set in the National Development Plan (National Planning Commission, 2011).
   - The SAULM and SEP-TLF qualitative data emphasise the importance of certain factors that support good pedagogy-related practices that stand out as contributing to students' progression through the system. These include:
     - Being transparent and communicating well. This implies better communication between institutional management and staff to align expectations with capabilities and resources. Communication between lecturers and students is also key to aligning expectations about roles, responsibilities, and boundaries.
     - Designing sound blended learning and teaching pedagogies to leverage the best of both worlds. For example, using technology to create interest, develop skills, widen knowledge bases, and create a sense of responsibility in learning, while using classrooms as spaces for discussions and peer interactions. This includes using learning and instructional design to enhance student engagement on digital platforms, as well as optimising learning environments for students and staff.
     - Providing relevant training to students and staff in the use of educational technology to facilitate learning and teaching; providing appropriate support in the form of access to hardware, software, and data; and providing technical support.
     - Providing training and support to lecturers in blended learning environments and alternative assessment practices, as well as keeping up-to-date with the latest trends and security concerns regarding technology that might enable academic dishonesty.
   - Student engagement data show that less than a quarter of students engage in practical work experience while studying. The SAULM and SEP-TLF data also speak to the difficulties of implementing practicals without physically attending, or without expensive, innovative technologies, such as virtual reality or artificial intelligence. While some reference to desired graduate attributes for employability featured in the data, there seems to be a general lack of intentional curriculum and programme design to scaffold the development of said desired attributes. Taken together, there is a need for more research to understand how higher education contributes to the personal and professional development of graduates.
   - An important finding from both quantitative and qualitative analyses is the need to build capacity in enrolment planning and management, instructional and learning design, and administrative

support, as well as capacitating students and staff with the necessary digital skills, competencies, and knowledge to leverage technology in teaching and learning.

- Advancing data analytics in the sector, while balancing the potential of technology with the possible threats to academic integrity and learning posed by artificial intelligence-driven technologies, are also factors that need to be considered as part of planning processes.

2.1. Recommendations for planning

- National and institutional interventions are needed to appropriately capacitate academic staff, academic professionals and support staff (in terms of numbers, qualifications, and continued professional development) to support student success.
- The negative enrolment and graduate growth trends need investigation, however, these trends also need to be investigated at institutional and sectoral planning and management levels.
- In leveraging technology for a more resilient system, a challenge is to ensure that digital inequities do not further disadvantage certain social groups. This will require a national collaborative approach to align policies and to strategically incentivise institutional practices that further equitable outcomes for students. Importantly, it will require a stronger focus on Universal Design for Learning (UDL) in the context of digital learning to ensure equitable education.
- Sectoral and institutional guidance is needed on how to establish, implement, and be accountable for good pedagogy-related practices in a blended learning and teaching environment.
- Advancements in technology and data require increasingly sophisticated data analytic capacity. Such services are currently limited to institutional capacity. Innovative ways of developing analytic capacity and sharing resources need to be investigated to enable all institutions to optimise evidence-based approaches to decision-making and resource allocation.

3. **Key findings and recommendations to guide financing of the system:**

- Enrolment and capacitation planning directly impacts how the system is funded. In 2021, the 17% deficit in first-time entering enrolment planning, 6% deficit in Teaching Input Units, 11% deviations in undergraduate enrolment planning, and 7% deviation in master's enrolment planning have resulted in several institutions being penalised financially.

3.1. Recommendations for funding

- In an already cash-strapped system, penalisations can be avoided by careful planning and management of institutional enrolments and support. This implies a stronger focus on the capacitation of institutional planning and management.
- The financial implications of a more technologically enhanced system require innovative responses, such as redirecting current funding or investing in partnership initiatives. Critical questions that could be tabled for discussion on funding include:
  - How can the DHET facilitate national partnerships with other ministries and industries to bridge the digital divide and allow equity of access for students to networks, devices, data, and digital literacy skills?
  - Should infrastructure grants be refocused on bridging the digital divide?
  - Should the University Capacity Development Grant (UCDG) intentionally focus on enhancing programme design capacity and enrolment planning capacity and management in the sector?
  - How are student funding sources being reimagined to align with national and institutional priorities?

4. **Recommendations for quality assurance**

- Mapped against the 16 standards of the Framework for Institutional Audits, quality assurance considerations drawn from the report include:
  - ensuring alignment of national and institutional policies at a strategic level;
  - investing in more sophisticated data analytics to track progress, identify areas of improvement, measure the impact of interventions, and inform decisions while aligning with ethical and legal data governance practices;
  - developing capacity in programme and curriculum design practices;

- encouraging lecturer development by creating incentives and support to pursue PhDs, and introducing continuing professional development (CPD) programmes;
- introducing significant efforts to rethink assessments in a digitalised system;
- promoting good pedagogical practices that support student success;
- intentionally integrating digital skills and competencies development for students and staff; and
- using quantitative and qualitative data that represent the student voice to guide curriculum transformation, and creating environments that optimise student success.

The findings of this report can be used to inform the intentional design of programmes and interventions to enhance quality promotion and capacity development at an institutional level. The report also points to the need to create a better network between institutional planners and quality assurance professionals to help build a new generation of higher education specialists that will enable the effective implementation of the Quality Assurance Framework.

Introduction

The COVID-19 pandemic significantly disrupted the core academic missions of universities in 2020 and 2021. The advent of the pandemic and resulting emergency remote learning and teaching responses from the sector fundamentally shifted the higher education landscape. During and immediately following the pandemic, there was a down-turn in the economy. Consequently, there were no increases in block grant funding allocations to universities, and even the current, small increases that are being received, do not match the increases in inflation. In a collaborative effort to recover from the impact of the pandemic on the sector, higher education institutions were called upon to critically reflect on the effectiveness of current operating models, systems, and processes. They were also asked to explore innovative practices that promoted organisational resilience and agility. Part of this reflection is to draw on national data sources to investigate trends in the sector, particularly those that impact planning, funding, and quality discussions. This investigation is the purpose of this report.

The data sources we draw on include national Higher Education Management Information System (HEMIS) data, which provides a quantitative overview of student enrolment, retention, and graduation, as well as trends in institutional capacity and planning. We complement the quantitative overview with qualitative reflections on student and staff experiences during the pandemic from the SAULM and SEP-TLF survey data. These surveys were administered in 2020 and 2021, respectively, and were the result of collaborative efforts between the DHET, Universities South Africa (USAf), the CHE, and the University of the Free State (UFS). The surveys explore the experiences of students and academic staff during the pandemic. The SAULM survey, administered in 2020, had 48,981 student respondents from 24 public universities, while the SEP-TLF survey, administered in 2021 at 24 public higher education institutions, had 1,851 academic staff respondents. The SEP-TLF survey focused on the experiences of academic staff during the pandemic; the future of teaching and learning; and the reflections of academic leaders and/or managers on their experiences, their staff's experiences, and how their institutions could best support them as they transitioned out of the pandemic. Put together, the qualitative responses provide rich data from which we can learn more about student and staff experiences. While the qualitative data was analysed for the national reports, the current report will be examining the data through the lens of student success, paying particular attention to equity.

This work forms part of the CHE's RELATE Project, a research and development project seeking to understand the implications of sectoral changes for pedagogic responsiveness, curriculum responsiveness, resource responsiveness, and capacity development responsiveness. The project also aims to understand how the higher education steering mechanisms of planning, funding, and quality assurance can be deployed to enable such responsiveness. In turn, this research-driven approach informs the CHE's Quality Assurance Framework (QAF), which already includes the shift towards technology-assisted learning and teaching, and more flexible learning pathways at a macro-level of external quality assurance. In line with its mandate as the Quality Council for higher education and its functions of quality promotion, research and advice, and quality assurance, the CHE needs to lead the development of a deeper and more meaningful understanding of learning and teaching in a dynamically changing external environment. The CHE also needs to promote quality in the academic project through the development of standards and good practice within the framework of the QAF.

To support the work of the RELATE project and in response to the national call for reflection on systemic and organisational effectiveness, the CHE commissioned two reports aimed at providing an in-depth exploration into student success prior to, during, and beyond the pandemic. One report aimed to focus on using quantitative HEMIS data as factual information about student success and related factors. The second report aimed to revisit qualitative data collected as part of the SAULM and SEP-TLF surveys to explore student and staff's lived experiences during the pandemic. It was later decided to merge the two reports to create a holistic representation of student success and some of its most prominent influencing factors.

This report is structured in five sections. Section 1 provides a literature overview of student success in the South African context, including how it is being conceptualised and what scholars are writing about. Section 2 will provide a quantitative overview of the sector's enrolment, retention, and graduation trends prior to, during, and beyond the pandemic, with particular emphasis on demographic trends. Section 3 revisits the qualitative data shared in the SAULM and SEP-TLF reports to explore how students and staff experienced learning and teaching

during the pandemic. Section 4 broadens the scope to a sectoral level, using HEMIS data to explore how academic capacity and planning impact student success work. Lastly, Section 5 takes together the information presented in this report to reflect on the experiences of students and staff during the pandemic and how these experiences inform how we might think of student success in future, as well as how we understand the impact of planning, financing, and quality on student success.

Section 1: Conceptualising student success in the South African context

The concept of student success is very broad, and definitions vary. Defining student success depends on the purpose, outcomes, and intended educational experience that form part of higher education qualifications (Pelletier, 2019). In the South African context, this would imply a strong focus on merging national, institutional, and individual priorities with the main concerns of the higher education sector, such as widened and equitable access, quality learning and teaching, horizontal and vertical mobility of students, and alignment between educational offerings and the world of work, amongst others (DHET, 2013; National Planning Commission, 2011).

The CHE (2014, 13) defines student success as "enhanced student learning with a view to increasing the number of graduates with attributes that are personally, professionally and socially valuable." In its *Framework for Institutional Audits,* the CHE (2021a, 9) expands on this definition by clarifying:

> For the institution, it refers to students' academic persistence in completing their studies, academic results that reflect equity of success in terms of race, gender, and disability, as well as their achieving credible results within a minimum time to completion; successful entry into employment or some other form of economic activity and/or successfully progressing to postgraduate studies

Student success, therefore, has elements of **throughput** (getting students to complete their studies in a decent timeframe), **equity of outcomes** (particularly between social groups), and **navigating the world beyond graduation** (employability, personal and socially valuable attributes, continuation of studies). These concepts, which constitute student success, will be revisited when analysing the survey data.

1.1. Theoretical or conceptual frameworks used to describe student success in South African literature

Some of the key theoretical or conceptual frameworks that have been used in South African literature on student success include student engagement, the capabilities approach, critical and social realism, and other approaches related to social justice. These frameworks have shaped how we understand students' experiences and how such experiences contribute to student success in South Africa. These perspectives will now be briefly explored.

1.1.1. Student engagement

Student engagement draws on knowledge from different fields, such as psychology, sociology, and education. As such, it varies conceptually. For Kuh (2001), student engagement includes two key components: i) the extent to which students take part in educationally purposeful activities, and ii) the extent to which institutions provide environments that enable students' participation in effective educational practices. Educationally purposeful activities refer to behaviours that have been identified through research as being valuable contributors to learning and, ultimately, student success. Strydom and Loots (2020) summarise examples of such behaviours: i) the amount of time spent on learning tasks (Carroll, 1963), ii) the quality of students' effort (Pace, 1984), iii) behaviours underpinned by the principles for good practice in undergraduate education (Chickering & Gamson, 1987), iv) students' active participation in their studies (Astin, 1977), and v) behaviours that contribute to student

success as outlined by the meta-analyses of factors contributing to student success by Pascarella and Terenzini (1991). These behaviours were integrated into the National Survey of Student Engagement (NSSE), a measuring instrument still administered today in the United States, that has also been adapted for use in several other contexts, including Ireland, South Africa, Australasia, China, the Republic of Korea, and Indonesia (Coates, Gao, Guo, & Shi, 2022).

Other conceptualisations of student engagement have developed over the years. Trowler (2010) positions student engagement as the interaction between time, effort, and resources, aiming to both optimise the student experience and the performance of the institution, while Barkley (2010) argues for student engagement as the pedagogical result of interaction between motivation and active learning. While these and other definitions might differ slightly, they have two important things in common: agreement on the multidimensional nature of student engagement, and consensus that student engagement both stimulates and results from the interaction between students and institutions (Strydom & Loots, 2020).

In the South African context, student engagement has been predominantly measured by the South African Surveys of Student Engagement (SASSE), with 23 public and private higher education institutions administering at least one of the surveys in the past ten years. Student engagement has played a significant role in how the sector understands the changes in student populations in recent years (Mentz, 2012; Strydom, Kuh & Loots, 2017; USAf, 2018a, 2018b, 2018c). Student engagement has also contributed to predicting student success (Schreiber & Yu, 2016); identifying institutional responsibilities in promoting engagement (Ivala & Kioko, 2013); and identifying what effective educational behaviours contribute to student success, such as tutorial programmes (UFS, 2019) and academic advising (UFS, 2018). Student engagement work also advocates for implementing scaled initiatives or High-Impact Practices (HIPs), such as variations of peer learning or first-year experience initiatives to make a significant impact in the learning experiences of as many students as possible (Loots, Kinzie & Oosthuysen, 2017). Within classrooms, Kinzie, Strydom and Loots (2017) replicated international studies in the South African context to identify which pedagogical behaviours are most effective in stimulating students' engagement and success. Drawing on SASSE data collected during 2014 from 1,985 undergraduate students enrolled at the University of the Free State, the following items were found to make a significant difference:

- Asking questions or contributing to subject discussions;
- Giving a presentation;
- Preparing two or more drafts of a paper or assignment before handing it in;
- Attending class prepared (having completed readings or assignments);
- Discussing academic performance with a lecturer;
- Talking about career plans with a lecturer;
- Discussing subject topics, ideas, or concepts with a lecturer outside of class;
- Asking another student to help understand subject material;
- Explaining subject material to other students;
- Working with other students on projects or assignments; and
- Having a challenging academic experience.

Lecturers' contributions to effective teaching practices include:

- Providing detailed feedback shortly after completing tests or assignments;
- Clearly explaining subject outcomes and requirements;
- Presenting subject sessions in an organised way;
- Using examples or illustrations to explain difficult points; and
- Providing feedback on a draft or work in progress.

Each of these items are measured on a Likert-type scale of four, where students indicate the extent to which they engage in pedagogical behaviours; related to the last five items on the questionnaire, they also indicate how they experience their lecturers' good educational practices. Regression analyses show that students' average marks increase by 6.48% the more they engage in the first 11 effective educational behaviour items. Similarly, students' average marks increase by 3.59% the more frequently lecturers engage in the five effective teaching practices listed above (Kinzie, Strydom & Loots, 2017).

While such findings are invaluable in informing staff development initiatives, the COVID-19 pandemic has changed the trajectory of how learning and teaching evolves. In e-learning, the term "student engagement" is often restricted to observable behaviours, such as the number of student responses to lecturers' questions, or the number of students who participated in a class activity (Adams et al., 2021). Concerns about relational engagement between students, peers, and lecturers have also been noted in the United States and South Africa. For example, longitudinal data from the SASSE show decreases in relational engagement indicators, such as "Student-Staff Interaction", "Collaborative Learning", and "Quality of Interactions" in the wake of systemic disruptions, such as the #FeesMustFall protests and the COVID-19 pandemic when online learning was implemented. Using the SASSE's parent survey, the NSSE, other studies have also found negative correlations between online learning and teaching contexts and relational engagement indicators (Dumford & Miller, 2018; Paulsen & McCormick, 2020). Concerns about relational engagement were also highlighted qualitatively by students and staff in national surveys conducted during 2020 and 2021 in the South African higher education context, as illustrated later in the report.

The student engagement work speaks directly to the definition of student success noted earlier. National and international evidence noted in the paragraphs above have shown that students' engagement with certain behaviours make a difference in their academic performance and therefore impact upon the rate at which they move through the system. These behaviours include peer learning; academic advising; higher-order and reflective learning; engaging with lecturers; and receiving adequate support and quality teaching. The student engagement work also has a strong focus on equity and promotes scaled interventions or high-impact practices that create equitable chances for all students to participate in development efforts, while emphasising engagement with diverse others. Lastly, the engagement work contributes to helping institutions reflect on how they are preparing their students for employment beyond graduation. For example, between 2015 and 2017, only 28% of students had participated in practical work related to their studies (e.g., internships, work integrated learning, clinical placement, field experience, etc.) This percentage further decreased to 21% in 2021 (Centre for Teaching and Learning [CTL], 2023; USAf, 2018b). In addition, there is still a significant discrepancy between the number of African students (20%) and white students (35%) accessing practical work. The student engagement work also helps institutions reflect on whether they are promoting graduate attributes appropriately through curricular and co-curricular initiatives. Figure 1 below shows an example of students' perceptions of the attributes they have developed during their time at university. This data allows institutions to reflect on whether they are intentional enough in developing the attributes they would like their graduates to develop, and which curricular or co-curricular channels might work best in assisting this development. For example, although developing a sense of citizenship is a national priority, 30% of students do not feel that they have developed this attribute through higher education. Such information can guide institutional priorities.

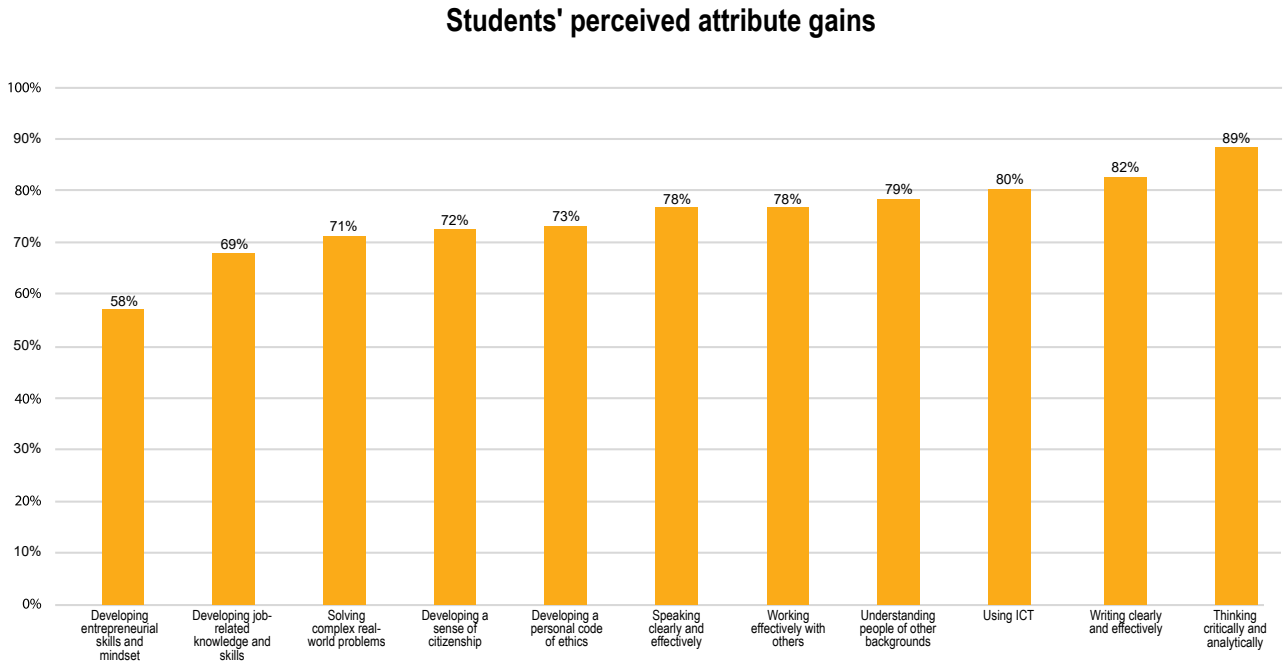


Figure 1 Graduate attribute gains

Since 2018, the NSSE has introduced additional survey questions focusing on students' career awareness and preparedness. Findings show that there is a tendency for students to talk to family and friends about career options rather than professionals at career services, and that up to 60% of students in professional degrees change their career goals while at university. Such findings have important implications for student success (NSSE, 2018). These questions are also being introduced in the SASSE to support institutions' reflections on how they are facilitating students' career paths.

1.1.2. The capabilities approach

In its early years, the capabilities approach was conceptualised by Amartya Sen and further developed by Martha Nussbaum. The approach has a strong social justice focus and has been used in a range of different study fields, including education. Drawing on a range of capability scholars' work, McLean (2018, 113) summarises the premise of the approach:

> The capabilities approach is concerned with what constitutes a flourishing life: for example, enough to eat, sound health, supportive relationships and good quality education. Opportunities to eat, be healthy, have supportive relationships and be well educated are termed 'capabilities.' The realised states of being and doing, that is, the actual practices of individuals in their everyday lives are called 'functionings.' Individuals flourish when they are free to choose how they want to function in all areas of life. So, the capability approach promotes agency whereby individuals are free to choose lives that express their own values and objectives. The social justice goal is that people lead free and dignified lives in a position of equality with others. Structural constraints are accounted for in the concept of 'conversion factors' which are the social, political, policy and economic arrangements that interact with personal biographies to enable or constrain capabilities for well-being and a flourishing life.

From the 2000s onward, the capabilities approach has been increasingly used in (higher) educational contexts. Walker (2006) developed an ideal-theoretical list of capabilities in higher education that include, amongst others, practical reasoning, educational resilience, and social relations and networks. In 2007, Walker and Unterhalter used the capabilities approach to illustrate how such an approach could promote social justice within and through education – particularly in the form of equitable access and being intentional in developing graduates who will contribute to the greater public good.

In the South African context, capability scholars have used the approach to interrogate access and success in the higher education system from a social justice perspective. For example, Wilson-Strydom (2015) explores transitioning from school to higher education by expanding on Walker's capability list to contextualise the opportunities that ease the adjustment of learners entering university. An important contextual contribution is the opportunity for students to develop competence and confidence in the language of instruction. Recently, Walker, McLean, Mathebula and Mukwambo (2022) published a longitudinal study tracking low-income students across their educational journeys in five institutions. The aim of this study was to explore the complexities of how low-income students, who make up most of the South African student population, navigate the sector. From the students' experiences, Walker et al. (2022) developed a capability matrix showing which opportunities from their university education students value, and the possible functionings, or learning outcomes, to which such opportunities could lead (Table 1). The authors position the matrix as a tool to be used by institutions for reflection on students' (in)equitable access to these valued capabilities, and in what ways institutions can assist.

Table 1 Capability matrix

Domain	**Capabilities**	**Key functionings (learning outcomes)**
Epistemic contribution	Equality in gaining degree knowledge; being able to reason, understand, apply, share, critically discuss, and examine knowledge (alone and with others); having a transformational relationship with university undergraduate knowledge; access to technology for learning; voice (academic, political, social).	Being an epistemic contributor
Ubuntu	Equality in understanding that a person's well-being is connected to the well-being of other people; intrinsically valuing relationships.	Connected to and concerned for the well-being of others
Practical reason	Equality in deliberating about, reflecting on, and forming a view of what would be best to do in specific situations and for a good life. Deliberating about ends and valuing a certain kind of life; being a certain kind of person; aspiring towards independence and confidence in making life-decisions.	Planning a (good) life
Navigation	Equality in the ability and confidence to manoeuvre into (access) and through university, and to adapt to succeed academically; resilience; support from others; motivation to succeed; fortitude.	Navigating university/ society's culture and systems
Narrative	Equality in telling one's own higher education story with confidence.	Telling one's own higher education story
Emotional balance	Equality in developing and achieving emotional balance in higher education experiences and learning (able to deal with challenges and stress, able to be happy).	Able to deal with academic and life challenges
Inclusion and participation	Equality in being respected, recognised, and participating fully in teaching and learning, the wider university, and their community; having good relationships/friendships.	Being a respected and participating member of the university/ society
Future work/ study	Equality in preparation to find a graduate-level job in the public or private sector, self-employment or further study.	Employable/ qualified for further study

Another recent study making use of the capabilities approach is titled Reshaping universities to create a student-centred higher education system in South Africa. This work, commissioned by USAf's Transformation Strategy Group (TSG) in 2020, sought to determine how institutional cultures could be reshaped to create a student-centred higher education system in South Africa (Wahl, 2022). Drawing on the expertise of 22 sectoral stakeholders, the study suggests that there are three clusters of values that underpin a student-centred higher education system: Inter-connectedness; Human Dignity; and Equitable Access. Each of these clusters also includes four subordinate values. The resulting framework for a South African student-centred higher education system aims to inform the ways in which institutions think about becoming more student-centred, while simultaneously actioning the framework's values to move students to the centre of higher education (Wahl, 2022). The proposed framework is shown in Figure 2.

Figure 2 Student-centred framework

The capabilities approach has also been used to look at employability. While employment is considered an important outcome of university studies, it has generally not received the necessary attention in research and policy discourse. From a capabilities approach, identifying opportunities and the enablers or constraints contributing to graduates' employability are important starting points to support successful transitioning out of university. Walker and Fongwa (2017) conducted research to identify what universities were already doing and what else they could do to enhance the employability of their graduates, particularly as a matter of social justice. They propose four key capabilities that could act as indicators for "educating the employable-capable graduate" (p. 222 –223). The capability indicators are shared in Table 2.

Table 2 Capability indicators for employability

Capability (indicator)	**Indicative functionings**
Subject knowledge, critical thinking and autonomy	· Planning and reflecting on career and life plans. · Open-minded and appreciating diversity of viewpoints – reasoning in a critical and informed way. · Participating in learning to enable knowledge, including voice, confidence and language; experiencing transformative pedagogies. · Developing skills. · Being ethical in approaching knowledge implications for people and society.
Economic opportunities	· Able to get careers advice, able to apply theoretical knowledge in practical settings, able to develop employer contacts (social capital) through university provided careers support. · Able to explore entrepreneurial possibilities. · Having equal access to employers. · Able to earn a "decent" income.

Capability (indicator)	Indicative functionings
Affiliation	· Being able to exercise a narrative imagination. · Solidarity and concern for others and for African citizens (continental citizenship). · Able to form solid friendships at university and generative pedagogical relationships with peers and lecturers. · Able to show respect and recognition towards others and experience the same oneself (diversity capital), including through modes of communication and language. · Social commitments to making disadvantaged lives go better.
'Thick' aspiration	- Able to review career aspirations and imagine future possibilities, able to have aspirations which slide forward.

In essence, exploring employability through a capabilities lens requires an assessment of the opportunities linked to individual aspirations, and the factors constraining or supporting such opportunities. In another analysis, Fongwa, Marshall and Case (2018) found that social and environmental factors influenced students' ability to access employability opportunities most. Many of these factors are out of students' control, including the status of the university; the need for work experience and career guidance; the field of study; family background; the geographical location of home and the university; and opportunities regarding employment.

1.1.3. Critical/social realism and similar conceptualisations of student success

Another important contribution to our understanding of students' experiences with access and success in South African higher education is from critical and social realism, particularly the work of Margaret Archer (1995).

Boughey and McKenna (2021) use Archer's work to interrogate the interplay between students (as active agents in their own lives), social structures (such as education), and culture (which can be interpreted as discourse, or a "set of ideas, beliefs, values, concepts and theories that are loosely bound together" [p. 22]). As a social structure, education facilitates students' and future graduates' access to material goods through employability and earnings and determines their social networks through contacts with other educated peers. Culture, on the other hand, can extend from the personal discourses that different role players in higher education bring with them to the often-rigid institutional cultures that have been shaped over many years. Boughey and McKenna (2021) argue that too little consideration has been given to the complexity of the interplay between these factors in South African higher education contexts, especially considering the significant transformational changes that have taken place since the 1990s. They urge the sector to critically interrogate the way dominant ideas have shaped thinking about the nature and manner of teaching and learning. An example of a dominant discourse that has emerged through previous research conducted by Boughey and McKenna is the idea of a "decontextualised learner" which assumes that students' success or failure primarily results from inherent characteristics such as intelligence, motivation, and aptitude. Boughey and McKenna (2021) further explain this phenomenon:

> Through the dominant discourse, the student is decontextualised from her social norms and practices, and her successes and failures are understood to be primarily or even exclusively a personal responsibility. The university, the society in which the university exists, the history of the country, the development of the curriculum – these are all hidden from view as the explanations for success and failure hone in on the individual (p. 54).

Boughey and McKenna use such examples to argue for a more critical reflection of the dominant discourses standing in the way of the potential developmental value that diverse knowledge sources could bring. They further argue for the reconceptualisation of learning and teaching to better serve diverse student populations.

Case, Marshall, McKenna and Mogashana (2018) share the narratives of 73 students from three institutions to explore what it meant for these students to engage with higher education studies. Also drawing on the concepts of structure, culture, and agency, Case et al. ask some pertinent questions about student success, including how success and failure are understood in higher education; how these concepts are influenced by social background and individual agency; and what institutions can do better to facilitate student success. In general, none of these students enrolled for their first choice of programme; engaged completely with their studies and graduated in minimum time; had good relationships with all their lecturers; participated in co- and extracurricular activities; and stepped out of the graduation ceremony into a well-paying job that relates to the knowledge, competencies, and skills they developed through their degree programmes. Indeed, these students' experiences highlight the complexities of entering higher education without appropriate academic advice. The experiences of these students also highlight difficulties such as having to rely on financial and social support from families who might not understand how the family itself contributes to additional pressures to succeed; dealing with transitional challenges; and discovering new identities and knowledges that empower students. Studies such as Case et al. (2018) help higher education stakeholders understand the complexity of the interplay between the social structures and cultures that either constrain or enable students' agency and resilience as they navigate their educational journeys.

Related to the concepts of social justice that feature strongly in conceptualisations of student success in the South African context is the work of Bozalek and Boughey (2012), who explore equity of access and equity of outcomes from the perspective of a normative framework of social justice. They argue that while institutional challenges, such as poor teaching practices or curricular inadequacies, are usually foregrounded as avenues that uphold inequities within the higher education system, there is a need to look beyond institutions toward systemic challenges that uphold inequities. Such challenges might include the inability of the basic education system to adequately prepare students for tertiary study, and a lack of appropriate support for students once they are admitted to or exit higher education.

Although researchers and scholars in the South African context take differing approaches to student success, they all acknowledge the need to better understand the students entering higher education and the factors helping them or standing in their way of graduating and becoming active contributors to the social and economic world. Another point of agreement is the importance of institutional responsibility in creating environments that will support different aspects of students' development and ultimately further student success.

1.2. Empirical themes on student success: What are scholars writing about?

Beyond the conceptual work, which attempts to understand the complexities associated with student success, scholars and researchers have also published empirically on how student success is pursued. To illustrate what has been written in academic spaces in the past decade, the following keyword searches were conducted in over 20 electronic databases:

> *("student success") AND ("higher education" or "tertiary education" or "post-school" or "university") AND "South Africa"*

Using the keywords listed above, the search produced **279** peer reviewed sources between 2012 and 2023. This, however, might only mean that scholars are not using the phrase "student success" in their publications – arguably because of the different interpretations of what student success means. Breaking down the factors that promote student success, the following keyword searches illustrate the extent to which these factors have been focused on:

> *("throughput" or "minimum time") AND ("higher education" or "tertiary education" or "post-school" or "university") AND "South Africa*" AND ("graduate" or "student")*

In total, this search produced **291** peer reviewed sources between 2012 and 2023. This implies that not many studies have focused on the throughput or minimum time graduation of students. The DHET and CHE actively track the

throughput rates of student cohorts, which might account for the lack of academic focus on these factors (e.g., CHE 2021c; DHET, 2020c). The next search aimed to see to what extent students' academic performance is used as an outcome variable in publications:

> *("student* achievement" or "student* performance" or "academic performance" or "academic achievement") AND ("higher education" or "tertiary education" or "post-school" or "university") AND "South Africa*"*

This search delivered **2,823** sources, which might reflect the reliance of academics to use student academic achievement or performance as proxy for success and the tendency to use smaller, module- or programme-based samples in publications. The next search aimed to see how many publications focus on employability as an aspect of student success:

> *"employability" AND ("higher education" or "tertiary education" or "post-school" or "university") AND "South Africa"*

This search produced **423** peer reviewed sources between 2012 and 2023. In relation to the focus on academic achievement, the scholarly focus on students' employability is much lower. The next search was aimed at identifying to what extent scholars are publishing about the role of higher education in supporting the development of "good citizens." The following terms were used in the search:

> *("socially conscious" or "citizen*" or "public good") AND ("higher education" or "tertiary education" or "post-school" or "university") AND "South Africa*" AND ("graduate" or "student")*

This search produced **437** peer reviewed sources between 2012 and 2023, indicating approximately the same amount of academic attention given to citizenship as a valued attribute of graduates than employability. Lastly, a search was conducted with keywords aimed at identifying how much scholarly attention has been placed on equity or equality in higher education:

> *("equity" or "equality" or "achievement gap") AND ("higher education" or "tertiary education" or "post-school" or "university") AND "South Africa*" AND ("graduate" or "student")*

This search produced **738** peer reviewed sources between 2012 and 2023. Besides the focus on academic achievement in scholarly publications, the second-most researched topic related to student success are issues of equity and equality in higher education.

It is important to note at this point that these publications are not exhaustive, and there are arguably some overlaps between publications. With these caveats in mind, however, the purpose of this document is not to conduct a systematic review of the literature on student success or the components it consists of. Rather, the purpose of including these searches is to illustrate, from a birds-eye view, what areas of student success research has focused on in the past ten years and where more attention is needed to build on the understanding of students' success. The searches show a strong emphasis on students' academic performance, followed by research on equity, and the purpose of higher education as a social good. Noteworthy is that while students' throughput has been a persistent challenge in the sector, this topic has not received as much research attention – arguably because the scale of research and publications are often not at institutional or sectoral levels. In addition, the DHET and CHE regularly provide information on longitudinal tracking of cohorts' throughput and dropout rates. Similarly, research using the term "student success" is less frequently undertaken than the other abovementioned themes, arguably because of a similar, scaled association with the term as well as the lack of consensus on its meaning.

Looking a bit closer at the publications on student success and related topics from the literature listed above, Figure 3 shows which themes emerged from the literature. This highlights what researchers and scholars deem as being important to student success. Some themes are expanded upon in the following section to illustrate the direction of scholarship in the last ten years.

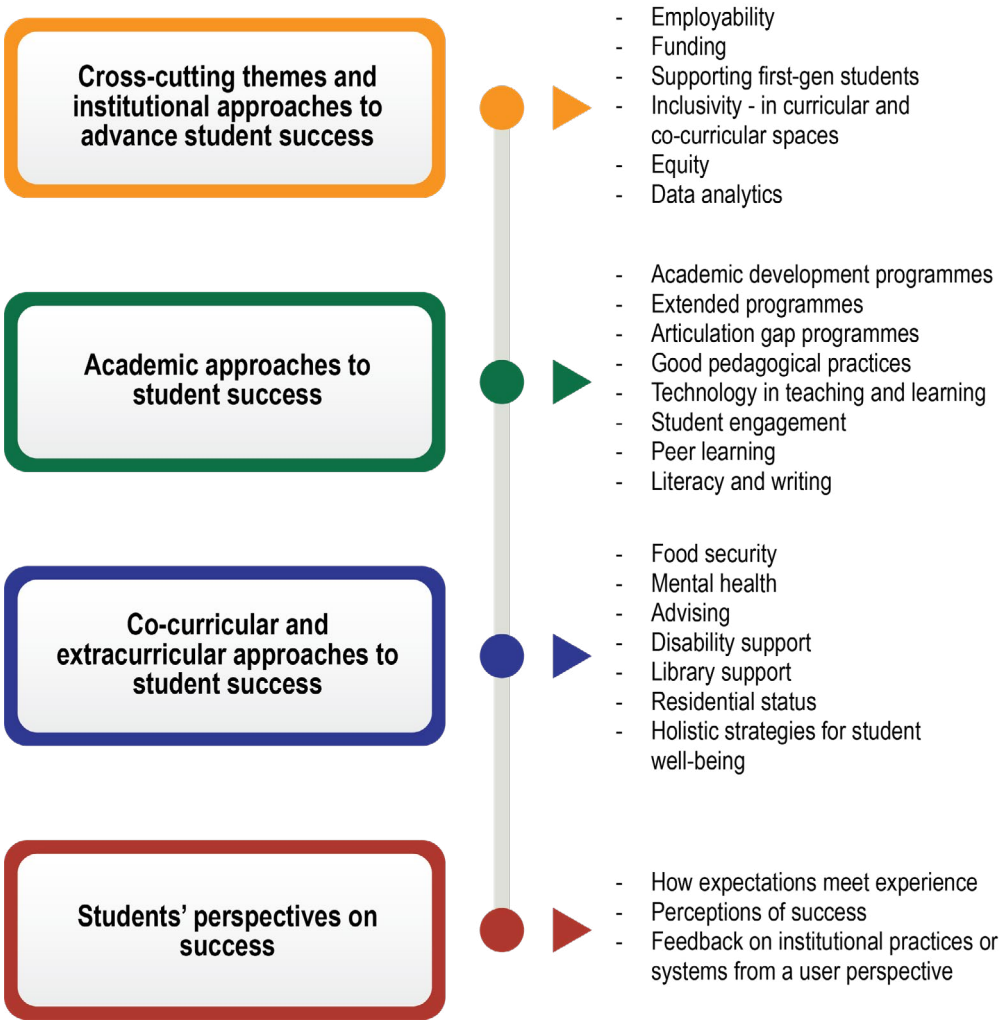


Figure 3 Themes that South African scholars are writing about in terms of student success

1.2.1. Cross-cutting themes and institutional approaches to advance student success

On an institutional level, several cross-cutting themes have been written about. These include a few publications on institutional approaches to student success. For example, Kilfoil's (2021) edited book on how the University of Pretoria has approached student success, the University of Johannesburg's 'Integrated Student Success Initiative' (van Zyl, Dampier & Ngwenya, 2020), and Unisa's 'Socio-Critical Model of Student Success' (Fynn, 2016).

Other cross-cutting themes at an institutional level include publications on employability; funding higher education; supporting first-year and first-generation students; creating a sense of belonging in institutions; and using data analytics in institutional research. Again, the themes and topics discussed here are not exhaustive, but this discussion does provide a sense of what the topics of conversation are in academic literature.

In the past ten years, publications on **employability** have included tracer studies on where graduates go after higher education (e.g., Nel & Neale-Shutte, 2013; Rogan & Reynolds, 2016; Senekal & Munro, 2019). Other areas of interest include: exploring discipline-specific attributes developed through higher education curriculums (e.g., Ngulube, 2020; Yende & Mugovhani, 2021); students' perceptions of the attributes they develop (e.g., Botha & Botha, 2022; Pitan & Muller, 2019; Pitan & Muller, 2020);institutional efforts to create work-ready graduates (e.g., Janeke, 2021; Taylor & Govender, 2017); getting feedback from employers about graduates' employability (e.g., Brits, 2018; Sotshangane & Obioha, 2022); labour market alignment between supply and demand (e.g., Mobarak, 2021; Wedekind & Mutereko, 2016); choosing entrepreneurship (e.g., Neneh, 2020); and perspectives from unemployed graduates (e.g., Mseleku, 2022).

The **funding** of students came into focus in 2015 with the #FeesMustFall protests, when the plight of students struggling to cope with high university fees was heard. In 2016, the CHE contributed to national discussions by responding with a special publication on student funding (CHE, 2016). Since then, a changed fee structure from the National Student Financial Aid Scheme (NSFAS) has supported over 400,000 university students (NSFAS, 2021). However, while there is no doubt that the availability of funding helps a significant number of students access post-school education and training, evidence of the contribution that funding makes to successful completion of studies is mixed. For example, a study conducted by NSFAS across two institutions found that younger, full-time, female students seem to benefit most from funding. A particularly concerning negative correlation exists between funding and male students' academic performance (NSFAS, 2019). Tracking the 2011 cohort's success at one institution, Naidoo and McKay (2018) could not find any correlation between funding and the student cohort's success or academic achievement. In contrast, a longitudinal analysis of students receiving NSFAS funding shows a relatively low graduation rate of 46%, but a labour market absorption rate of 97% (Wildschut, Mncwango, Rogan, Rust & Fongwa, 2018). Studies such as these illustrate that funding is only one of many factors that need to be considered in supporting students toward successful completion of their studies.

Unfortunately, persistent annual challenges with managing funds have resulted in recurring unrest at post-school institutions; many students do not receive their allowances with sufficient time to settle into their study lives. Current discussions are underway, which focus on developing a ten-year plan to expand funding avenues for students; including alternative sources of funding; and extend the range of eligibility for funding options (Republic of South Africa, 2022).

National survey data show that between 70% and 82% of students are **first-generation** students, which means that they do not have parents who graduated from university (DHET, 2020a; USAf 2018a). This is an important statistic since the probability of employment for youth between the ages of 25 and 30 rises from 69% for those who hold a matric certificate, to 88% for those who have a degree (Van der Berg, 2017). The value of a university degree for these students is undeniable. However, first-generation students typically come from lower socio-economic circumstances, which brings with it a range of compounding factors that might make it difficult to adjust and flourish at university. For this reason, publications on first-generation students' experiences often focus on the resilience of these students and how such factors, along with a supportive institutional environment, can help them succeed (e.g., Motsabi, Diale & van Zyl, 2020; Reed, Maodzwa-Taruvinga, Ndofirepi & Moosa, 2019).

Inclusivity is also an important topic about which scholars are writing. The socio-political transformation of South Africa that has been ongoing since the 1990s has resulted in significant changes in higher education – ranging from increased diversity in the student and staff populations, to debates on the relevance of the predominantly Western content taught to students. Institutional cultures are notoriously slow to change and several publications in recent years have argued for a decolonised approach to pedagogy (e.g., Arbuckle, 2020; Du Plessis, 2021; Joubert & Sibanda, 2022; Mampane, Omidire & Aluko, 2018; Sibanda, 2021). There has also been increased emphasis on supporting students' sense of belonging and inclusivity in developing future leaders; helping students to access support structures; and addressing rigid institutional structures that uphold past divides (e.g., Ige & Naidoo, 2022; Rudman, 2022; Sithaldeen, Phetlhu, Kokolo & August, 2022; Van der Walt, 2022).

Another institutional-level theme is **data analytics** – an umbrella term used to describe how data are being used to inform institutional practices, planning, and decisions. Specific to student success, publications seem to focus on utilising data to predict whether students might be at risk of failing or dropping out. This predictive ability is so as to enable early intervention or determine what factors contribute to student success (e.g., Cassells, 2018; Cele, 2021; Crous & Goodchild, 2021; Lourens & Bleazard, 2016; Mthimunye, Daniels & Pedro, 2018; Ntema, 2022; Van Zyl, Gravett & de Bruin, 2012); explore innovative ways of mining or analysing data at scale (Chaka, 2022; Kirby & Dempster, 2014; Madahana, Khoza-Shangase, Moroe, Nyandoro & Ekoru, 2022); and caution against the ethical pitfalls of data analytics (e.g., Archer & Prinsloo, 2020; Broughan & Prinsloo, 2020).

1.2.2. Academic approaches to student success

Literature on academic approaches to student success includes a strong focus on helping students transition into higher education through **academic development programmes,** including programmes aimed at narrowing

the **articulation gap**, and **extended degree programmes.** This literature focuses on first-year students and includes studies that argue for scaffolded teaching approaches; evaluate the impact of interventions that help students engage with disciplinary knowledge; and discuss the implications of selection criteria in relation to students' success (e.g., CHE, 2020; Chetty, 2014; Kizito, Munyakazi & Basuayi, 2015; Leibowitz, van der Merwe & van Schalkwyk, 2009; Mogashana, Case & Williams, 2022; Ogude, Majozi, Mathabathe & Mthethwa, 2021; McGhie, Venter & Dos Reis, 2020; Ndwambi & Roets, 2020; Slabbert & Friedrich-Nel, 2015; Smith, Case & van Walbeek, 2014; Winberg et al., 2019).

Closely tied to transitional support, but extending beyond support for first-year students, is a literature base on the importance of **peer learning** and **academic literacy and writing development** for students' success. The importance of peers as academic support structures for students has also been well documented. In recent years, South African literature has focused on the value of peer mentorship (e.g., McConney & Fourie-Malherbe, 2022; Naidoo, Byles & Kwenaite, 2021; Ontong, Arendse-Fourie & Schonken, 2022; Spark, de Klerk, Maleswena & Jones, 2017); evaluating the effectiveness of tutorial programmes (e.g., Campbell, 2019; Cupido & Norodien-Fataar, 2018; Pather, 2018; Mare & Mutezo, 2021; McKay, 2016); and using tutorial spaces as incubators for innovations related to decolonisation, multilingualism, introducing technology, furthering student engagement, and so forth (e.g., Arend, Hunma, Hutchings & Nomdo, 2017; du Buisson, 2017; Faroa, 2017; Hassan, 2022; Layton & McKenna, 2016). Similar to the importance of peers in navigating higher education, the necessity and value of academic literacy interventions to narrow articulation gaps has been well documented in South Africa. Recent literature on academic literacy and writing support confirms the importance of such support structures for student success (e.g., De Klerk, Spark, Jones & Maleswena, 2017; Drennan & Keyser, 2022; Du Plessis, 2016; Fouche, Van Dyk & Butler, 2017; Van Dijk, Vivian & Malan, 2019).

Not surprisingly, the role of **technology in teaching and learning** practices has also started to feature more prominently in literature during the past decade. Scholars have focused on incorporating technology into pedagogy and support structures (e.g., Janse van Rensburg & Oguttu, 2022; Louw & Michau, 2018; Van Wyk, 2022); supporting students in blended learning spaces by cultivating a sense of belonging and engagement (e.g., Blignaut et al., 2022); interrogating institutional structures and designs to leverage technology (e.g., Kritzinger, Lemmens & Potgieter, 2021; Mashile, Fynn & Matoane, 2020; Moolman & Du Plessis, 2021); including the student voice in technology inclusion (e.g., Nel, 2017); and reflecting on the impact of the COVID-19 pandemic on the use of technology in learning and teaching (e.g., Amin & Dhunpath, 2021; Mason, Craven & Fredericks, 2022; Nyoni, 2022; Pillay et al., 2021; Songca, Ndebele & Mbodila, 2021; Van Staden & Naidoo, 2022).

1.2.3. Co-curricular and extracurricular approaches to student success

As expected, the most recent publications on co-curricular, holistic student support reflect on how support structures could respond to a more **technologically-enabled** higher education system (e.g., Dunn-Coetzee et al., 2021; Govender, Reddy & Bhagwan, 2022; Immenga, 2021; Netanda, Mamabolo & Themane, 2019) (although these studies were not exclusively in response to the pandemic).

In recent years, two co-curricular themes seem to be prominent: students' **mental health**, and **academic advising**. In terms of mental health, the trends in the literature seem to acknowledge that while students' mental health concerns are a reality, many studies focus on positive interventions, such as developing growth mindsets, students' resilience, active coping strategies, and recognising students as active agents in their own mental wellbeing (e.g., Campbell, Direito & Mokhithi, 2021; Dison, Shalem & Langsford, 2019; Engelbrecht, Mostert, Pienaar & Kahl, 2020; Knoesen & Naude, 2018; Mason, 2019; Mogashana & Basitere, 2021; Schreiber, 2018; Terblanche, Mason & Van Wyk, 2021; Van Wyk, Mason, Van Wyk, Phillips & Van der Walt, 2022; Van der Walt, 2019).

As an independent contributor to student success, academic advising has developed significantly in the South African context in the past decade. In parallel, literature on academic advising in the South African context has also started to increase (e.g., De Klerk, 2021; De Klerk, 2022; De Klerk & Dison, 2022; Moosa, 2021; Obaje & Jeawon, 2021; Schoeman, Loots & Bezuidenhoud, 2021; Tiroyabone & Strydom, 2021; Van Pletzen et al., 2021). These studies firmly position its important contribution to the sector. Other themes in the co- or extracurricular literature spaces include a focus on **food security** (e.g., Wagner, Kaneli & Masango, 2021), and **disability support** for students (e.g.,

Duma & Shawa, 2019; Lyner-Cleophas et al., 2021), amongst others.

1.2.4. Students' perspectives on success

An important contributor to our understanding of student success is hearing from students themselves. Several scholars have helped to articulate the student voice on the following topics: how students' expectations meet their actual experience; how students perceive success; and feedback on how students experience institutional practices or systems (e.g., Burger & Naude, 2020; Pather & Dorasamy, 2018; Sikhwari, Ravhuhali, Lavhelani & Pataka, 2019; Singh, Steenkamp, Harmse & Botha, 2020; Xulu-Gama, Nhari, Alcock & Cavanagh, 2018).

As noted earlier, the literature review provided here is in no way an exhaustive representation of the work produced on aspects that contribute to students' success. It does, however, help the higher education community understand some of the main discussion trends in the field in South Africa. An important finding to note is the significant focus on first-year students. Many of the publications listed above focus on how first-year students can be supported as they enter higher education. Other trends include a focus on modular or programme-level interventions; foregrounding academic achievement or performance as the outcome of interventions; and interrogating equity in access and success. Some work builds on confirmed actions or interventions that support students' success, such as peer learning, student engagement, and transitional support. Other work brings to light current issues that need to be discussed further, such as students' mental health, advancing academic advising as a profession, and incorporating technology in learning and teaching to create more relevant and resilient systems. Some topics that seem underrepresented in the review include structured, institutional approaches to student success, and how such approaches are managed and driven. There also seems to be space to expand discussions on senior undergraduate and postgraduate students' success, scaled interventions to advance throughput rates, and the relationship between graduates and the labour market.

With an understanding of the current debates in the field, this report now turns to the SAULM and SEP-TLF data to explore what can be learnt from students' and staff's experiences of remote learning and teaching. This is with the overall aim of informing the sector's understanding of what matters for student success.

Section 2: A quantitative overview of sectoral trends

While the qualitative experiences of students and staff include some reference to the positive experiences they had during the pandemic, most reflections were negative. For both students and staff, limited access to network, appropriate devices, data, the internet, as well as inadequate digital skills to leverage technology caused the most frustrations during emergency remote learning and teaching.

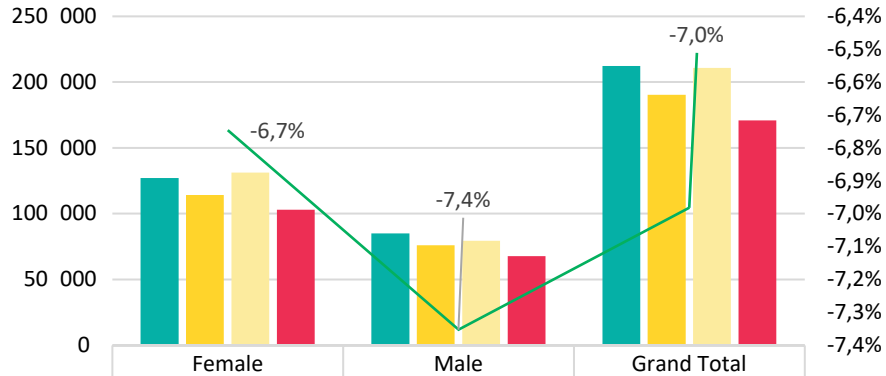
Contrary to expectations, however, student success data point toward improved student success rates at many institutions during the COVID-19 pandemic. The data points shared in this section aim to accurately document student success trends across the university system prior to, during, and beyond the COVID-19 pandemic. The reflections on these trends, in relation to the qualitative experiences of students and staff shared in Section 3, will inform future work and recommendations on how the sector could reconceptualise learning and teaching in a blended learning environment. The data shared here are limited to public universities in South Africa.

2.1. Student access and success indicators

Data were analysed by population groups (race, gender, international student status), major field of study, level of study (undergraduate or postgraduate), and institutional type. These analyses are presented for first-time entering undergraduate students, all enrolments, success rates, retention rates, and graduate growth.

2.1.1. First-time entering undergraduate students

The intake of first-time entering students reflects access to higher education. Trends or changes in this indicator provide insight into how the pandemic might have affected access to higher education. Figures 4 and 5 show the trends that emerged during the pandemic by university type.



	Female	Male	Grand Total
2018	127 1868	5 1492	12 341
2019	114 2127	6 0701	90 292
2020	131 2667	9 3882	10 672
2021	103 1426	7 7141	70 898
Avg annual growth rate, 2018-2021	-6,7%	-7,4%	-7,0%

Figure 4 First-time entering enrolment trends by institutional type

Figure 4 shows that in traditional universities and universities of technology, first-time entering undergraduate student enrolments consistently declined at an average annual rate of 2.6%. Comprehensive universities were the only university type where there was a slight average annual increase over the 2018 to 2021 period, likely because of a substantial increase from 29 027 in 2020 to 33 205 in 2021. UNISA has experienced significant fluctuations in first-time entering enrolments, first showing a decrease of around 20 000 students between 2018 and 2019, then an increase of almost 30 000 students between 2019 and 2020, followed by a decrease of over 40 000 between 2020 and 2021. Over the period 2018 to 2021, the first-time entering intake at UNISA declined on average by 19.5% per annum. In total, the first-time entering students at all universities declined on average per annum by 7.0%.

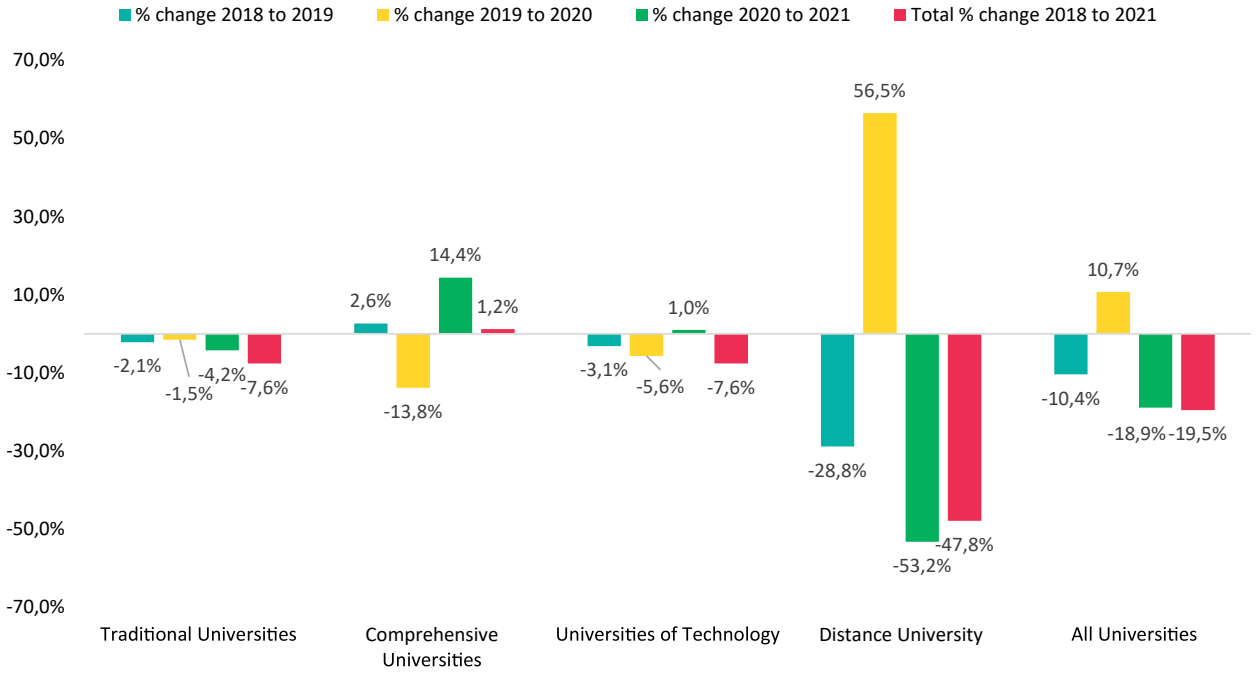
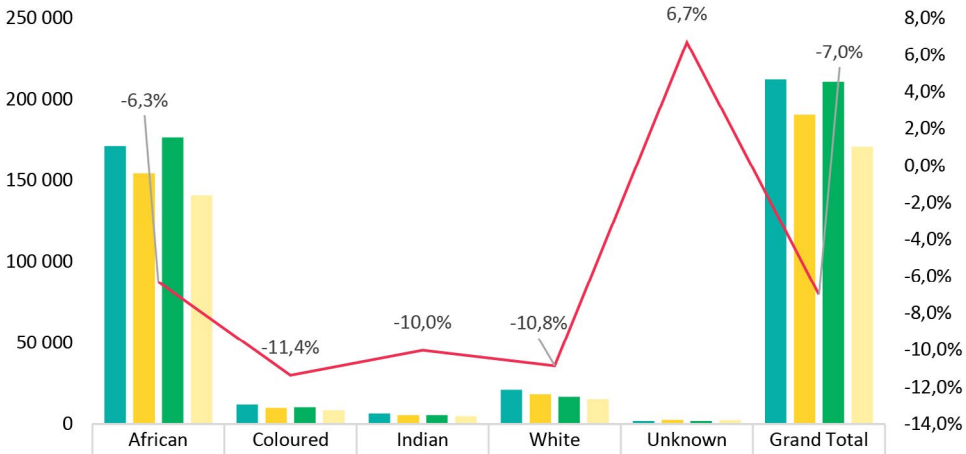


Figure 5 Percentage difference in first-time enrolments year-on-year by institutional type

In Figure 5, the total percentage change of first-time undergraduate enrolments is shown from year to year, along with the total percentage change over the period 2018 to 2021. For traditional universities, the first-time entering undergraduate intake declined by 7.6% over the period 2018 to 2021. The biggest decline of 4.2% was between 2020 to 2021. At comprehensive universities, there has been some fluctuation, with a large decline of 13.8% between 2019 and 2020, followed by a steep increase of 14.4% in the subsequent year. Overall, these institutions show a small increase of 1.2% in first-time entering undergraduate students over the 2018 to 2021 period. UNISA experienced significant fluctuations over the 2018 to 2021 period. A decline of 28.8% between 2018 and 2019 was followed by a 56.5% increase in the intake of first-time entering students between 2019 and 2020. Since 2020, however, there has been a 53.25% decline. In total, first-time entering undergraduate student enrolments declined by 47.8% over the 2018 to 2021 period. Nationally, first-time entering student enrolments declined by 10.4% between 2018 and 2019, increased by 10.7% between 2019 and 2020, and declined again by 18.9% between 2020 and 2021. In total, the first-time entering undergraduate intake declined by 19.5% over the 2018 to 2021 period.

Turning to population groups, the following graphs show trends in first-time entering undergraduate student enrolments in terms of race and gender. The "Unknown" category includes students who have not been classified according to racial group, mostly because some universities have moved away from this classification - especially of international students. The racial group classification is a South African classification system, however, at some universities students can opt out of the racial group classification. The number of students in the "Unknown" group increased from 1 841 in 2018 to 2 236 in 2021. Trends related to this group of students are not elaborated on in the analyses. Figure 6 shows trends in first-time entering undergraduate student intakes by racial group for the years 2018 to 2021.



	African	Coloured	Indian	White	Unknown	Grand Total
2018	171 177	11 864	6 330	21 129	1 841	212 341
2019	154 203	9 823	5 378	18 463	2 425	190 292
2020	176 516	10 114	5 303	16 848	1 891	210 672
2021	140 811	8 263	4 614	14 974	2 236	170 898
Avg annual growth rate 2018 - 2021	-6,3%	-11,4%	-10,0%	-10,8%	6,7%	-7,0%

Figure 6 First-time entering enrolment trends by racial group

Figure 6 shows an average annual decline in all racial groups, except those listed as "Unknown". The African first-time entering undergraduate intake shows some fluctuations, with increases in 2018 and 2020 and decreases in 2019 and 2021. Overall, the percentage of African first-time entering students declined, on average, by 6.3% per annum between 2018 and 2021. The intake of Coloured first-time entering undergraduate students shows a similar pattern to African students, with declines in numbers during 2019 and 2021. Between 2018 and 2021, the Coloured first-time entering undergraduate student intake declined by 11.4%, on average, per annum. The intake of Indian first-time entering students shows a consistent decline between 2018 and 2021, with an average annual decline of 10.0%. Similarly, the percentage of White first-time entering students declined consistently over this period at an average annual rate of 10.8%. In total, national data show an average annual decline of 7% in first-time entering undergraduate students between 2018 and 2021.

Figure 7 shows the total percentage change from year to year as well as the total percentage change over the collective 2018 to 2021 period. The decline in the intake over this period was 17.7% for African students, 30.4% for Coloured students, 27.1% for Indian students, and 29.1% for White students. Nationally, the first-time entering undergraduate student intake declined in total by 19.5% between 2018 and 2021.

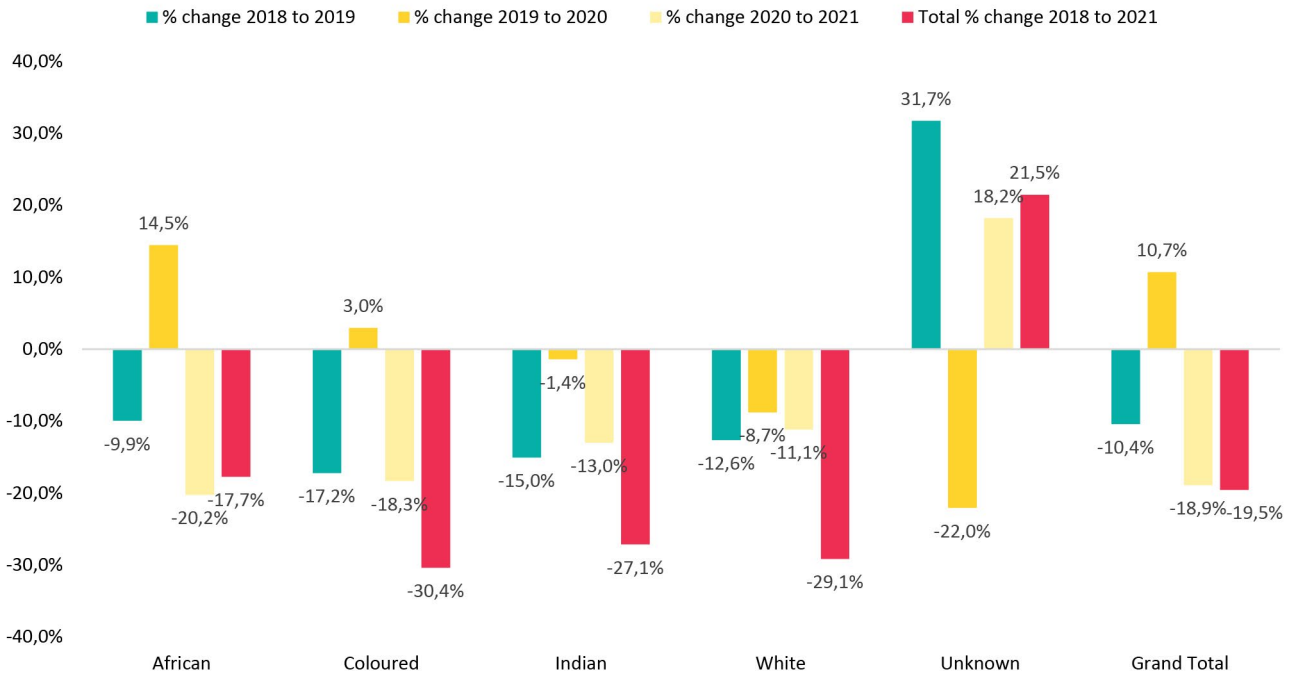


Figure 7 Percentage difference in first-time enrolments year-on-year by race

Trends in the first-time entering undergraduate intake by gender for the period 2018 to 2021 are shown in Figures 8 and 9. The intake of female first-time entering undergraduate students declined by 10.2% between 2018 and 2019, followed by an increase of 14.9% between 2019 and 2020, and a decline of 21.4% between 2020 and 2021. Between 2018 and 2021, the total number of female first-time entering students declined, on average, by 6.7% per annum, with 18.9% fewer female students in 2021 compared to 2018. The intake of male first-time entering undergraduate students declined by 10.7% between 2018 and 2019, followed by an increase of 4.4% between 2019 and 2020, and a decrease of 14.7% between 2020 and 2021. Between 2018 and 2021, the total number of male first-time entering students declined, on average, by 7.4% per annum, with 20.5% fewer male students in 2021 compared to 2018.

	Female	Male	Grand Total
2018	127 186	85 149	212 341
2019	114 212	76 070	190 292
2020	131 266	79 388	210 672
2021	103 142	67 714	170 898
Avg annual growth rate, 2018-2021	-6,7%	-7,4%	-7,0%

Figure 8 First-time entering enrolment trends by gender

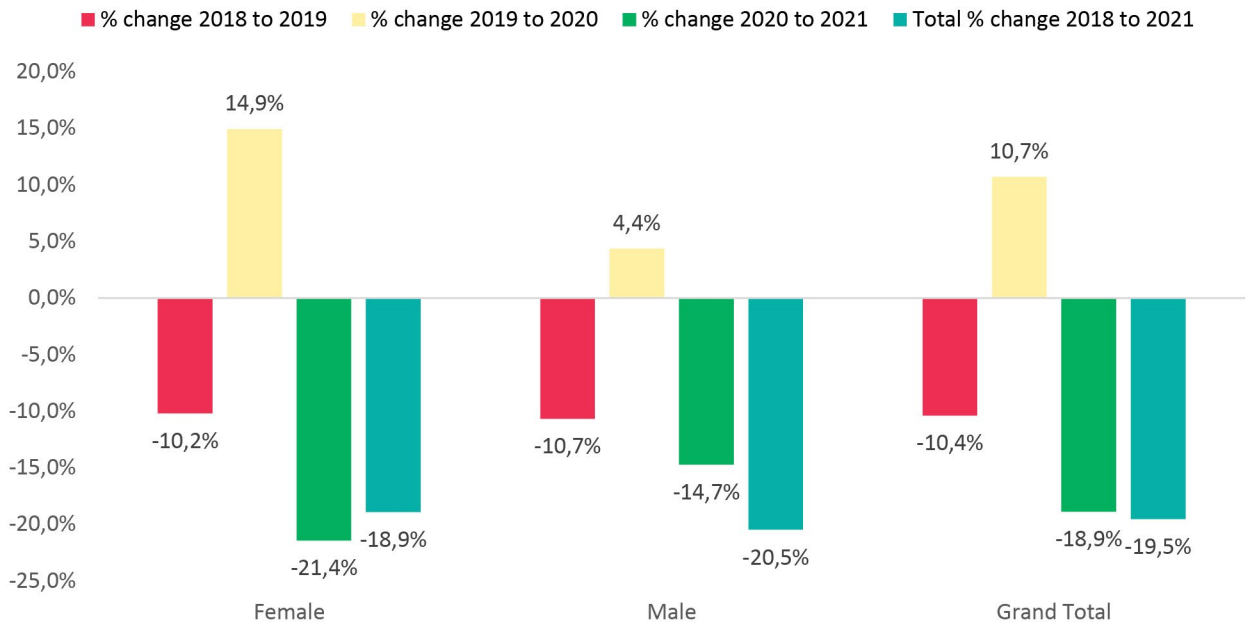
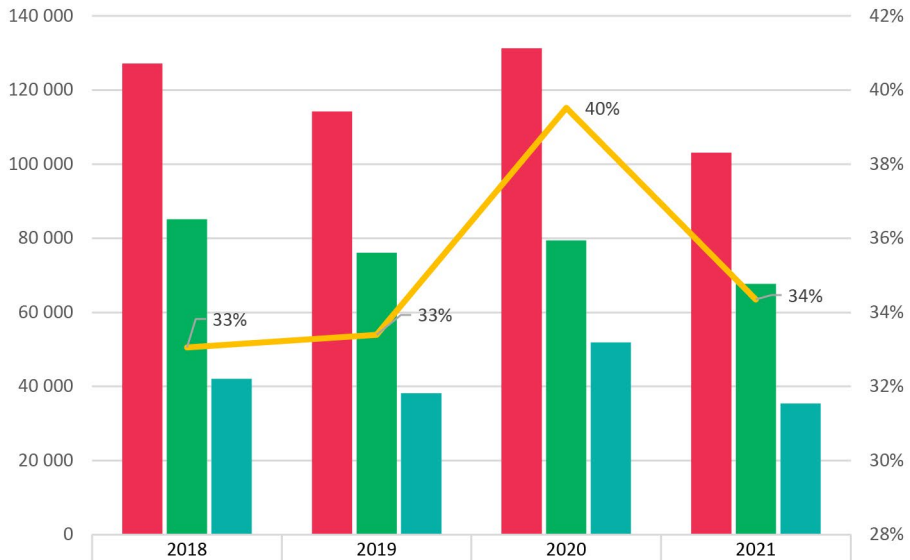


Figure 9 Percentage difference in first-time enrolments year-on-year by gender

The gap between female and male participation in higher education remains a concern. Figure 10 shows that there are much higher numbers of female students entering the higher education system than male students. Figure 10 also shows that the gaps in intake and performance between females and males seems to be increasing (which will be discussed further on in the report). In 2018 and 2019, 33% more females than males enrolled as first-time entering undergraduate students. In 2020, at the advent of the pandemic, the gap was at its highest, with 40% more females enrolling than males. In 2021, the gap reduced to 34%, which is still a percentage point higher than before the pandemic.



	2018	2019	2020	2021
Female	127 186	114 212	131 266	103 142
Male	85 149	76 070	79 388	67 714
Difference in female and male enrolments	42 037	38 142	51 878	35 428
% difference between female and male intake	33%	33%	40%	34%

Figure 10 Percentage difference between male and female first-time entering enrolments

Figure 11 combines the data on race and gender to show the average annual declines in first-time entering undergraduate students between 2018 and 2021. Except for the "Unknown" group, the intake of all race and gender groups declined. However, the percentage intake of African (6.9%) and Coloured males (12%) shows the

biggest decline in their respective groups, while the percentage intake of Indian (10.8%) and White females (10.4%) shows the biggest decline in their respective groups. Overall, the percentage of male students show a slightly bigger decline (7.4%) than females (6.7%).

Figure 11 Percentage annual growth of first-time entering enrolments by race and gender

2.1.2. Enrolment growth

Enrolment numbers by institution type and nationality are shown in Table 3. In general, total enrolments declined by 17 500 students between 2018 and 2021. Similarly, international student enrolments showed a steady decline of over 16 000 between 2018 and 2021. Because of restricted movement during the pandemic, significantly fewer international students enrolled in South African higher education institutions. Additionally, it does not seem as though the sector has been able to recover the international students it might have lost during the pandemic.

The year-on-year percentage difference in enrolment numbers is shown in Table 4. Enrolments at traditional universities declined by 3.1% between 2019 and 2020, with the onset of the pandemic. At comprehensive universities as well as at universities of technology, enrolments declined by 5% during the pandemic (2019 to 2020). The opposite trend was observed at UNISA, where total enrolments increased considerably by 14.4% during this time. Between 2020 and 2021, national enrolments declined by 2.4%. Increases were experienced by traditional universities (0.3%) and comprehensive universities (3.5%), whilst enrolments declined at universities of technology by 2.2% and at UNISA by 7.4%. In general, over the 2018 to 2021 period, enrolments declined in total at traditional universities by 0.9%, at universities of technology by 2.4%, and at UNISA by 2.9%. The only increase, in total, was experienced by comprehensive universities with an increase of 0.7% over the 2018 to 2021 period. Concerningly, while international student enrolments declined during the pandemic, as expected, the South African public higher education sector lost a quarter (26%) of their international students between 2018 and 2021.

Table 3 Enrolments by institutional type and nationality

Institution type	2018			2019			2020			2021		
	Nat	Int	Total	Nat	Int	Total	Nat	Int	Total	Nat	Int	Total
Traditional Universities	342 609	27 522	370 131	351 452	26 033	377 485	343 217	22 621	365 838	344 680	22 215	366 895
Comprehen-sive Universities	150 200	6 020	156 220	153 567	6 527	160 094	146 156	5 918	152 074	151 475	5 856	157 331
Universities of Technology	178 490	6 748	185 238	188 158	6 378	194 536	179 491	5 355	184 846	176 188	4 612	180 800

Institution type	2018			2019			2020			2021		
	Nat	Int	Total	Nat	Int	Total	Nat	Int	Total	Nat	Int	Total
Distance University	351 943	22 036	373 979	324 180	18 617	342 797	375 936	16 114	392 050	349 587	13 433	363 020
Grand Total	1 023 242	62 326	1 085 568	1 017 357	57 555	1 074 912	1 044 800	50 008	1 094 808	1 021 930	46 116	1 068 046

Table 4 Year-on-year percentage change by institutional type and nationality

Institution type	% change 2018-2019			% change 2019-2020			% change 2020-2021			Total % change 2018-2021		
	SA	Int	Total	SA	Int	Total	SA	Int	Total	SA	Int	Total
Traditional Universities	2.6%	-5.4%	2.0%	2.3%	-13.1%	-3.1%	0.4%	-1.8%	0.3%	0.6%	-19.3%	-0.9%
Comprehensive Universities	2.2%	8.4%	2.5%	-4.8%	-9.3%	-5.0%	3.6%	-1.0%	3.5%	0.8%	-2.7%	0.7%
Universities of Technology	5.4%	-5.5%	5.0%	-4.6%	-16.0%	-5.0%	-1.8%	-13.9%	-2.2%	-1.3%	-31.7%	-2.4%
Distance University	-7.9%	-15.5%	-8.3%	16.0%	-13.4%	14.4%	-7.0%	-16.6%	-7.4%	-0.7%	-39.0%	-2.9%
Grand Total	-0.6%	-7.7%	-1.0%	2.7%	-13.1%	1.9%	-2.2%	-7.8%	-2.4%	-0.1%	-26.0%	-1.6%

Illustrated differently, Figure 12 shows the total year-on-year percentage change of international and South African students. The decline in international students was 7.7% between 2018 and 2019, 13.1% between 2019 and 2020, and 7.8% between 2020 and 2021. Over the period (2018 to 2021), the total international student enrolment declined by 26%. South African students declined by 1% in total from 2018 to 2019, but increased in total by 1.9% from 2019 to 2020. From 2020 to 2021, South African student enrolments declined by 2,4% in total, and by 1.6% in total over the full period of 2018 to 2021.

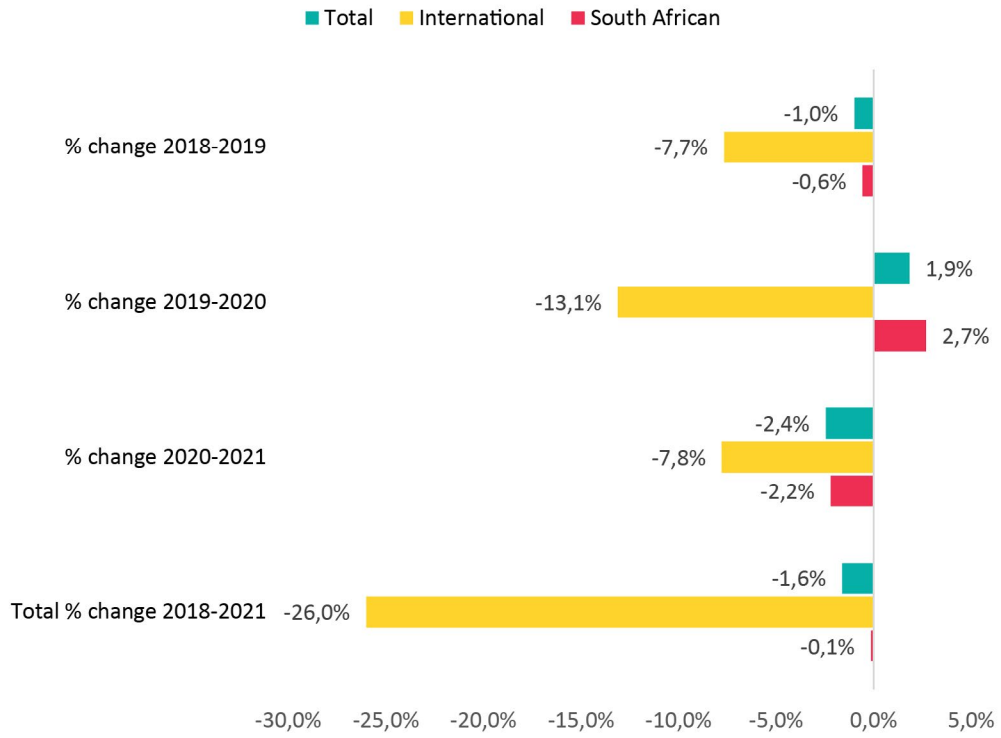


Figure 12 Year-on-year percentage change by nationality

Figure 13 shows the average annual enrolment growth rates between 2018 to 2021 by university type and nationality. Evident in this figure are the significant declines in international student enrolments due to travel restrictions as well as the economic downturn in countries, which created funding challenges for students. In general, the number of South African students did not grow in this four-year period. Traditional universities had a small average annual growth rate of 0.2% and comprehensive university enrolments increased on average by 0.3% over this period. These growths were, however, offset by the enrolment declines at universities of technology at an average rate of 0.4%, and by the average annual enrolment decline of 0.2% at UNISA. The average annual decline in international student enrolments over the 2018 to 2021 period was the highest at UNISA (15.2%), followed by universities of technology (11.9%) and traditional universities (6.9% on average per annum). International student enrolments declined on average by 0.9% per annum at comprehensive universities. In general, the international student enrolments declined on average by 9.6% per annum, and all student enrolments declined on average by 0.5% per annum because of the decline in international student enrolments.

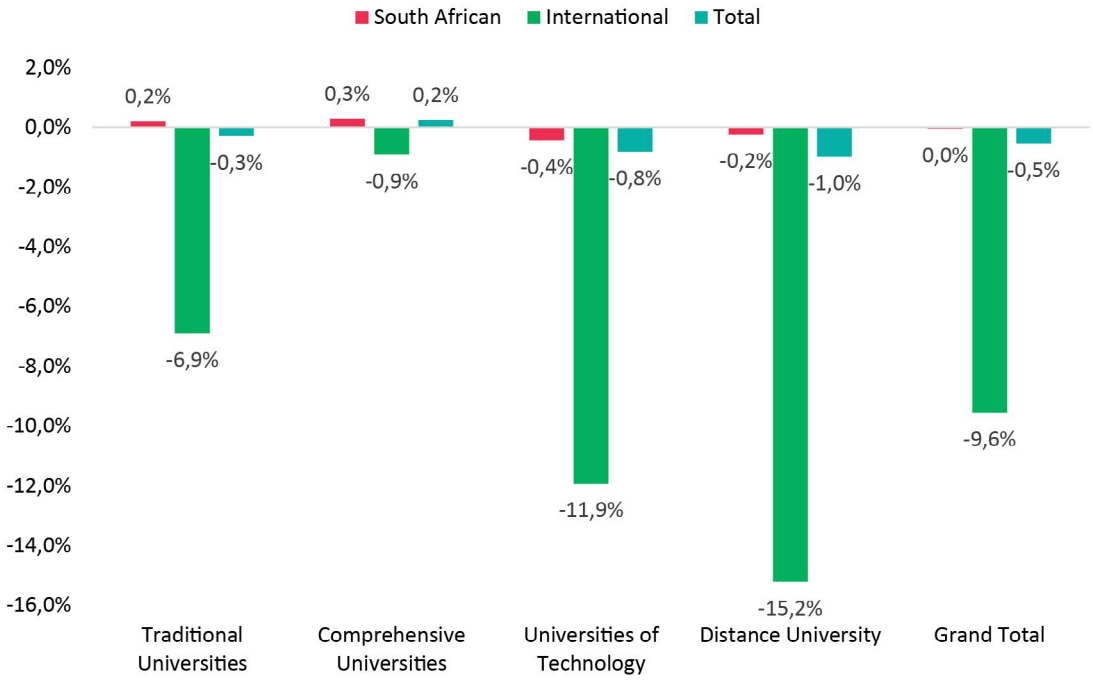
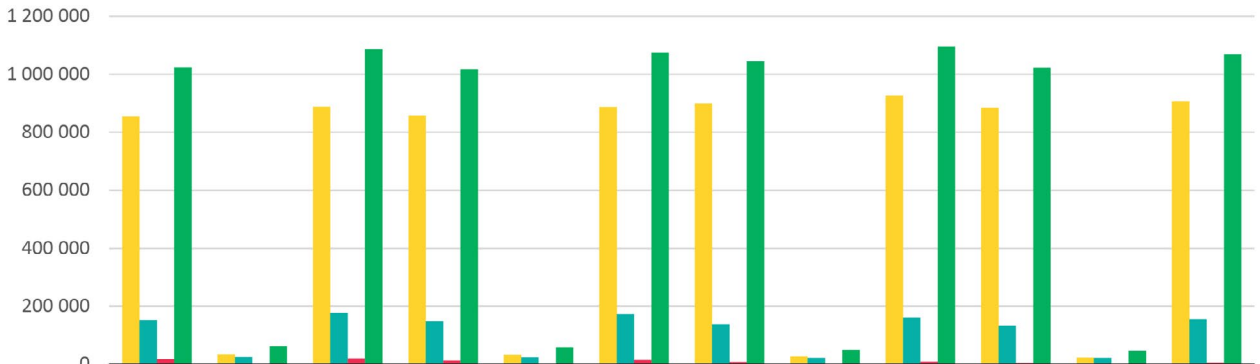


Figure 13 Average annual enrolment growth rate by institution type

Figure 14 shows the number of international students enrolled at undergraduate, postgraduate, or occasional study levels. In total, international student enrolments declined by 16 210; from 62 326 in 2018 to 46 116 in 2021. International enrolments at an undergraduate level declined from 34 514 in 2018 to 23 200 in 2021 (a total decline of 11 314). At a postgraduate level international enrolments declined from 25 180 in 2018 to 21 744 in 2021 (a total decline of 3 436). The number of international students enrolled for occasional studies declined from 2 632 in 2018 to 1 172 in 2021 (a total decline of 1 460). South African student enrolments at an undergraduate level increased from 853 709 in 2018 to 883 480 in 2021 (a total increase of 29 771). South African postgraduate enrolments declined from 151 930 in 2018 to 133 615 in 2021 (a total decline of 18 315). Similarly, South African occasional studies enrolments declined from 17 603 in 2018 to 4 835 in 2021 (a total decline of 12 768).



	2018			2019			2020			2021		
	Nat	Int	Total	Nat	Int	Total	Nat	Int	Total	Nat	Int	Total
UG	853 709	34 514	888 223	856 240	31 218	887 458	898 740	26 749	925 489	883 480	23 200	906 680
PG	151 930	25 180	177 110	148 513	24 222	172 735	138 197	22 047	160 244	133 615	21 744	155 359
OCC	17 603	2 632	20 235	12 604	2 115	14 719	7 863	1 212	9 075	4 835	1 172	6 007
Total	1 023 242	62 326	1 085 568	1 017 357	57 555	1 074 912	1 044 800	50 008	1 094 808	1 021 930	46 116	1 068 046

Figure 14 Enrolments by nationality and educational level

Figure 15 shows the average annual growth rate in enrolments by nationality and study level over the 2018 to 2021 period. South African undergraduate student enrolments increased by 1.1% on average over the 2018 to 2021 period, while the postgraduate enrolments declined by 4.2% on average per annum, and occasional students declined on average by 35% per annum. International student enrolments declined at all levels, with undergraduate level enrolments declining on average by 12.4% per annum, postgraduate enrolments declining by 4.8% on average per annum, and occasional studies enrolments declining by 9.6% on average per annum over the 2018 to 2021 period.

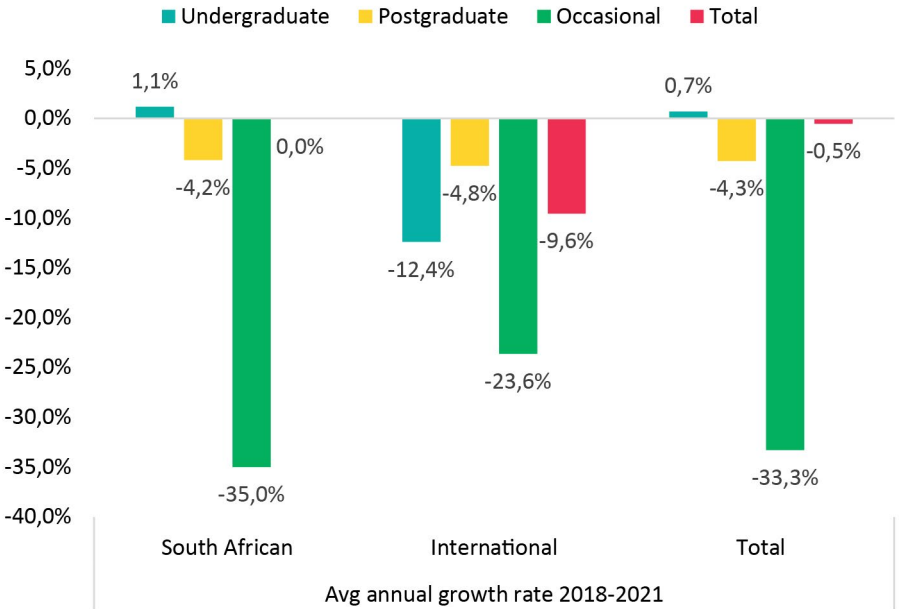


Figure 15 Average annual growth by nationality and educational level

International student enrolments, as a percentage of total enrolments by level of education, is shown in Figure 16. Occasional student enrolments, as a percentage of total occasional enrolments, increased from 15.0% to 24,2% over the 2018 to 2021 period. This was mainly because of the significant decline in South African occasional student enrolments. International undergraduate students, as a percentage of total undergraduate enrolments, declined from 4.0% in 2018 to 2.6% in 2021. At postgraduate level, international students declined from 6.1% of the total postgraduate enrolments in 2018 to 4.5% of the total postgraduate enrolments in 2021.

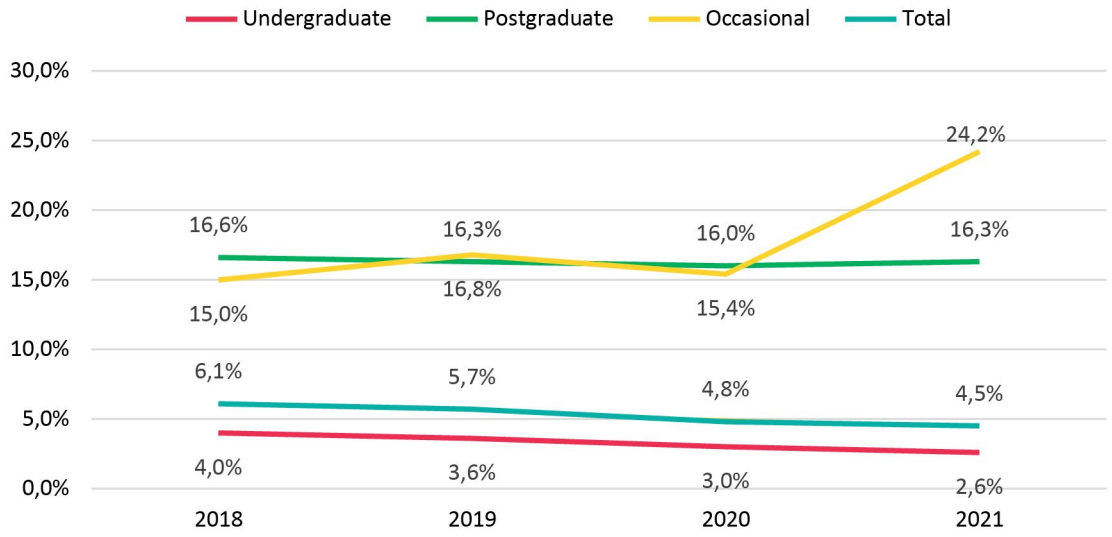


Figure 16 Percentage international enrolments per year by educational level

The average annual growth rates in enrolments by institutional type and education level are shown in Table 5 and Figure 17. At all university types, except for universities of technology, undergraduate enrolments increased between 2018 and 2021. Undergraduate enrolments at traditional universities increased on average by 0.5% per annum, by 4% on average per annum at comprehensive universities and by 1.9% on average per annum at UNISA. In total, undergraduate enrolments increased on average by 0.7% per annum. Universities of technology experienced a decline in enrolments of 1.0% on average per annum over the 2018 to 2021 period. Opposite trends regarding postgraduate enrolments are seen. Postgraduate enrolments at universities of technology increased on average by 5% per annum between 2018 and 2021. At all other university types, postgraduate enrolments declined. At traditional universities, postgraduate enrolments declined on average by 1.9% per annum, and at comprehensive universities by 0.7% on average per annum. UNISA had the highest average decline per annum of 12.9% over this period.

Table 5 Annual enrolment growth rate by institutional type and educational level

Institution type	Level	2018	2019	2020	2021	Avg annual growth rate 2018-2021
Traditional Universities	UG	268 736	276 799	272 897	272 647	0.5%
	PG	96 518	95 500	89 132	91 005	-1.9%
	Occ	4 877	5 186	3 809	3 243	-12.7%
	Total	370 131	377 485	365 838	366 895	-0.3%
Compre-hensive Universities	UG	134 438	138 373	132 097	136 077	0.4%
	PG	21 251	21 175	19 647	20 831	-0.7%
	Occ	531	546	330	423	-7.3%
	Total	156 220	160 094	152 074	157 331	0.2%

Institution type	Level	2018	2019	2020	2021	Avg annual growth rate 2018-2021
Universities of Technology	UG	176 014	184 161	175 122	170 607	-1.0%
	PG	8 493	9 861	9 487	9 972	5.5%
	Occ	731	514	237	221	-32.9%
	Total	185 238	194 536	184 846	180 800	-0.8%
Distance University	UG	309 035	288 125	345 373	327 349	1.9%
	PG	50 848	46 199	41 978	33 551	-12.9%
	Occ	14 096	8 473	4 699	2 120	-46.8%
	Total	373 979	342 797	392 050	363 020	-1.0%
Grand Total	UG	888 223	887 458	925 489	906 680	0.7%
	PG	177 110	172 735	160 244	155 359	-4.3%
	Occ	20 235	14 719	9 075	6 007	-33.3%
	Total	1 085 568	1 074 912	1 094 808	1 068 046	-0.5%

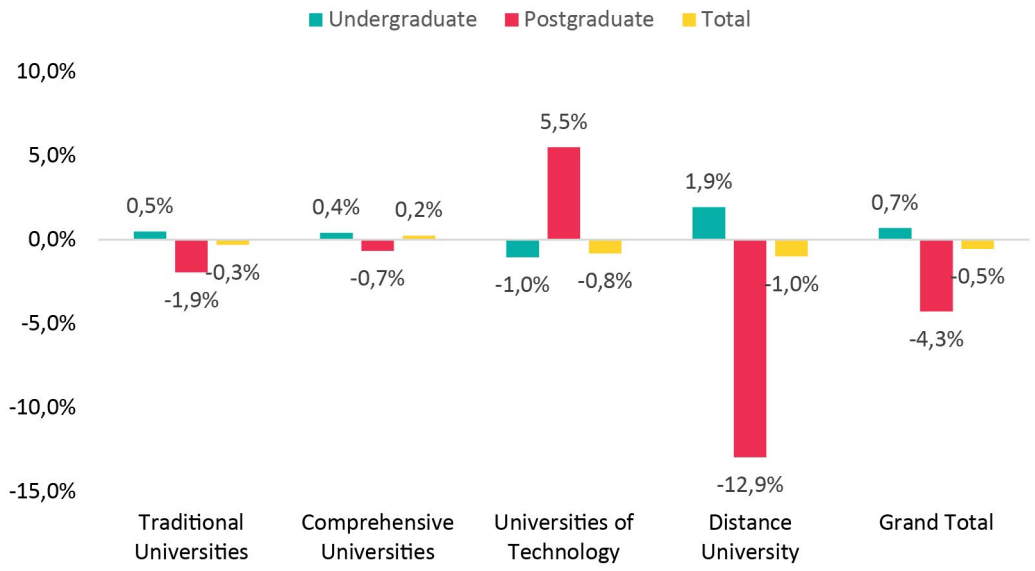


Figure 17 Percentage enrolment growth by institutional type and educational level

Tables 6 and 7 and Figures 18 and 19 show changes in enrolments by race and gender. Table 6 shows that the numbers of students in the "Unknown" category have been increasing because some universities have moved away from classifying students according to population group. The highest declines in average annual growth rates over the period 2018 to 2021 were experienced by Indian and White students.

Table 6 Enrolment growth trends by race and gender

Population Group	Gender	2018	2019	2020	2021	Avg annual growth rate, 2018-2021
African	Female	484 804	495 556	526 692	524 337	2.6%
	Male	335 803	335 214	335 589	324 828	-1.1%
	Unknown	12	27	32	81	89.0%
	Total	820 619	830 797	862 313	849 246	1.1%
Coloured	Female	41 716	39 570	39 708	38 380	-2.7%
	Male	24 192	22 785	22 205	20 911	-4.7%
	Unknown	3	7	10	22	94.3%
	Total	65 911	62 362	61 923	59 313	-3.5%
Indian	Female	28 843	26 115	24 856	23 480	-6.6%
	Male	19 022	17 215	16 403	15 424	-6.8%
	Unknown			3	7	
	Total	47 865	43 330	41 262	38 911	-6.7%
White	Female	80 173	72 669	68 502	63 028	-7.7%
	Male	60 121	54 067	49 969	45 889	-8.6%
	Unknown	11	19	34	65	80.8%
	Total	140 305	126 755	118 505	108 982	-8.1%
Unknown	Female	5 956	6 423	5 871	6 202	1.4%
	Male	4 902	5 233	4 922	5 376	3.1%
	Unknown	10	12	12	16	17.0%
	Total	10 868	11 668	10 805	11 594	2.2%
Grand Total	Female	641 492	640 333	665 629	655 427	0.7%
	Male	444 040	434 514	429 088	412 428	-2.4%
	Unknown	36	65	91	191	74.4%
	Total	1 085 568	1 074 912	1 094 808	1 068 046	-0.5%

Table 7 illustrates the year-on-year percentage change in racial and gendered groups. White males declined by 23.7% and White females declined by 21.4% between 2018 and 2021. Similarly, Indian males and females declined by almost 19%, respectively, between 2018 and 2021. The number of African female enrolments grew by 8.2% during this time. The total female enrolments increased by 2.2% between 2018 and 2021, while the total male enrolments declined by 7.1% between 2018 and 2021, and the overall total enrolments declined by 1.6% during this time.

Table 7 Year-on-year percentage changes in enrolment growth by race and gender

Pop Group	Gender	% change 2018-2019	% change 2019 -2020	% change 2020-2021	Total % change 2018-2021
African	Female	2.2%	6.3%	-0.4%	8.2%
	Male	-0.2%	0.1%	-3.2%	-3.3%
	Total	1.2%	3.8%	-1.5%	3.5%
Coloured	Female	-5.1%	0.3%	-3.3%	-8.0%
	Male	-5.8%	-2.5%	-5.8%	-13.6%
	Total	-5.4%	-0.7%	-4.2%	-10.0%
Indian	Female	-9.5%	-4.8%	-5.5%	-18.6%
	Male	-9.5%	-4.7%	-6.0%	-18.9%
	Total	-9.5%	-4.8%	-5.7%	-18.7%
White	Female	-9.4%	-5.7%	-8.0%	-21.4%
	Male	-10.1%	-7.6%	-8.2%	-23.7%
	Total	-9.7%	-6.5%	-8.0%	-22.3%
Unknown	Female	7.8%	-8.6%	5.6%	4.1%
	Male	6.8%	-5.9%	9.2%	9.7%
	Total	7.4%	-7.4%	7.3%	6.7%
Grand Total	Female	-0.2%	4.0%	-1.5%	2.2%
	Male	-2.1%	-1.2%	-3.9%	-7.1%
	Total	-1.0%	1.9%	-2.4%	-1.6%

Viewed differently in Figure 18, African students were the only student group whose enrolment numbers increased at the peak of the pandemic between 2019 and 2020. They were also the only student group whose enrolments increased in total by 3.5% between 2018 and 2021. The number of Coloured student enrolments declined by 10.0% between 2018 and 2021, and Indian student enrolments declined by 18.7% during this time. Like Indian students, White student enrolments declined over all years, with the highest declines between 2018 and 2019 (9.7%) and between 2020 and 2021 (8.0%).

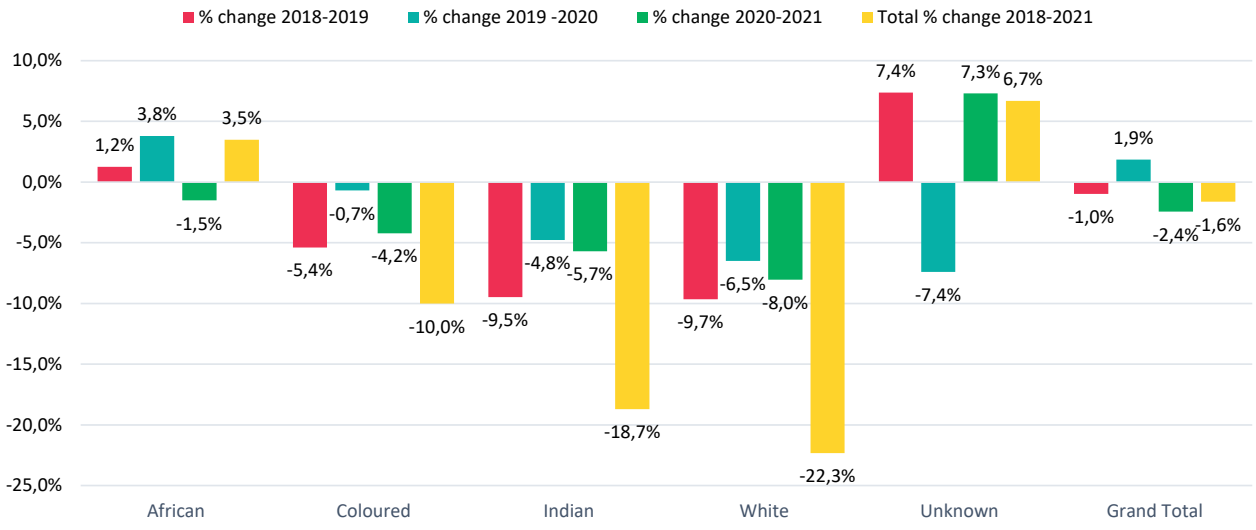


Figure 18 Percentage enrolment change year-on-year by race

Figure 19 shows a 4% increase in female student enrolment between 2019 and 2020, contributing to the overall 2.2% change in female participation between 2018 and 2021. In contrast, the number of male students consistently declined in year-on-year participation, culminating in a decline of 7.1% between 2018 and 2021. Apart from the fact that consistently higher numbers of female students enrol in universities compared to males, male students drop out at much higher rates than female students and their success rates are much lower than those of females, as will be discussed next.

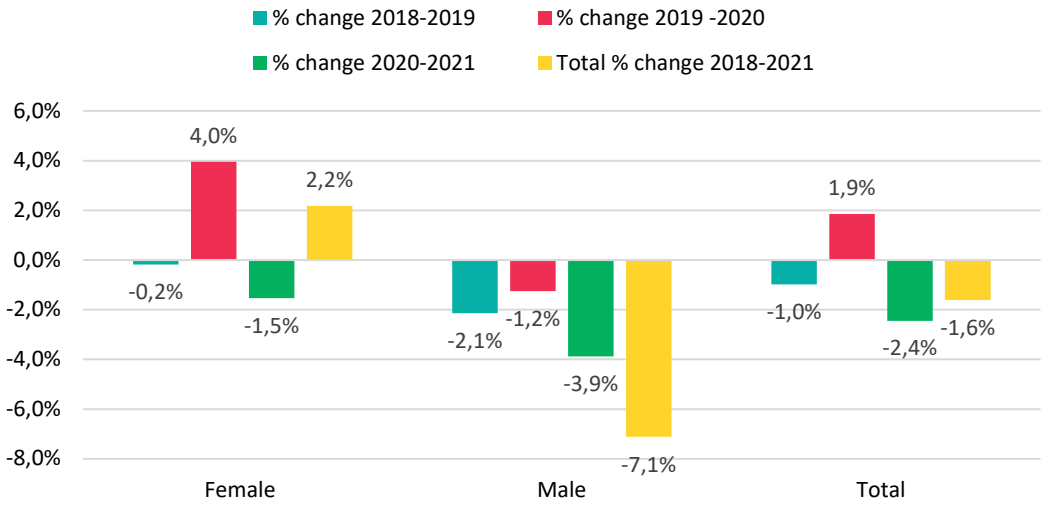


Figure 19 Percentage enrolment change year-on-year by gender

2.1.3. Success Rates

Success rates seemed to peak during 2020 at all types of institutions. Figure 20 shows the changes in success rate by institutional type over the 2018 to 2021 period. Collectively, the success rate at all universities increased slightly from 77% in 2018 to 78% in 2019, after which it increased by 5% to 83%, and declined again in 2021 by 5% to 78%. The success rates of traditional universities increased from 82% in 2018 and 2019 to 87% in 2020 and declined to 84% in 2021. For comprehensive universities the success rate of 81% in 2018 and 2019 increased to 85% in both 2020 and 2021. The universities of technology had a success rate of 79% in 2018 and 2019, which increased to 83% in 2020, declining slightly to 82% in 2021. The success rate of UNISA was 68% in both 2018 and 2019. It then increased by 10% to 78% in 2020 but declined by 12% to 66% in 2021.

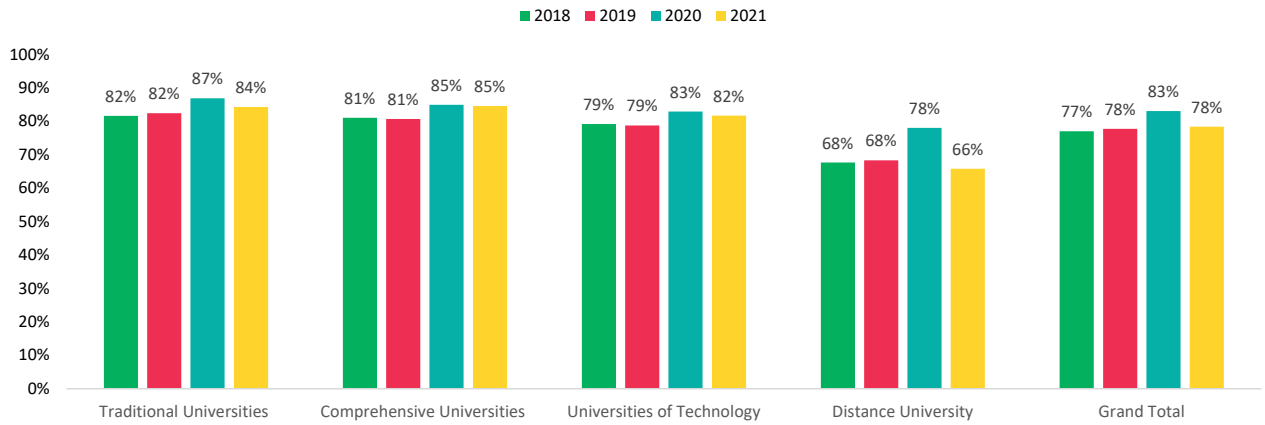


Figure 20 Success rates by institutional type

Commenting on the increased success rates in 2020, Essop (2021) notes that it does not necessarily imply that more learning took place during this time, or that there was an improvement in learning. This point is further

explored in Section 3.

Table 8 shows the success rates of individual institutions between 2018 and 2021. A summary of key trends observed at each institution is provided here:

- The Cape Peninsula University of Technology (CPUT) experienced a 2% increase in its success rate in 2020, after which the success rate declined by 3% to 79% in 2021.
- The success rate of the University of Cape Town (UCT) increased by 3% from 83% in 2019 to 86% in 2020, and then declined by 6% to 80% in 2021.
- The Central University of Technology's (CUT) success rate increased by 6% from 75% in 2019 to 81% in 2020, and then declined by 5% to 76% in 2021.
- Durban University of Technology (DUT) showed smaller differences, with a 2% increase between 2019 and 2020, and only a 1% decline thereafter.
- Unlike other institutions, the University of Fort Hare (UFH) showed a consistent upward trend in success rates, from 76% in 2018 to 83% in 2021, which is a 7% increase.
- The University of the Free State (UFS) had a 6% increase in success rate from 81% in 2019 to 87% in 2020, and then showed a 4% decline to 83% in 2021.
- The success rate of the University of Johannesburg (UJ) increased by 3% from 83% in 2019 to 86% in 2020, and declined slightly by 1% to 85% in 2021.
- The University of KwaZulu Natal (UKZN) showed a 5% increase in success rate from 82% in 2019, to 87% in 2020, with a slight decline of 1% to 86% in 2021.
- Like UFH, the University of Limpopo (UL) showed a consistent increase in success rate between 2018 and 2021, from 80% in 2018 to 88% in 2021, with the highest increase of 5% between 2019 and 2020.
- Nelson Mandela University (NMU) increased its success rate by 6% to 85% in 2020. The success rate declined slightly by 1% to 84% in 2021.
- The success rate of North-West University (NWU) increased by 8% from 83% in 2019 to 91% in 2020. This was the highest success rate of all universities in all years. It declined by 3% to 88% in 2021.
- The University of Pretoria (UP) experienced a 3% increase in success rate from 84% in 2019 to 87% in 2020, and then a slight decline of 1% to 86% in 2021.
- Rhodes University (RU) had the most stable success rate over this period, with the success rate declining from 83% in 2019 to 82% in 2020.
- The University of South Africa (UNISA) showed the most fluctuation in success rate, with a 10% increase from 68% in 2019 to 78% in in 2020, and a 12% decline thereafter to 66% in 2021.
- Stellenbosch University (SU) showed an increase of 1% in success rate between 2019 and 2020, with a 4% decrease thereafter.
- The success rate of Tshwane University of Technology (TUT) increased by 3% from 77% in 2019 to 80% in 2020, with a further increase of 1% to 81% in 2021.
- The University of Venda (UNIVEN) showed a decline in success rate of from 81% in 2019 to 78% in 2020, then a steep increase of 9% to 87% in 2021.
- The success rate of the Vaal University of Technology (VUT) increased by 10% from 74% in 2019 to 84% in 2020, and further increased by 1% to 85% in 2021.
- The success rate of Walter Sisulu University (WSU) increased by 9% from 79% in 2019 to 88% in 2020, and then declined by 2% to 86% in 2021.
- The University of the Western Cape (UWC) had a success rate of 81% in three of the four years, with a 5% increase to 86% in 2020.
- The success rate of the University of the Witwatersrand (WITS) increased from 82% in 2019 to 84% in 2020, but declined again by 2% to 82% in 2021.
- The University of Zululand (UZ) showed a success rate of 83% in 2018, which declined to 79% in 2019, and increased again to 83% in 2020 and 2021.
- The success rate of Sol Plaatje University (SPU) showed a continuous decline from 85% in 2018 to 81% in 2021.
- The University of Mpumalanga (UMP) showed a continuous increase in success rate between 2018 (82%) and 2021 (85%).
- The success rate of the Mangosuthu University of Technology (MUT) increased by 6% from 80% in 2019 to 86% in 2020, and then declined by 2% to 84% in 2021.

- The Sefako Makgatho Health Sciences University (SMHSU) success rate increased by 7% from 78% in 2019 to 85% in 2020, then declined again by 7% to 78% in 2021.

While most institutions showed some fluctuations in success rates during the emergency remote learning and teaching responses to the COVID-19 pandemic, when the data is taken together, a few institutions showed a continuous increase in success rate over the four-year period included in the analysis (i.e., UFH, UL, TUT, VUT, and UMP), and one institution (SPU) showed a continuous decline in success rate during this time.

Table 8 Success rate by university

University Number	University Name	2018	2019	2020	2021
H01	Cape Peninsula University of Technology	79%	80%	82%	79%
H02	University of Cape Town	82%	83%	86%	80%
H03	Central University of Technology	78%	75%	81%	76%
H04	Durban University of Technology	86%	86%	88%	87%
H05	University of Fort Hare	76%	79%	82%	83%
H06	University of Free State	79%	81%	87%	83%
H07	University of Johannesburg	83%	83%	86%	85%
H08	University of Kwazulu-Natal	81%	82%	87%	86%
H09	University of Limpopo	80%	81%	86%	88%
H10	Nelson Mandela University	79%	79%	85%	84%
H11	North-West University	83%	83%	91%	88%
H12	University of Pretoria	83%	84%	87%	86%
H13	Rhodes University	82%	83%	82%	82%
H14	University of South Africa	68%	68%	78%	66%
H15	Stellenbosch University	86%	87%	88%	84%
H16	Tshwane University of Technology	77%	77%	80%	81%
H17	University of Venda	83%	81%	78%	87%
H18	Vaal University of Technology	76%	74%	84%	85%
H19	Walter Sisulu University	79%	79%	88%	86%
H20	University of the Western Cape	81%	81%	86%	81%
H21	University of Witwatersrand	81%	82%	84%	82%
H22	University of Zululand	83%	79%	83%	83%
H23	Sol Plaatje University	85%	83%	81%	81%
H24	University of Mpumalanga	82%	82%	83%	85%
H25	Mangosuthu University of Technology	81%	80%	86%	84%
H26	Sefako Makgatho Health Sciences University	79%	78%	85%	78%
Grand Total		77%	78%	83%	78%

Table 9 and Figures 21 and 22 show the success rate by racial group and gender. The spike in success rates in 2020 was experienced by all population groups. White students had the highest success rate in all years, followed by Indian students. In 2021, White students had a success rate that was 10% higher than that of African students (87% and 77%, respectively) and a 6% higher success rate than Coloured students (81%). African and Coloured

males had the lowest success rates in all four years. In 2021, White females and Indian females had the highest success rates (89% and 85%, respectively) and African males and Coloured males the lowest success rates (74% and 77% respectively). Females are consistently performing better than males in all population groups and for all years. In 2018 and 2019, females had a 6% higher success rate than males. The gap narrowed slightly to 5% in 2020 and 2021.

Table 9 Success rate by race and gender

Population Group	Gender	2018	2019	2020	2021
African	Female	78%	78%	84%	79%
	Male	72%	72%	77%	74%
	Total	75%	76%	82%	77%
Coloured	Female	81%	83%	88%	83%
	Male	74%	76%	82%	77%
	Total	79%	80%	86%	81%
Indian	Female	82%	84%	89%	85%
	Male	77%	79%	87%	82%
	Total	80%	82%	88%	84%
White	Female	88%	89%	93%	89%
	Male	82%	84%	89%	84%
	Total	86%	87%	91%	87%
Unknown	Female	81%	84%	88%	83%
	Male	76%	79%	84%	77%
	Total	79%	82%	86%	80%
Grand Total	Female	79%	80%	85%	80%
	Male	73%	74%	80%	75%
	Total	77%	78%	83%	78%

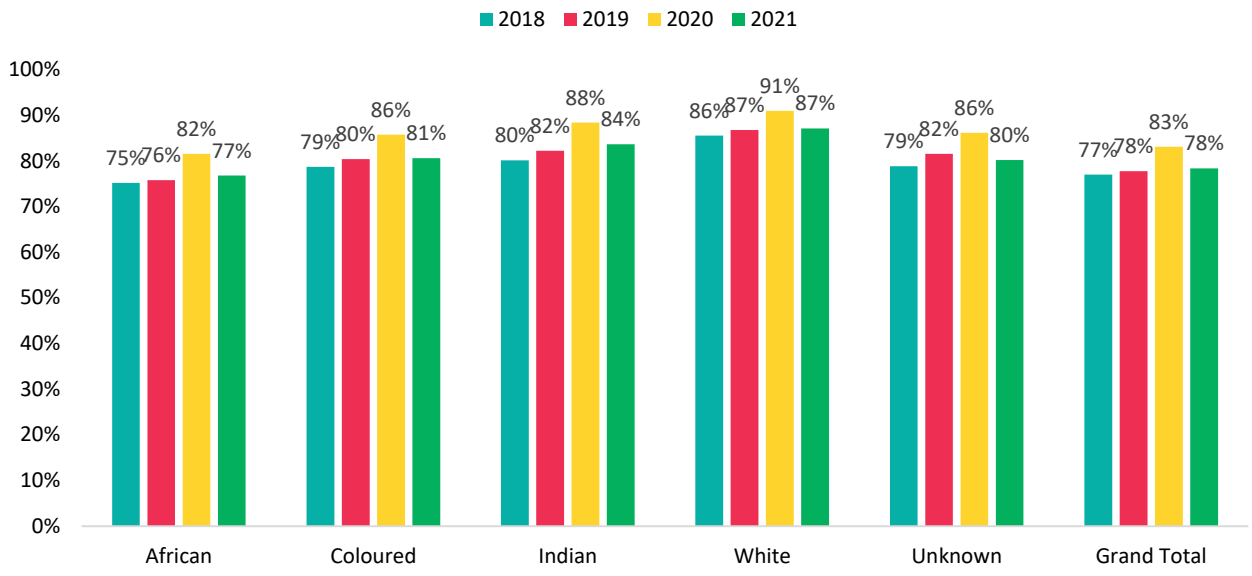


Figure 21 Success rate by race

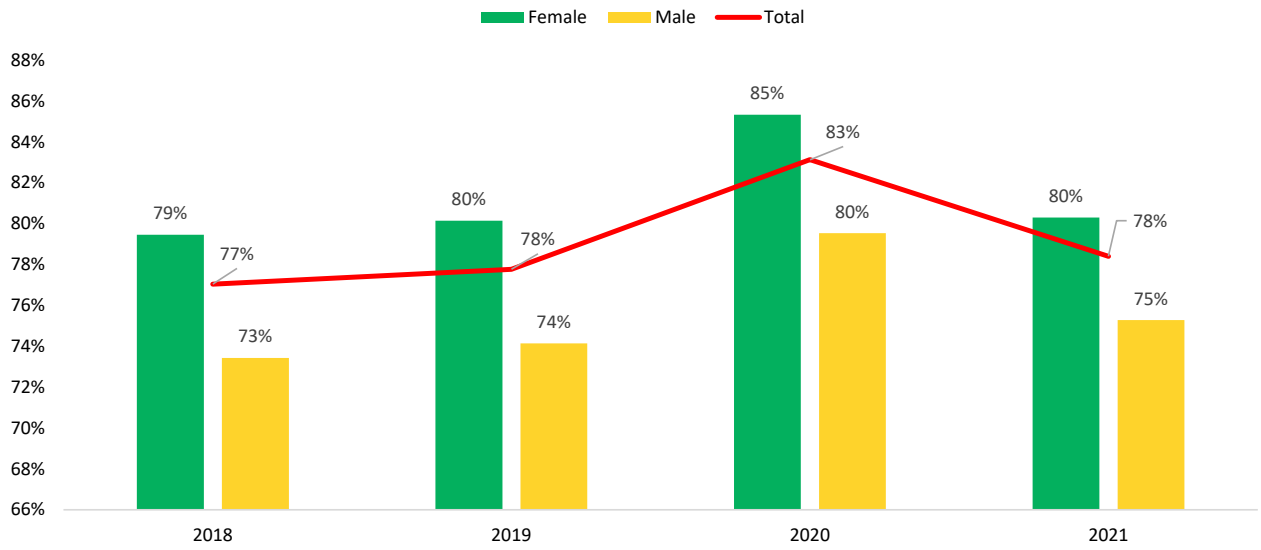


Figure 22 Success rate by gender

Figure 23 shows the success rate by educational level between 2018 and 2021. Generally, undergraduate success rates were higher than postgraduate success rates. This might simply be explained by the fact that advanced degrees, such as master's and doctoral degrees, take longer to complete; every year that these degrees are not completed, the calculation notes credits as 'not completed'. The undergraduate success rate increased from 78% in 2018, to 79% in 2019, and increased by 6% to 85% in 2020. Thereafter, it declined by 6% in 2021 to 79%. At postgraduate level, the success rate increased from 71% in 2018 to 72% in 2019, and further increased to 73% in 2020 and 2021. It must, however, be kept in mind that postgraduate enrolments declined quite sharply over these years.

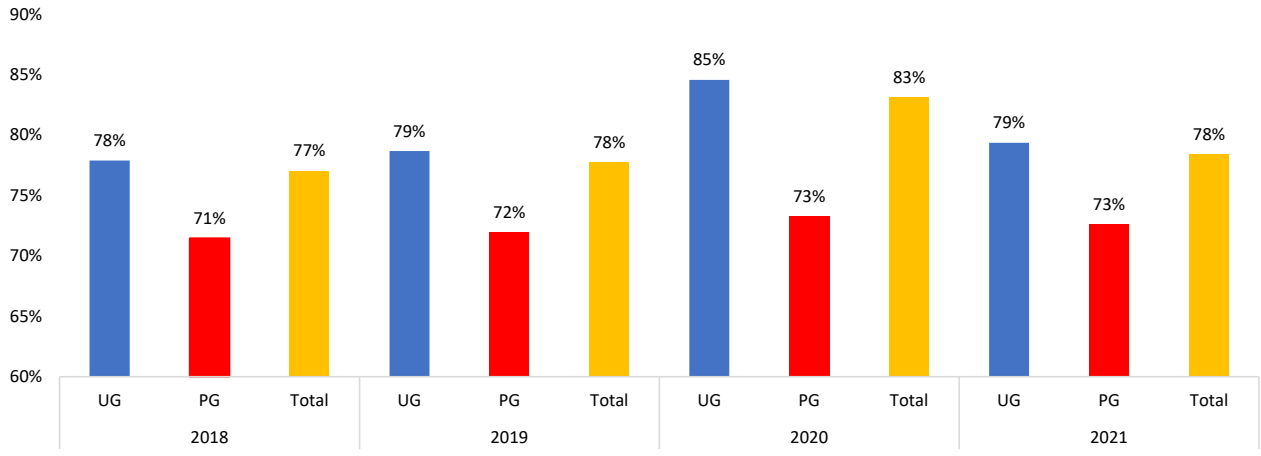


Figure 23 Success rate by study level

Figure 24 shows the success rate by major field of study. Generally, the success rates in Health Sciences and Education are considerably higher than the success rates in the other fields of study. The success rate in Health Sciences remained consistent over the 2018 to 2021 period, ranging between 88% and 89%. A possible explanation is that many of the students in Health Sciences faculties were allowed to continue with their clinical training in contact situations during the pandemic (as they could not do this remotely). Their learning experiences were, therefore, not as disrupted during the pandemic. Success rates increased in all major fields of study between 2019 and 2020 and declined for all in 2021. In Natural Sciences, the success rates increased by 6% from 75% in 2019 to 81% in 2020, but then declined to 78% in 2021. The success rates in Engineering and Technology increased from 75% in 2019 to 79% in 2020 and declined to 77% in 2021. The success rates in Business, Economic and Management Sciences increased by 6% from 72% in 2019 to 78% in 2020, then declined by 5% to 73% in 2021. Business, Economics and Management sciences had the lowest success rates in all four years. In Education, the success rates increased by 4% from 86% in 2019 to 90% in 2020, but then declined by 5% to 85% in 2021.

Humanities and Social Sciences experienced a 7% increase in success rate from 78% in 2019 to 85% in 2020, but then a decline again to 78% in 2021.

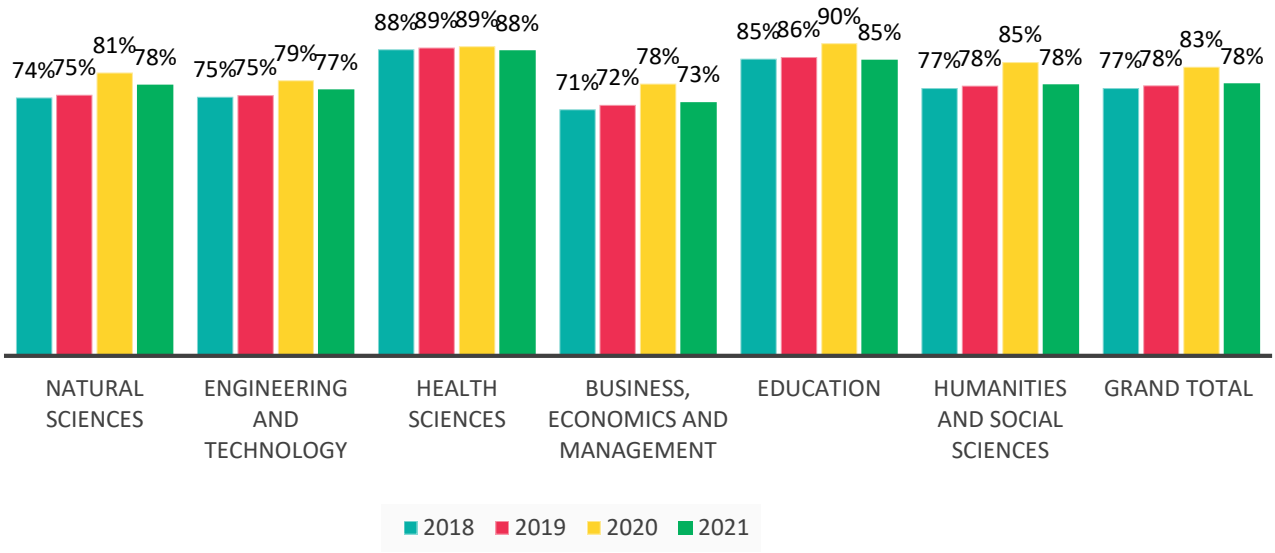


Figure 24 Success rate by major field of study

An analysis of the success rates by the Classification of Education Subject Material (CESM) is shown in Table 10. The lowest success rates were in Mathematics and Statistics with 66% in 2018 and 69% in 2019. From 2019 to 2020 the success rate increased considerably by 8% to 77%, but then declined by 6% to 71% in 2021, which was again the lowest success rate in 2021. Law was also a field with lower success rates (70% in 2018 and 71% in 2019) that experienced a high increase of 14% from 71% in 2019 to 85% in 2020. The Law success rate declined by 11% to 74% in 2021. Military Sciences had very low enrolments, and no real conclusions can be drawn from the trends. Business, Economics and Management Sciences also had relatively low success, with 71% in 2018 and 72% in 2019, increasing by 6% to 78% in 2020, and declining by 5% to 73% in 2021. Physical Sciences are another area with low success rates. The success rate declined from 75% in 2018 to 74% in 2019. It increased to 79% (5% increase) in 2020, with a 2% decline to 77% in 2021. Both Life Sciences and Physical Sciences are laboratory intensive fields of study, but despite this, these fields showed an increase in success rates between 2019 and 2020. While there were periods of total lockdowns, students studying in these fields received priority when returning to campuses began. Computer and Information studies also had lower success rates than most fields of study. In 2018 the success rate was 74%, which increased slightly to 75% in 2019. The success rate increased by 5% to 80% in 2020, with a 3% decline to 77% in 2021.

Table 10 Success rate by CESM

	2018	2019	2020	2021
010 Agriculture, agricultural operations and related sciences	81%	80%	84%	83%
020 Architecture and the built environment	85%	85%	86%	84%
03A Music	84%	84%	85%	85%
03B Visual Arts	84%	87%	84%	81%
03C All other arts, visual and performing	86%	87%	84%	83%
040 Business, economics and management studies	71%	72%	78%	73%
050 Communication, journalism and related studies	81%	82%	84%	79%
060 Computer and information studies	74%	75%	80%	77%
070 Education	85%	86%	90%	85%
080 Engineering	73%	73%	77%	75%

	2018	2019	2020	2021
09A Nursing, rehab, therapy, etc.	88%	88%	88%	87%
09B All other health care and health science	88%	89%	90%	89%
100 Family, ecology and consumer sciences	85%	85%	87%	83%
110 Languages, linguistics and literature	78%	80%	84%	77%
120 Law	70%	71%	85%	74%
130 Life sciences	80%	80%	86%	84%
140 Physical sciences	75%	74%	79%	77%
150 Mathematics and statistics	66%	69%	77%	71%
160 Military sciences	100%	100%	76%	77%
170 Philosophy, religion and theology	78%	81%	84%	79%
180 Psychology	80%	81%	86%	83%
190 Public management and services	78%	78%	84%	79%
200 Social sciences	79%	79%	84%	80%
Grand Total	77%	78%	83%	78%

2.1.4. Retention trends

The retention of students from one year to another was calculated by working out what percentage of the students that did not complete their studies in year n, and who thus returned in year n+1. Occasional students were excluded from the calculations because they were not expected to graduate or to return the following year. With the exception of UNISA, that was not affected in the same way by the pandemic in 2020, the percentage of students registered in 2019 who returned in 2020 declined at other institutions.

Traditional universities had a retention rate of 87% between 2018 and 2019, which declined to 84% between 2019 and 2020, and increased to 89% between 2020 and 2021. The retention rate for comprehensive universities declined from 87% between 2018 and 2019 to 84% between 2019 and 2020, followed by an increase to 87% between 2020 and 2021. Universities of technology had a retention rate of 84% between 2018 and 2019, which declined to 83% between 2019 and 2020, followed by an increase to 84% between 2020 and 2021. UNISA had the lowest retention rate, increasing from 65% between 2018 and 2019 to 73% between 2019 and 2020 (an 8% increase in retention rate). Their retention rate then increased further to 75% between 2020 and 2021 (see Table 11 and Figure 25). Because of the significant increases in retention at UNISA between 2019 and 2020, the retention rate in total for all universities increased from 78% between 2018 and 2019, to 80% between 2019 and 2020, with a further increase to 82% between 2020 and 2021.

Table 11 Retention of students by institutional type

University Group	2018	2019	% 2018 return in 2019	2019	2020	% 2019 return in 2020	2020	2021	% 2020 return in 2021
Traditional Universities	277 484	241 064	87%	284 497	239 160	84%	272 264	241 683	89%
Comprehensive Universities	118 620	102 699	87%	123 481	103 821	84%	115 621	100 966	87%
Universities of Technology	145 200	121 812	84%	152 632	126 730	83%	144 109	121 052	84%

University Group	2018	2019	% 2018 return in 2019	2019	2020	% 2019 return in 2020	2020	2021	% 2020 return in 2021
Distance University	305 972	198 077	65%	289 136	211 405	73%	331 417	247 867	75%
Grand Total	847 276	663 652	78%	849 746	681 116	80%	863 411	711 568	82%

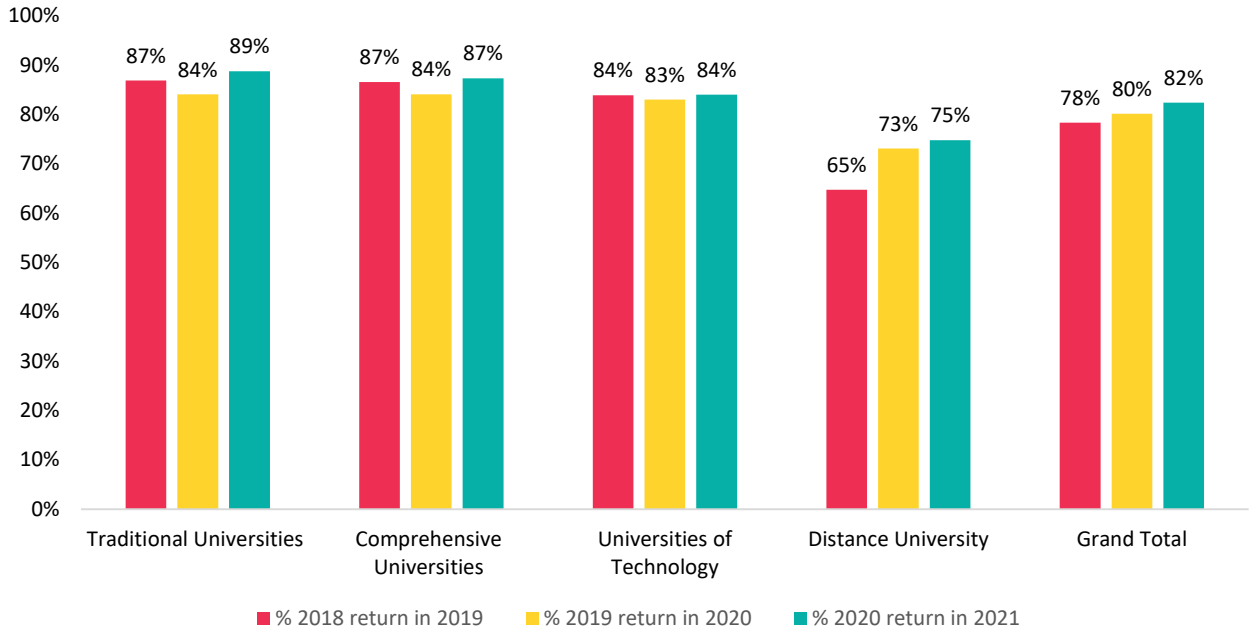


Figure 25 Percentage retention by institutional type

Figure 26 shows the retention rate by race. The retention rate for all population groups increased over the 2018 to 2021 period. White students, followed by Indian students, had the highest retention rate for all years. Between 2018 and 2021, the retention rate of African students increased by 3% from 78% in 2019, to 81% between 2020 and 2021. The retention rate of Coloured students increased from 78% in 2019 to 84% in 2021. Indian students increased their retention rate by 7% from 80% in 2019 to 87% in 2021. The retention rate of White students increased from 83% in 2019 to 88% in 2021.

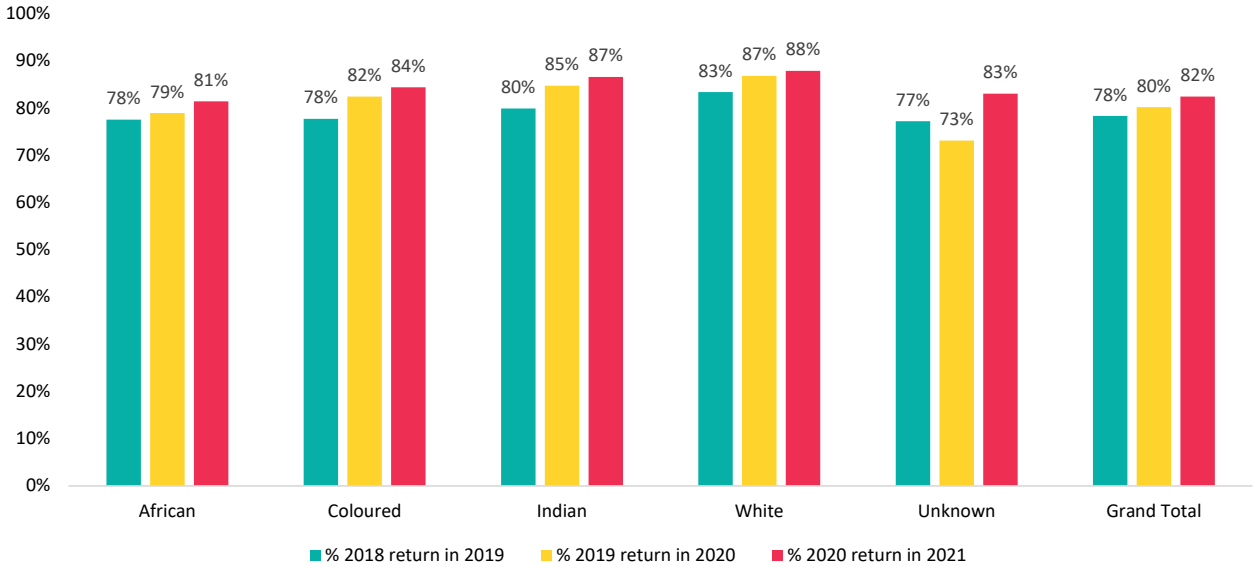


Figure 26 Retention by race

Figure 27 shows retention rates by gender. Female students were retained at much higher rates. Between 2018 and 2019, 4% more females (80%) were retained compared to males (76%). Between 2019 and 2020, 5% more females were retained (82%) than males (77%). Similarly, there was a 5% difference in the retention of females (84%) compared to males (79%) between 2020 and 2021.

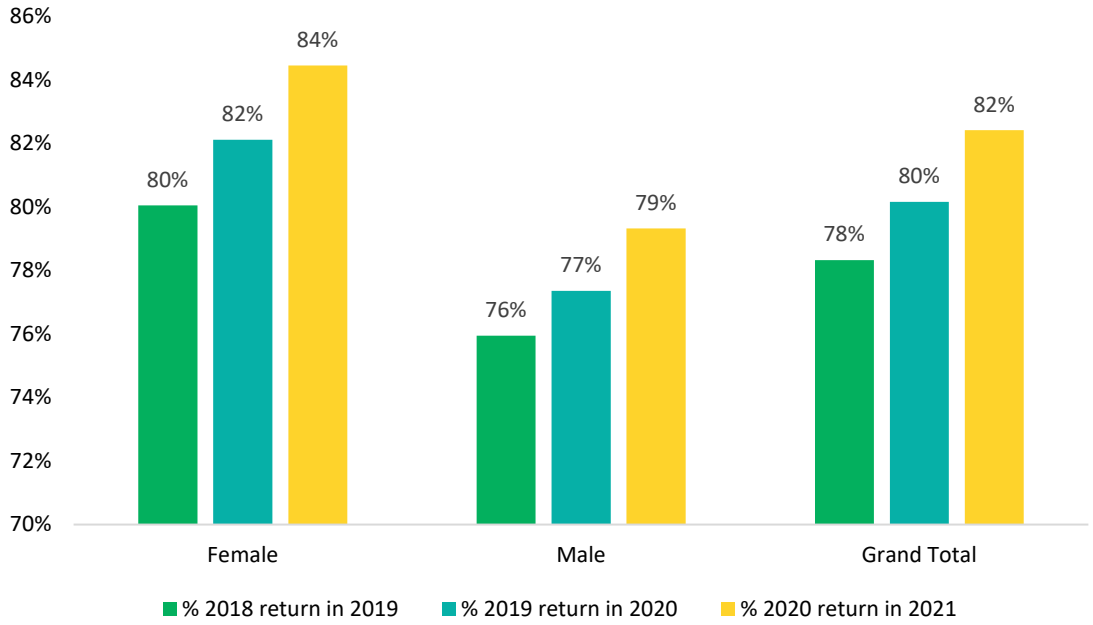


Figure 27 Retention by gender

The retention rate of students by major field of study for the period 2018 to 2021 is shown in Figure 28. In Natural Sciences, the retention rate remained constant, with only a small decline of 1% from 83% to 82% between 2020 and 2021. The retention rate of Engineering and Technology students increased steadily from 77% to 82% between 2019 and 2021. Retention rates in Health Sciences showed a slight decline between 2019 and 2020, but an increase to 95% between 2020 and 2021. Health Sciences had the highest retention rate, which correlated with the fact that their students also had the highest success rates. Business, Economics and Management students had the lowest success rates and consequently also the lowest retention rates. However, these students showed steady increases in retention from 72% in 2019, to 78% between 2020 and 2021. Education students showed a significant increase of 6% between 2020 and 2021. Retention in the Humanities and Social Sciences showed a continuous increase from 78% in 2019 to 82% between 2020 and 2021.

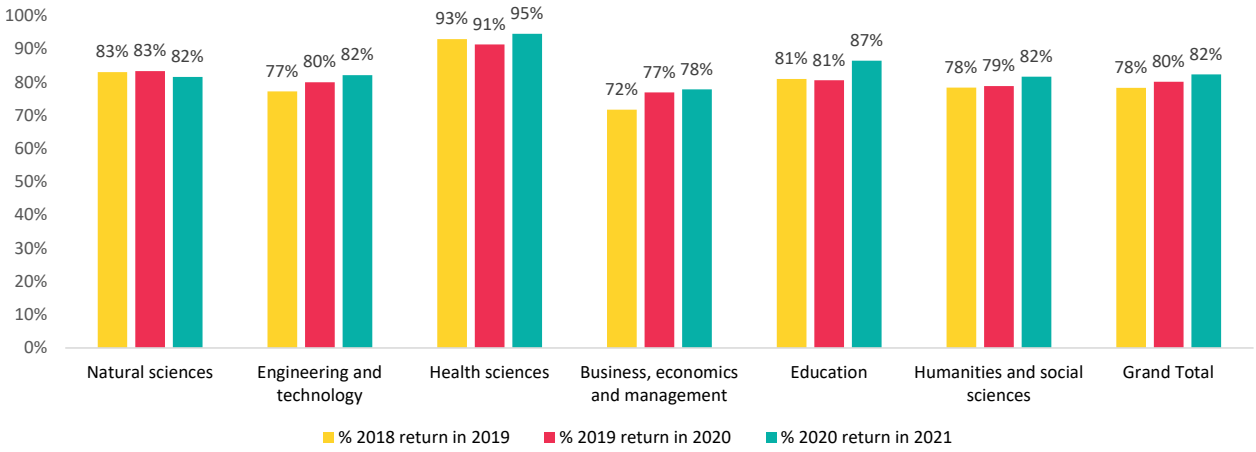
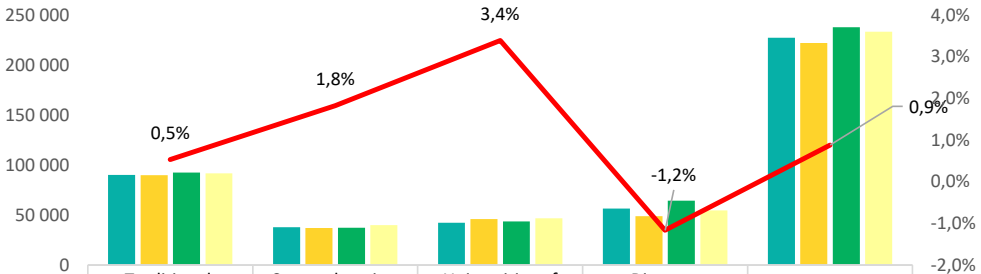


Figure 28 Retention by major field of study

2.1.5. Graduate growth

The growth in graduates by institutional type over the period 2018 to 2021 is shown in Figure 29. The average annual growth rate in graduates between 2018 and 2021 was the highest at universities of technology (3.4%), followed by comprehensive universities (1.8%) and then by traditional universities (0.5%). UNISA's graduates declined by 1.2% on average per annum over this period. The total number of graduates at universities increased from 227 188 in 2018 to 233 257 in 2021, with an average annual growth rate of 0.9%. The highest number of graduates produced during this period was 237 882, mainly related to the increase in UNISA's graduates (20 906) from 48 906 in 2019 to 64 423 in 2020.



	Traditional Universities	Comprehensive Universities	Universities of Technology	Distance University	Grand Total
2018	90 269	37 844	42 442	56 633	227 188
2019	89 913	37 133	45 990	48 906	221 942
2020	92 501	37 441	43 517	64 423	237 882
2021	91 718	39 957	46 905	54 677	233 257
Avg annual growth rate 2018 - 2021	0,5%	1,8%	3,4%	-1,2%	0,9%

Figure 29 Growth in graduates by institutional type

Figure 30 shows that universities of technology experienced an increase of 8.4% in graduates between 2018 and 2019, while the graduates declined at the other three institutional types. UNISA had the biggest decline of 13.6% in graduates between 2018 and 2019. Graduates increased at traditional universities by 2.9%, and by 0.8% at comprehensive universities between 2019 and 2020. UNISA experienced a considerable increase in graduates of 31.7% between 2019 and 2020. Between 2020 and 2021, the graduates at traditional universities declined slightly by 0.8%, while UNISA experienced a substantial decline of graduates of 15.1%. During this same timeframe, the graduates of comprehensive universities increased by 6.7% and the graduates of universities of technology increased by 7.8%. Collectively, over the four years included in the analyses, graduates increased at traditional universities by 1.6%, at comprehensive universities by 5.6%, and at universities of technology by 10.5%. Overall, UNISA's graduates declined by 3.5% between 2018 and 2021.

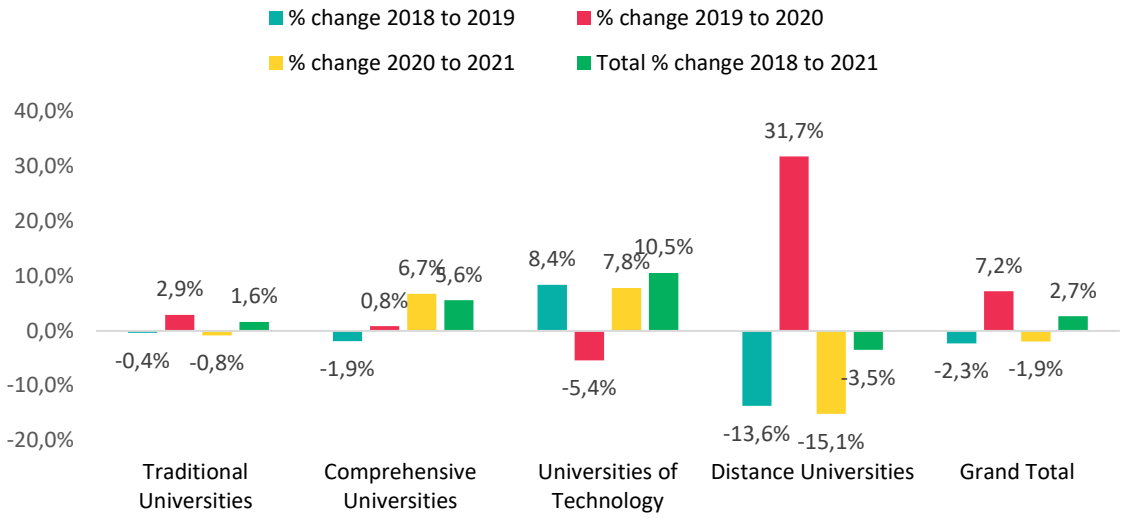
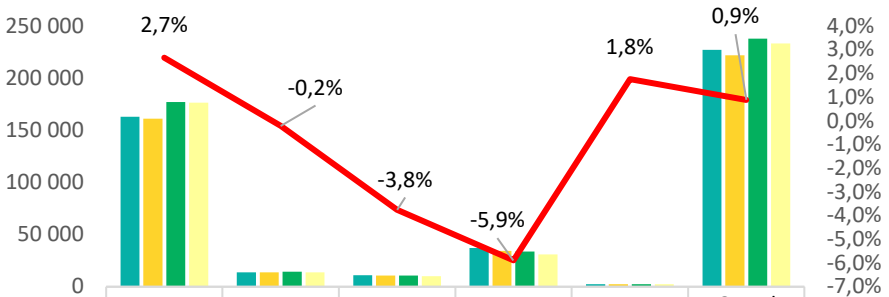


Figure 30 Year-on-year change in graduate growth

The growth in graduates by racial group between 2018 and 2021 is shown in Figure 31. Over this period, African graduates increased by an average annual growth rate of 2.7%, Coloured graduates declined at an average annual rate of 0.2%, Indian graduates declined on average by 3.8% per annum and White graduates declined on average by 5.9%. In total, the number of graduates increased by an average of 0.9% per annum.



	African	Coloured	Indian	White	Unknown	Grand Total
2018	163 087	13 690	11 084	37 049	2 278	227 188
2019	161 244	13 572	10 499	34 259	2 368	221 942
2020	176 956	14 226	10 571	33 787	2 342	237 882
2021	176 500	13 600	9 880	30 877	2 400	233 257
Avg annual growth rate 2018 - 2021	2,7%	-0,2%	-3,8%	-5,9%	1,8%	0,9%

Figure 31 Growth in graduates by race

Figure 32 shows the year-to-year percentage change in graduates between 2018 and 2021. Generally, the number of African graduates increased by 8.2%, Coloured graduates declined by 0.7%, Indian graduates declined by 10.9% , and White graduates declined by 16.7% . The total number of graduates for all universities increased by 2.7% over this period. The largest increases were in African (9.7%) and Coloured graduates (4.8%) between 2019 and 2020. Indian graduates also increased slightly by 0.7% between 2019 and 2020. The biggest decline in Coloured graduates (4.4%) was between 2020 and 2021. Indian graduates declined by 5.3% between 2018 and 2019, and by 6.5% between 2020 and 2021. White graduates declined every year. Between 2018 and 2019, White graduates declined by 7.5%, between 2019 and 2020 by 1.4%, and between 2020 and 2021 by 8.6%.

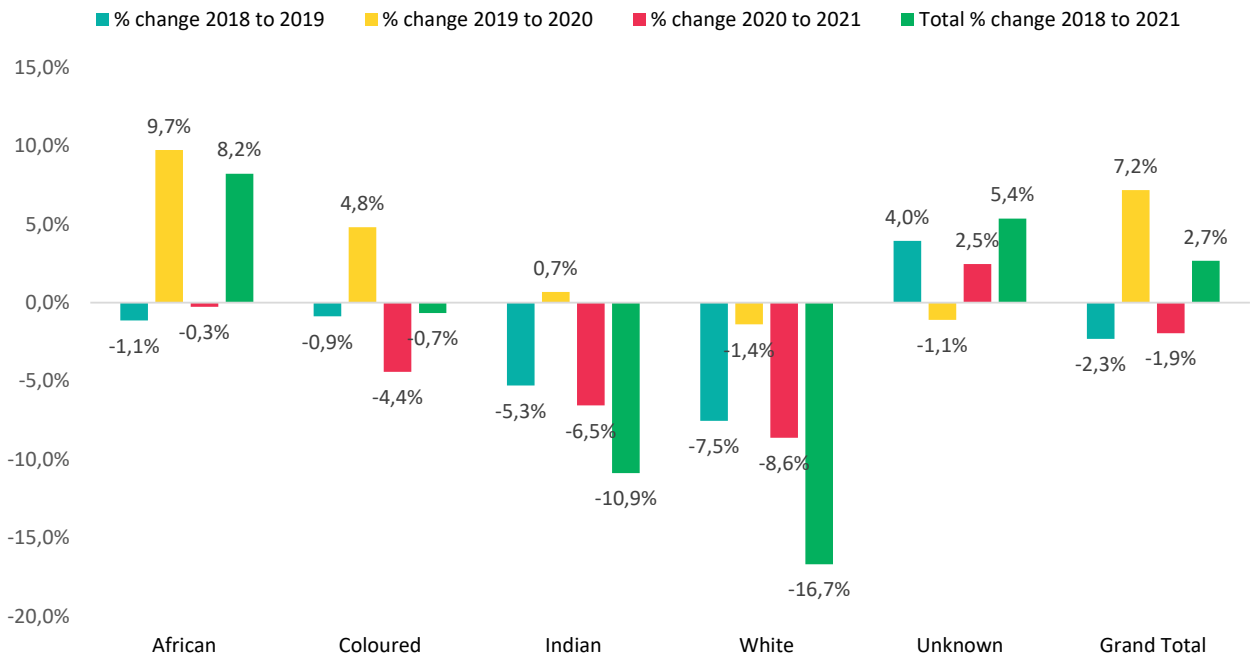
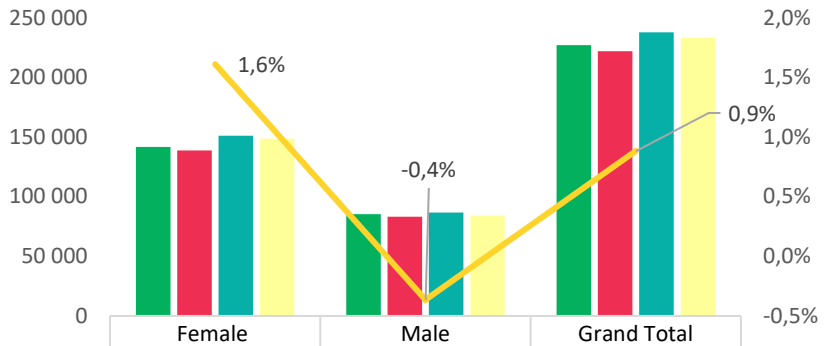


Figure 32 Year-on-year percentage change in graduate growth by race

Figure 33 shows the graduate growth in the sector by gender. Between 2018 and 2021, female graduates had an average annual growth rate of 1.6%, while male graduates declined on average by 0.4% per annum.



	Female	Male	Grand Total
2018	141 876	85 296	227 188
2019	138 816	83 103	221 942
2020	151 170	86 685	237 882
2021	148 841	84 367	233 257
Avg annual growth rate 2018 - 2021	1,6%	-0,4%	0,9%

Figure 33 Graduate growth by gender

The year-to-year changes in graduates by gender is shown in Figure 34. Between 2018 and 2019, female graduates declined by 2.2% and male graduates declined by 2.6%, resulting in a 2.3% decline in total graduates. Between 2019 and 2020, female graduates increased by 8.9% and male graduates by 4.3%, resulting in a total increase of 7.2% for all graduates. Between 2020 and 2021, female graduates declined by 1.5% and male graduates by 2.7%, with a total decline in graduates of 2%. Over the four years analysed, female graduates increased by 4.9% in total, and male graduates declined by 1.1% in total. Ultimately, the total number of graduates increased by 2.7% between 2018 and 2021.

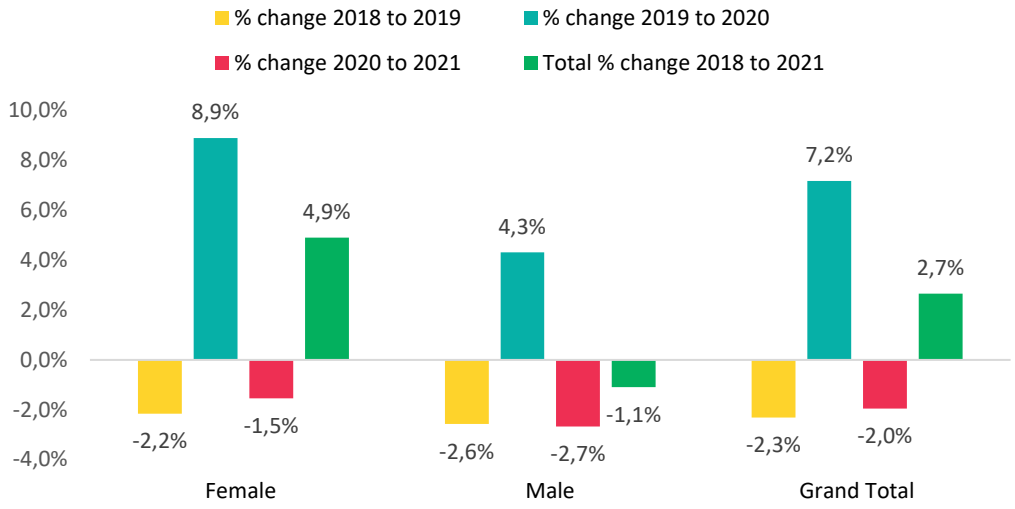
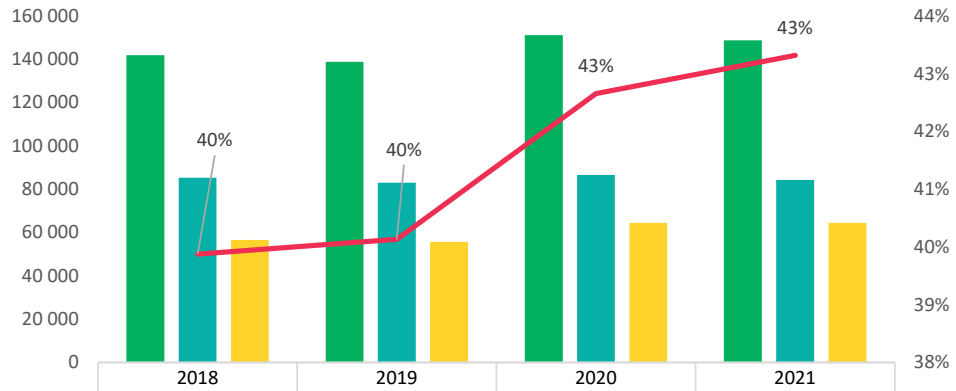


Figure 34 Year-on-year percentage graduate growth change by gender

Figure 35 shows the difference between male and female graduates. As a result of the widening gap between female and male enrolments at universities, combined with much lower success rates and higher dropout rates of male students, the gap between female and male graduates has been widening from year-to-year. Between 2018 and 2019, there were 40% more female graduates than male graduates. This increased to 43% between 2020 and 2021.



	2018	2019	2020	2021
Female	141 876	138 816	151 170	148 841
Male	85 296	83 103	86 685	84 367
Difference in female and male graduates	56 580	55 713	64 485	64 474
% difference between female and male graduates	40%	40%	43%	43%

Figure 35 Graduate differences between genders

Figure 36 shows the average annual growth rate of graduates by both race and gender. African females had the highest average annual growth rate of 3.5% per annum over the 2018 to 2021 period, followed by African males who showed a 1.2% increase. (t'e 'Unknown' group has not considered been in this analysis). The only other group that increased over this period were Coloured females who grew on average by 0.3% per annum. All other groups declined over the 2018 to 2021 period. Coloured males declined on average by 1.3% per annum. Indian females declined on average by 4.2%, and Indian males by 3.1%. White females had the highest decline between 2018 and 2021, declining by 6.0% on average per annum, while White male graduates declined on average by 5.8%.

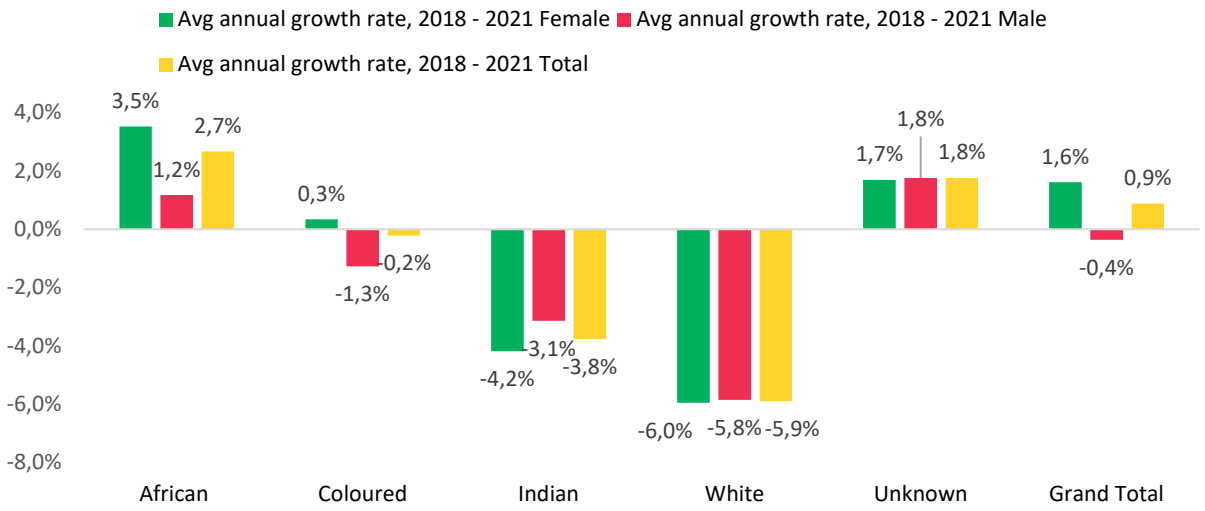
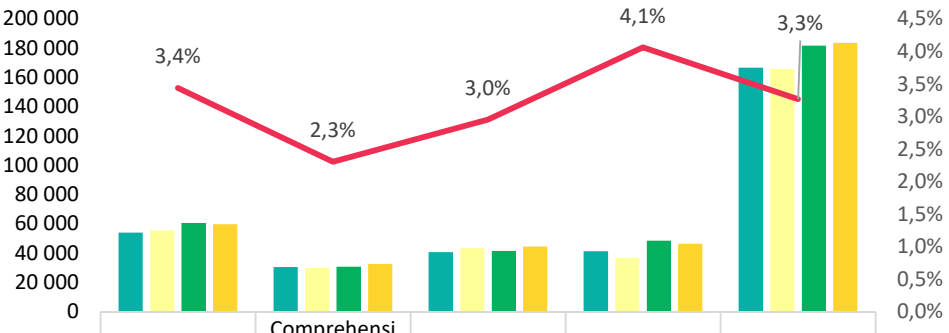


Figure 36 Annual graduate growth rate by race and gender

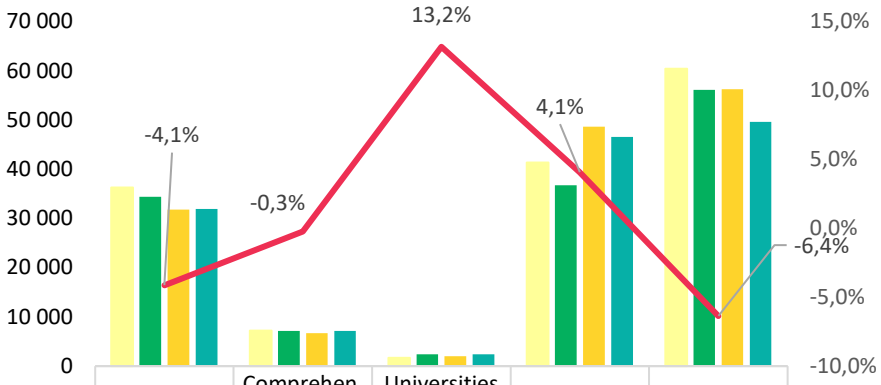
Figure 37 shows the graduates at an undergraduate level between 2018 and 2021. In general, these graduates have been growing on average by 3.3% per annum. This trend is quite different to the undergraduate enrolments, which show modest increases of 0.7% on average per annum over the same period. UNISA had the highest average annual growth rate in graduates at an undergraduate level (4.1%), followed by traditional universities (3.4%), universities of technology (4.1%) and comprehensive universities (2.3%).



	Traditional Universities	Comprehensive Universities	Universities of Technology	Distance University	Grand Total
2018	54 006	30 648	40 785	41 327	166 766
2019	55 498	30 015	43 598	36 730	165 841
2020	60 689	30 799	41 521	48 620	181 629
2021	59 772	32 815	44 504	46 570	183 661
Avg annual growth rate, 2018 - 2021	3,4%	2,3%	3,0%	4,1%	3,3%

Figure 37 Undergraduate graduates by institutional type

Graduates at postgraduate level are shown in Figures 38 and 39. These graduates declined on average by 6.4% . This is to be expected with the average annual 4.3% decline in postgraduate enrolments. Traditional universities, which have the highest percentages of postgraduate enrolments, experienced an average annual decline in graduates of 4.1% at a postgraduate level. Comprehensive universities saw an average annual decline of 0.3%, and universities of technology, in contrast, experienced an average annual growth rate in graduates of 13.2% at a postgraduate level. UNISA experienced a steep decline in graduates of 19.1% on average per annum at a postgraduate level over the 2018 to 2021 period.



	Traditional Universities	Comprehensive Universities	Universities of Technology	Distance University	Grand Total
2018	36 263	7 196	1 657	41 327	60 422
2019	34 415	7 118	2 392	36 730	56 101
2020	31 812	6 642	1 996	48 620	56 253
2021	31 946	7 142	2 401	46 570	49 596
Avg annual growth rate, 2018 - 2021	-4,1%	-0,3%	13,2%	4,1%	-6,4%

Figure 38 Graduates at a postgraduate level by institutional type

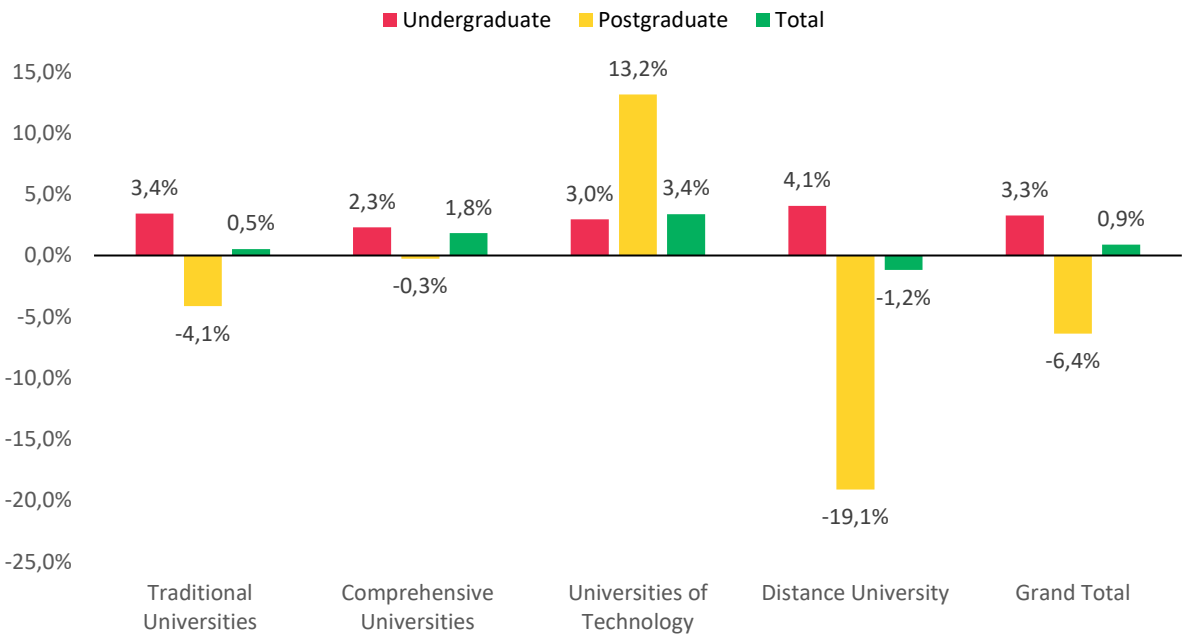
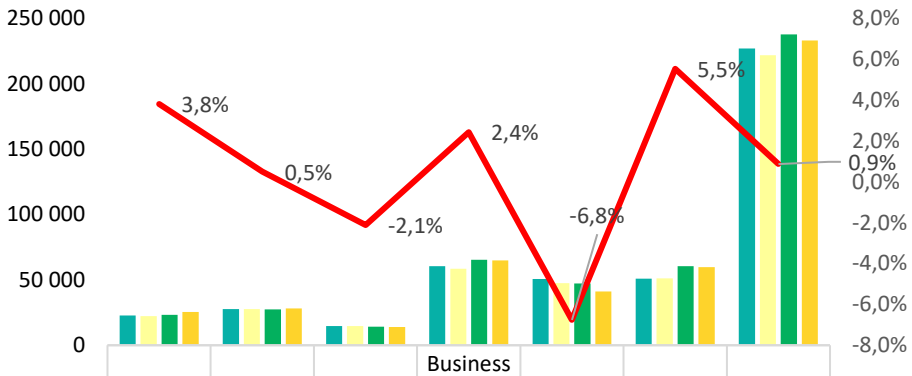


Figure 39 Percentage annual graduate growth by level of education

The growth in graduates by major field of study over the period 2018 to 2021 is shown in Figure 40. From 2018 to 2019, there was a slight decline in graduates in the Natural Sciences (463 fewer graduates), but the graduates then increased year-on-year at an average annual growth rate of 3.8% (with 25 368 graduates in 2021). Graduates in Engineering and Technology declined from 2018 to 2020 by 372 graduates, but then increased by 801 graduates to 28 199 graduates in 2021. Engineering and Technology graduates increased at an average annual growth rate of 0.5%. Graduates in Health Sciences declined by 916 from 14 766 in 2018 to 13 850 in 2021 (at an average rate of 2.1%). Business, Economics and Management Sciences graduates increased by 4 513 graduates at an average annual growth rate of 2.4%. Graduates in Education declined at a rate of 6.8% on average per annum over the 2018 to 2021 period (from 50 651 in 2018 to 41 063 in 2021). This is a decline of 9 588 graduates over this period. Graduates in the Humanities and Social Sciences increased from 50 869 in 2018 to 59 806 in 2021 at an average annual rate of 5.5%. This is an increase of 8 937 graduates.



	Natural Sciences	Engineering and Technology	Health Sciences	Business, economics and management	Education	Humanities and social sciences	Grand Total
2018	22 674	27 770	14 766	60 458	50 651	50 869	227 188
2019	22 211	27 688	14 781	58 668	47 492	51 102	221 942
2020	23 181	27 398	14 140	65 336	47 271	60 556	237 882
2021	25 368	28 199	13 850	64 971	41 063	59 806	233 257
Avg annual growth rate	3,8%	0,5%	-2,1%	2,4%	-6,8%	5,5%	0,9%

Figure 40 Percentage annual graduate growth by major field of study

Figure 41 shows the proportional percentage of graduates in field of study. Most graduates in 2021 were in the field of Business, Economics and Management sciences (28%). Humanities and Social Sciences graduates were the second largest group of graduates increasing from 22% of all graduates in 2018 to 26% of all graduates in 2021. Graduates in Education declined from 22% of all graduates in 2018 to 18% of all graduates in 2021. Graduates in Health Sciences generally represent 6% of graduates, and Engineering and Technology graduates remained at 12% of all graduates. Natural Science graduates increased slightly from 10% of all graduates in 2018 to 11% of all graduates in 2021.

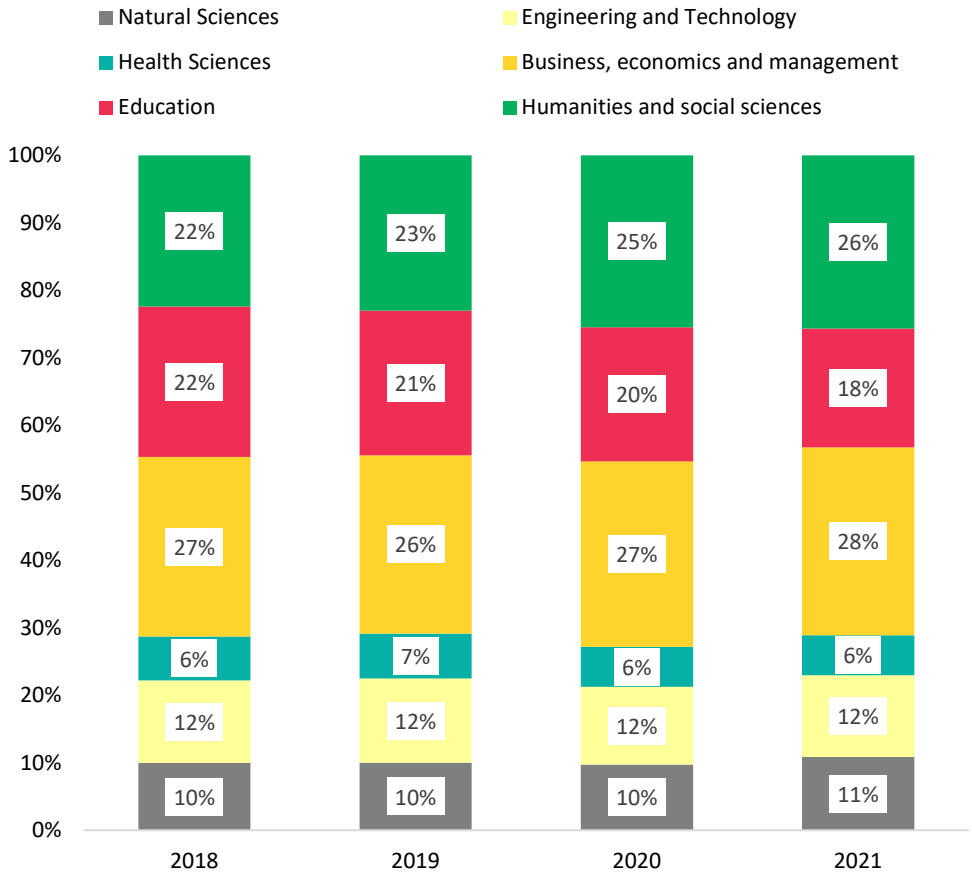


Figure 41 Percentage of graduates by major field of study

Figure 42 shows the year-on-year percentage differences between graduates in major study fields. Graduates in Natural Sciences declined by 2% between 2018 and 2019, then increased by 4.4% between 2019 and 2020, and by 9.4% between 2020 and 2021. In total, these graduates show an increase of 11.9% between 2018 and 2021. Engineering and Technology graduates declined slightly by 0.3% between 2018 and 2019, and by 1.0% between 2019 and 2020. These graduates increased by 2.9% between 2020 and 2021, with a total increase of 1.5% between 2018 and 2021. There was only a slight increase in Health Sciences graduates of 0.1% between 2018 and 2019, after which graduates declined by 4.3% between 2019 and 2020, with a further decline of 2% between 2020 and 2021. The total decline in Health Sciences graduates was 6.2% between 2018 and 2021. Business, Economics and Management Sciences graduates declined by 3% between 2018 and 2019, then increased by 11.4% between 2019 and 2020, and decreased again by 0.6% between 2020 and 2021. In total, graduates in Business, Economic and Management Sciences increased by 7.5% between 2018 and 2021. Education graduates declined every year between 2018 and 2021. The biggest decline in Education graduates was 13.1% between 2020 and 2021. In total, Education graduates declined by 18.9% between 2018 and 2021. Graduates in the Humanities and Social Sciences increased slightly by 0.5% between 2018 and 2019, then there was a steep increase of 18.5% between 2019 and 2020, followed by a 1.2% decline between 2020 and 2021. In total, Humanities and Social Sciences graduates increased by 17.6% between 2018 and 2021.

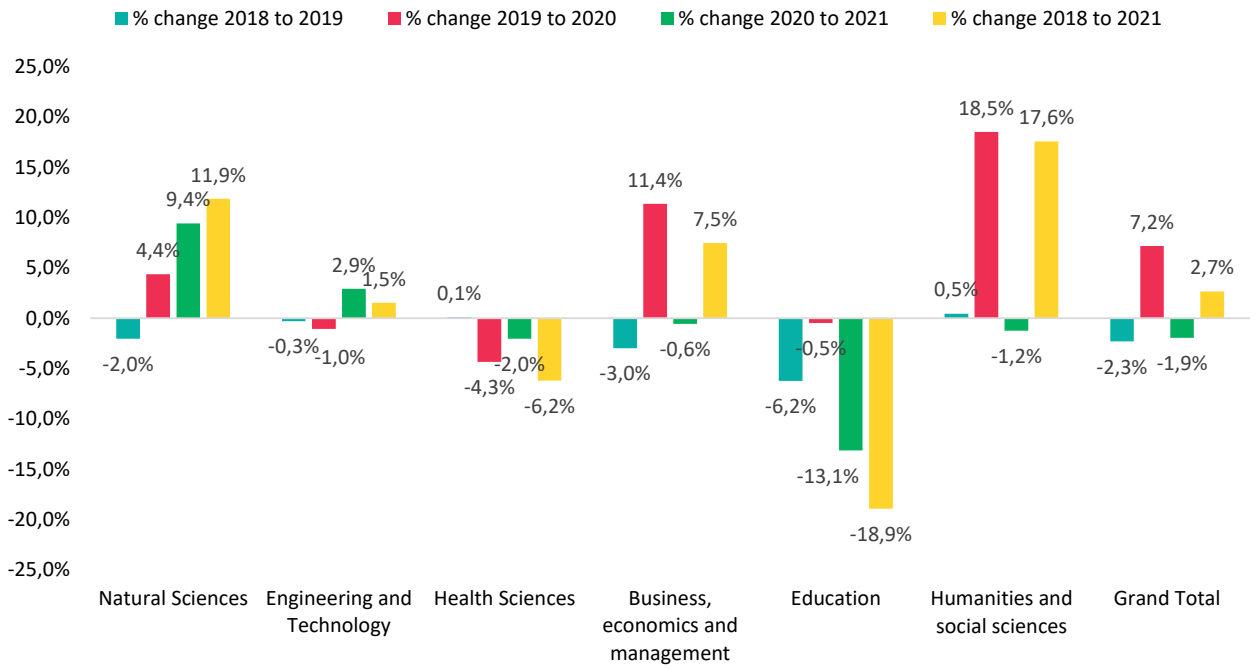


Figure 42 Year-on-year percentage change in graduates by major field of study

Given the quantitative overview of student success and the related indicators provided in Section 2, the next section draws on the qualitative data collected by the SAULM and SEP-TLF surveys in 2020 and 2021, respectively, to explore the lived experiences of students and staff during the pandemic. Section 3 will conclude by reflecting on what both the quantitative and qualitative analyses provided in this report mean for our current and future understanding of student success.

Section 3: Emergency remote learning and teaching experiences of students and lecturers

3.1. Students' perspectives via the SAULM survey

The SAULM survey was administered mid-2020 and asked students to qualitatively respond to the benefits and challenges they were experiencing while learning with technology. The data was re-analysed with a student success lens, and comments particularly relating to students' experiences during remote learning and teaching were extracted. These qualitative responses may assist higher education stakeholders understand what focal areas are necessary to support the sector and its role players in a more blended learning and teaching environment beyond the pandemic. Table 3 shows the most commonly referenced themes. These have been grouped into five overarching themes that, together, reflect students' experiences. To contain the length of the report, only sub-themes marked in green are discussed in more detail.[1] The overarching themes include:

- **Access to infrastructure, resources and materials:** This theme includes students' perspectives on how certain factors influenced their learning and teaching experience during the pandemic. The factors mentioned were: national infrastructure (such as network connectivity and electricity provision); access to data; accessing and the ability to use devices; and engaging with different learning materials. Two sub-themes stand out: students' engagement with learning materials, and challenges with devices and infrastructure. These will be explored in more detail in the sections below.
- **Learning and teaching experiences:** This theme was dominated by students' reflections on their time (e.g., saving time travelling or managing time), the communication they had with lecturers and peers,

[1]A more extensive analysis of the data collected as part of the SAULM survey in 2020 is provided in the survey report that can be accessed here: https://www.usaf.ac.za/wp-content/uploads/2021/02/DHET_SAULM-Report-2020.pdf

and their experiences of remote learning. These sub-themes will be explored in more detail in the sections below. The other sub-themes will also be discussed below.

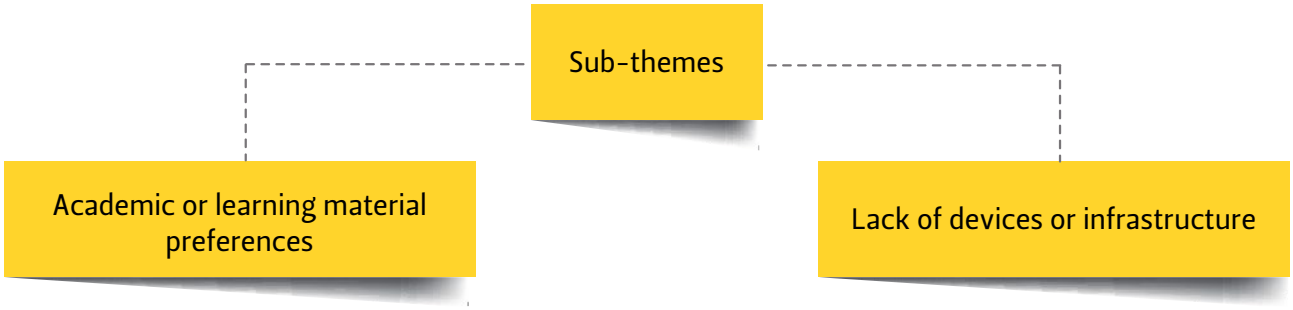
- **Learning with technology:** This overarching theme was dominated by students' reflections on their digital skills and competencies. This, and the other sub-themes, will be explored in more depth in the sections below.
- **Support:** Three forms of support stood out for students: support from their lecturers, support from their tutors and peers, and financial support. Each of these sub-themes will be discussed in more detail in the sections below.
- **Impact on personal aspects:** Remote learning and teaching impacted individuals differently. However, two aspects stood out in the analysis: the convenience of studying remotely, and students' development into self-directed learners. These themes will be further explored below, and both the positive and negative experiences of students during emergency remote learning and teaching will be shared.

Table 3 SAULM coding themes

Coding themes	Nr of coded references
Access to infrastructure, resources, and materials	
Academic (learning) materials	2310
Lack of devices and infrastructure	957
Difficulties with using devices	250
Loadshedding	223
The use of other resources to supplement information	82
Learning and teaching experiences	
Managing time and dealing with workload	2691
Communication	753
Online/blended learning	278
Conducive study environments	236
Students' academic performance	163
Students' engagement	132
Assessments (tests, examinations, assignments, practicals etc.)	113
Difficulties in understanding concepts	88
Face-to-face learning	47
Learning with technology	
Technological literacy and skills	870
Access to software	79
Navigating online university platforms	64
Technical support from the university	26
Support	
Lecturer and tutor support	441
Peer support	233
Support from family and friends	28

Coding themes	Nr of coded references
Students' financial position	383
Impact on personal aspects	
The convenience of studying from home	1192
Being self-directed	1114
Health/mental health	223
Distractions	63

3.1.1. Access to infrastructure, resources, and materials



While many students struggled to access their academic materials because of challenges with network connectivity, inappropriate devices, and a lack of data, many also commented on the convenience of working with digital learning materials and having access to the internet, which provides a range of additional sources for students to use.

3.1.1.1. Academic or learning material preferences

By far, the most frequently occurring comments from students related to their appreciation for recorded lectures, or voice-recorded presentations or notes. The benefits of these learning materials, according to students, included the ability to access them when convenient, to revisit them, and to use them as a basis to find additional information from other sources. Another benefit to technological resources is the convenience of storing everything on one device and not having to carry around several textbooks. There were, however, several students who commented that they prefer hard copies of learning materials, especially when making notes and studying from those notes. Some examples of students' comments are shared here:

> *There is a lot more access to learning materials and it is extremely beneficial to have recorded lectures which I can refer back to and re-watch if something is unclear.*
>
> *I can work through it at my own pace and go through the videos on several occasions to better understand the work.*
>
> *When watching the videos prepared by the lecturers, I can rewind it if I missed something he/she said. Not like in class you have no such opportunity.*
>
> *I understand the work much better, because I can go back to listen to the same slides over and over again until I understand the work, which makes me successful in my modules.*
>
> *There are plenty on videos that you can watch online or on YouTube that explain certain concepts in depth as compared to lecture videos.*
>
> *The variety of sources are greater than expected.*

You can research additional information on the content to gain a better understanding of what is required of you especially when it comes to the submission of assignments.

Everything is stored on 1 device hence no need to carry books.

Can't make notes, highlight, prefer hard copies as learning material, but online regarding exams and assignments.

3.1.1.2. Lack of devices or infrastructure

As reported in the SAULM report, students had a difficult time with network connectivity, access to appropriate devices (many relied on their cellphones to study), and adequate provisioning of data to access electronic resources. The quotes below illustrate these challenges, with many commenting on poor network connectivity at their places of residence, or the influence of loadshedding on connectivity. Regarding devices, some students did not have laptops, and many had to rely on their cellphones to study. Those who did have laptops also had challenges with technical support, outdated software, or the slow processing speeds of entry-level devices. Some examples of students' experiences are shared here:

Most of it is the network coverage in my village at several times it gets weaker and I will struggle to do and retrieve my work online when something of this nature occur. In most cases I had to go to the Campus where the internet runs smoothly and free.

But it gets difficult sometimes when you have to submit your work and there is load shedding and poor connectivity.
Technology is nice and all that. Since you do everything on your own time the problem is that data is expensive and students like us who can't afford such thing as Data we feel excluded because no one is meeting us halfway.

I get distracted easily when am using a smartphone to study. And not having data.
I often find myself using my devices for watching Netflix and not working on them.
I've found it stressful and difficult to do remote schoolwork using the small screen of a cellphone to engage with blackboard and online resources. I wish I could get a laptop but I cannot afford one. It is very difficult learning off a cellphone.

I don't own a laptop so I always have borrow and affects my performance.

Crushing of my laptop and it becoming slow when am working with huge data set.

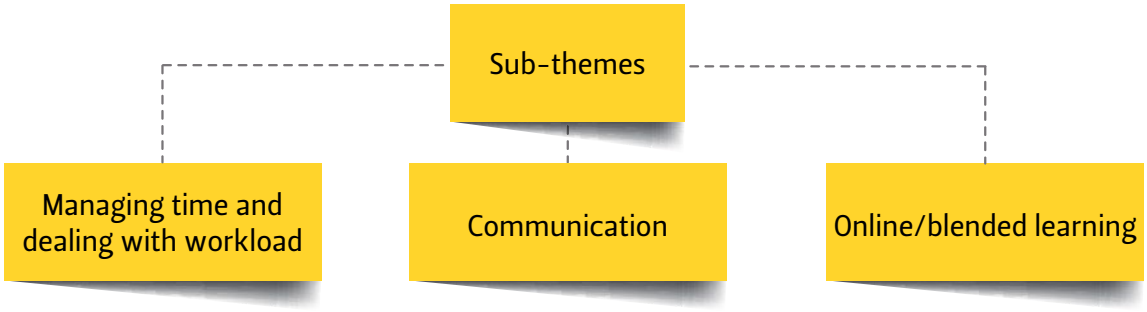
My laptop gives me issues and is slow at times, making it difficult and frustrating to complete assignments.

My devices are quite old and slow now so not as effective and efficient, sometimes get stuck, etc. Typing when competing tests takes longer than handwriting which leads to timing issues - cannot complete test in the prescribed time.

Some of the software we used for learning was too much for my laptop at times, thus it froze and crashed often.

Lack of some resources like a smart phone. Without it I cannot communicate with other students.

3.1.2. Learning and teaching experiences



Students' learning and teaching experiences were mixed. Many commented that they struggled to study in their home environments due to challenges such as a lack of infrastructure, the absence of dedicated study spaces, and family members who do not understand the demands of engaging with academic work. In general, students also reported feeling disengaged from lecturers and peers. Students had different viewpoints on whether remote learning and teaching had a positive or negative effect on their academic performance. For some, it was difficult to stay abreast of their studies, and they found it challenging to understand their work without having a lecturer or tutor nearby with whom to engage. For others, being forced to take more responsibility in engaging with academic work, and the ability to revisit recorded lectures or presentations and other digital sources, helped them to perform better academically. Similarly, some students found that frequent quizzes and open book tests helped them to persevere with their academic work. For others, technical challenges, the volume of assessments, and the pace at which they had to work through multiple assessments were too much to handle.

The three most notable sub-themes were: how students managed their time; communication with lecturers and peers; and experiences of online/blended learning. Examples of each of these sub-themes will now be shared.

3.1.2.1. Managing time and dealing with workload

Students' comments on time management tell a story of how they adjusted from following a set institutional timetable to having to manage their own time. For some, this was convenient and they enjoyed the flexibility. For others, it was overwhelming to self-manage the workload and increased assessments. Some example comments are shared here:

> *I get to complete the work on my own time which is somewhat better than having to wait for the lecturer to complete it himself/herself. I have more time to do research about assignments.*
>
> *If necessary, it is easier to structure my day in a way that makes it easier for me to engage with learning activities and do anything else I need to. I can also work faster through easier sections and spend more time on difficult content.*
>
> *We also get more assignments online then we would have had assignments when on campus.*
>
> *Quite a lot of work all at once. Struggling to keep up.*
>
> *Some of my modules and assignments overlap and I usually do not have time to complete everything in a day that I am supposed to complete.*
>
> *The pace was much more intense, it took me longer to do a lot of the work without being given more time to compensate.*
>
> *Timelines must match technology, do not have face-to-face centred timelines for technology.*

3.1.2.2. Communication

Another important sub-theme under "learning and teaching experiences" relates to the difficulties and successes students experienced with online communication. For some, communication was challenging because they found it difficult to explain what they did not understand; they could not have group discussions; they found it difficult to follow group discussions online; they struggled with technological challenges that kept them from reaching out to lecturers and peers; and they generally found it difficult to engage with lecturers and peers online. In contrast, many students found communication easier and more convenient through email and social media platforms, such as WhatsApp and Telegram. For many, the immediacy of responses through technology was convenient, however, some students commented that they struggled at times to get responses. Some example comments include:

> *Not being able to have group/class discussions to allow for better understanding from a different point of view.*
>
> *Not being able to reach the lecturer in time when I need help.*
>
> *Communicating digitally leaves much more room for miscommunication. There is more pressure to engage with online group tasks, because everything is on the record.*
>
> *Not being able to have easy conversations with lecturers.*
>
> *Not being able to understand some of the activities and assignment given.*
>
> *Easy and fast communication.*
>
> *Lecturers uploading papers in the wrong places, being unable to communicate with the university because they don't answer the phone /emails.*
>
> *I can ask questions freely without being afraid that I would be judged by other students.*
>
> *Ability to connect with people outside of one small region. Can now connect to academics or learners globally. Reaching out to contacts beyond a certain geographic boundary.*

3.1.2.3. Online/blended learning

Many students shared their experiences of remote learning. Students' positive experiences related to their introduction to new technologies and platforms that facilitate learning and engaging with digital learning materials. However, some students experienced challenges with adapting to an environment where they need to be more self-sufficient, sort out technical challenges, and apply certain disciplines or practical work in an online context. Examples of students' experiences are:

> *Learning can be made fun through use of educational apps.*
>
> *There are many sources of learning such YouTube, Google, blackboard etc.*
>
> *I learnt a lot like using Google Zoom or Google Meeting, makes groupwork to be a lot easier.*
>
> *Especially during the lockdown being a UNISA student helped me a lot, everything was provided online and on time lucky enough that I am used to online learning, my work was made much easier I was able to write online exam.*
>
> *It's very hard to adapt especially if you are a first-year student who used to study full time at high school now you don't have full time lectures who can guide you daily like at high school.*

It was very difficult for me to do assignments that required me to do slide shows, using the quick access tools to find the sum of the cells and mostly to engage in MyItLab. It would've been better to be taught practically first, as I couldn't submit assign.

When studying remotely there are some concepts in mathematics (major is mathematics and statistics) that is very difficult to follow in the prescribed textbook and you don't have someone immediately at hand to help you in online lectures.

3.1.3. Learning with technology

Many students acknowledged that they learnt a range of new skills related to working with and leveraging technology for academic and employability purposes. Others reflected on the lack of basic digital skills that kept them from working efficiently with technology. Access to software, navigating institutional platforms, such as Learning Management Systems, and receiving technical support from institutions were also topics highlighted by students. Some examples of students' comments about their digital skills capabilities are listed here:

Using a laptop could be really hard for a person that has never used it before.

I don't know how to use technology and how to write an email.

How to type fast and how to send the assignment and to check some of the work.

Students struggle to use some basic functions like unzipping a file on their own computer.

It is hard, discouraging and time consuming if you first have to figure out on your own how basic things on MS Word like layouts of documents, how to correctly reference work, etc.

Learned new skills in searching and processing information.

I learned a lot of things online such as using zoom which I did not know before, I can now host a meeting via zoom. I learned making posters online and ended up figuring out how to screen record using PowerPoint.

Learned to use software that I never knew existed before.

It helped me to learn more about using technological devices and I am more motivated to study while using technology for working and learning purposes.

With everything going digital this day, one gets to advance and keep up with new software. I am passionate about technology and the digital world, if only I could afford a new and better computer.

3.1.4. Support

Having responsive and caring lecturers, along with peer interactions through instant messaging platforms or online discussion facilitation platforms made a significant difference in students' ability to cope with the isolation of remote learning and teaching. Unfortunately, however, the opposite was also true. Many students reflected on the challenges that a lack of interaction with lecturers and peers brought about. Students' financial positions also featured strongly with many comments about unreliable funding (e.g., receiving NSFAS one year and not the next), and the limitation of funding to tuition fees (excluding all other costs associated with academic studies, such as devices, data, and living costs). One positive thing about remote learning and teaching was the money students saved on travelling to campus and buying food on campus.

Some examples of comments about students' experiences of lecturer and peer support include:

Engaging with other students frequently.

I also benefited from chatting with other students and lectures where I needed help.

Online interactions like discussions groups help with online learning.

Feedback is given fast with emails and Telegram groups provide support for students.

Our lecturers constantly check on us and ask us how we are, and I feel that has been amazing.

My lectures were always available to assist me electronically.

Not being able to get quick response via email from lectures when I encounter a problem with a certain module.

Not all lecturers are willing to help us with our learning (do not explain anything, they just upload the PowerPoints).

The lecturers do not put themselves in our shoes, they expect us to be competent, they do not consider possible problems that we may face (lack of resources, load shedding etc).

Some students' reflections on how they managed financially are captured here:

Data has always been a problem and the need for appropriate technology for remote learning like a laptop. I agree as a NSFAS beneficiary we get the option to choose a laptop and R5200 I opted for the money, I can get to buy books and save for data & trans.

Financial inconvenience. Data costs are very high and accessing most of the sites require data i.e. downloading materials, YouTube videos & others.

I have issue of finance because my bursary (Bushbuckridge Municipality Bursary) did not pay for my fees, so I have to buy data for my school work and my parents are not working.

The other thing that is stressing me the most is NSFAS I was funded then the next thing I am not on the funding list which make things difficult for me.

With staying at home I can help my parents financially with what I get from NSFAS.
The most relevant learning materials and software required me to pay and I don't have that money, my sponsor only pays for tuition.

We're not all from the same background so the mistakes universities make is assume that if one has I'm internet connection we all have it. Which isn't the case. Technology and learning are expensive to maintain.

It saves us traveling time and money.

It makes life easier and gaining more knowledge of using technology and how to access information online and you save transport money and to buy more data.

I have saved a lot of time, money and petrol by not having to commute to university.

3.1.5. Impact on personal aspects

Many students commented on the convenience of studying anywhere or at any time:

I love learning remotely, because I can work and study at the same time!

Studying at convenient times and at my own pace.

It is in many ways a positive thing to learn remotely because you are overall safer at home and in your room.

It prepares you for the world of work, you can work anywhere at any time when using technology for learning.

Convenient even if you don't physically show up for classes you can never be left behind.

I save time staying at home, travelling use to take a lot of my time and made me very tired to work when I reached home. Now I have more rest and more time to effectively complete my studies in a more comfortable environment.

Many students commented on their becoming self-directed learners and taking responsibility for their studies, especially those who did not or could not engage in synchronous online learning. This is an important finding for the design of pedagogies in a more technologically advanced teaching and learning environment. In research, self-directedness includes self-regulation, motivation, taking personal responsibility, and showing autonomy in learning (Brandt, 2020). The examples shared below illustrate how self-directedness manifested for students, particularly in terms of motivation, dedication, taking responsibility, and self-regulation:

Fast, easy, I do everything at the comfort of my own space. It has absolutely changed learning as we know it and gave it a whole new meaning. I find Self-directed learning a lot more fun and laid back.

I have a better sense of self-time-management. I have learnt a lot on how to motivate myself and how to teach myself.

Dedication becomes a skill. If you don't put in the time and effort, the marks won't be good.

Learning to be responsible and do things on your own.

Time management is very important and that you should not expect to be spoon fed but rather study on your own and take full responsibility of your work.

It instils the skill of time management and the responsibility of organising and planning your academic work properly.

Students' mental health has been highlighted as a concern in recent years; the comments from students below reflect these concerns.

Mental health, feeling overwhelmed, never feeling that my work is complete (therefore never having time off, or feeling guilty when I do).

The work is a lot, we cover new topics every week whilst I didn't even understand the previous week's work. It causes a lot of stress both academic and emotional.

Everything is just overwhelming and causing stress.

Reduced anxiety and increased health due to getting enough sleep and being able to manage

time more efficiently.

There is always stress during online assessments that there will be a power cut or network outage during the assessment.

3.2. Emergency remote learning and teaching experiences of lecturers

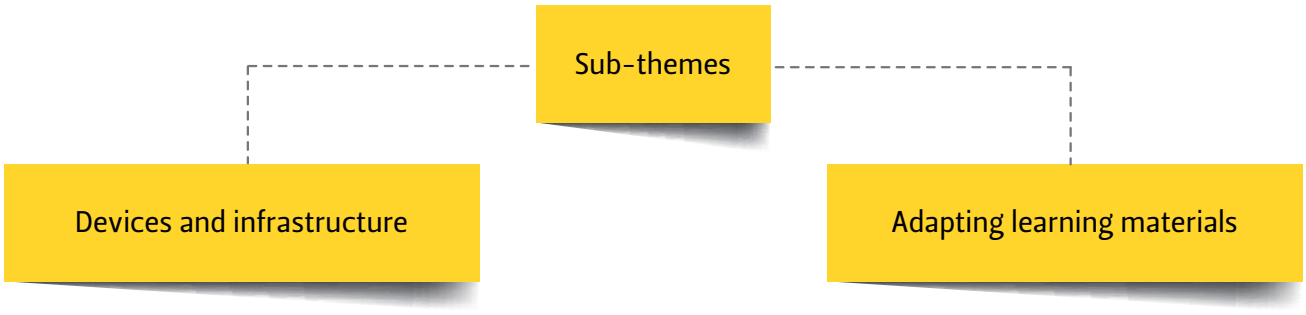
The SEP-TLF asked academics to reflect qualitatively on their teaching and learning experiences during remote teaching and learning and how these experiences influenced their approach to teaching and learning. Respondents were further asked to comment on the quality of teaching and learning that took place during emergency remote teaching and learning and how, if necessary, such quality might be enhanced in similar circumstances in the future. These responses were examined in more depth by considering what academic staff highlighted as being important for them to do their work efficiently and effectively in a remote learning and teaching context. The assumption was that these factors can also contribute to the quality of a more blended learning and teaching environment in the aftermath of the pandemic.

Four key themes emerged: i) access to resources and materials; ii) adjusting pedagogical approaches; iii) ensuring the quality of assessment practices; and iv) academic support and training needs. Each of these themes are discussed next.

3.2.1. Access to infrastructure, resources and materials

We are teaching as if we are teaching in a first-world setting, but we are smack-dab in a third world setting. This is very detrimental to our students and their learning experience.

The quote shared above illustrates some of the lecturers' frustrations with national infrastructure, such as network connectivity and loadshedding. The quote also highlights their frustrations with the lack of access to appropriate devices, data, and conducive environments for leveraging technology in higher education. The sections below expand on this theme by discussing the impact that (non)availability of devices and infrastructure, as well as other resources and materials, had on learning and teaching experiences.



3.2.1.1. Devices and infrastructure

Network connectivity was an issue for both students and lecturers during remote learning and teaching. Similarly, the availability of appropriate devices and data was an important factor that contributed to the continuation of learning and teaching during this time. While many institutions provided students and staff with devices and data, several challenges were noted by lecturing staff. These challenges include data or website restrictions; Learning Management Systems that were not zero rated; irresponsible use of data; and the digital skills training needs of students and staff. In addition, while lecturers explored new avenues to reach students, such as social media or cellphones, student engagement remained a challenge.

Lecturers were concerned that students were unable to access study materials and engage with their work due to a lack of resources. Having recorded material available, however, gave students the opportunity to access work at a time and place that suited them, or when they experienced network or data issues during the duration of the live, online teaching sessions. Example comments include:

> *I make more available for downloading etc. But whether students have the resources to access it is unknown.*
>
> *It is a promising approach if the resources and connectivity were not a challenge, but we end up using a night surfer since the connectivity is better at night.*
>
> *Students' attendance is not consistent because some have network issues, data issues and some are just lazy to attend. They tend to rely on recordings.*
>
> *Loadshedding provided huge challenges to any live sessions.*
>
> *In the year since, we have developed multiple modes to engage with students depending on their access, so they have the following available: live online class, downloaded video or audio of the live class or pre-recorded lectures, Telegram Q&A sessions and tutorials, and written notes. This means that students all get the same content irrespective of their connectivity.*

Many lecturers had to rely on their personal devices and resources to support emergency remote learning and teaching. While several lecturers needed specific devices or tools for online teaching, some experienced challenges with outdated devices that could not support the software required for remote teaching. Others had to be innovative when software or systems failed them. Some examples of lecturers' experiences include:

> *The biggest challenge however, is the lack of this university to provide lecturers with 'updated' computers. Most computers are totally outdated - to such an extent that they don't even support Windows 360. Hence those lecturers involved cannot use MS Teams as a host.*
>
> *Provide staff with the necessary tools (data, routers, Stable networks, tablets or touchscreen laptops to enable writing and drawing illustrations).*
>
> *Academics also need resources - better online platform, software if necessary and hardware e.g. devices/ equipment to assist in delivering better online lectures, marking of assessments, etc.*
>
> *I am fortunate to have access to the resources I need at home to teach online, most of which are self-purchased. This has allowed me to continue working online.*
>
> *The university does not provide us with appropriate technology to conduct online lectures - laptops are not sufficient to handle big size of videos / render videos using editing software. My laptop broke down because of the overuse (as a result of online learning) and the laptop could not be replaced because of a lack of funds.*
>
> *It is the informal 'fuzzy' connections that have been key to retaining and in some cases even improving the quality of teaching and learning. WhatsApp groups. Meetings off-campus. Reading groups. Everyone gets free UPS devices to keep online during loadshedding. We are buying loads of books including ebooks, since people aren't accessing the library. I've done all this, but others might need very significant budget.*
>
> *This year our LMS crashed for most of May, which meant further adjustments to TLA. I started to use Teams for assessment but many staff did not want to spend the time recreating assessments that were already in a Moodle question bank and have decided to decrease the number of assessments or cram all assessments into a shorter time frame.*

Lecturers found it difficult to engage in high quality teaching and learning when students were not equipped with the necessary resources. Example comments include:

> *One can try to pursue quality teaching, however if your students do not have access to good connectivity and the high-end computers required for our discipline - it becomes incredibly difficult. Therefore - resources for under privileged students is vital - without it they cannot do the work.*
>
> *Remote teaching and learning should be tackled holistically. Students should be equipped with both hardware and connectivity solutions to be able to participate without discrimination.*
>
> *Quality of teaching could be enhanced in future by ensuring access to discipline appropriate devices and volume of data for both students and lecturing staff. (We need powerful devices and more data in the media and advertising environment).*
>
> *The quality of teaching and learning can be outstanding if proper gadgets are given to lecturers other than just laptops. For other modules such as Accounting and Maths, one needs to draw and write examples. With the laptops we are using, it is not possible to do some of the examples on the drawing board.*
>
> *My experience was that the students who were helped with laptops and data went on to succeed and thrive throughout the last year and a half, but those students who had to move back to specifically rural areas where connectivity is an issue even if the university provides them with the resources cannot succeed. The inequality of the country was evident and universities (especially resourced universities) did their best in supporting students, but there were students left behind.*

Many institutions provided students with devices and data. However, some challenges remained. These include data or website restrictions that prohibited lecturers from accessing certain required platforms; students using the data provided for non-academic purposes; Learning Management Systems not being part of the free educational websites students could access; and a need for training students and staff in devices and relevant technology.

> *Many students didn't have access to laptops, the internet, or wi-fi. Some students had only one laptop between a family and they have to "book" space on the laptop, making it difficult for them to attend Team/Zoom meetings.*
>
> *Most students were very resource-poor and lacked the workspace, physical and digital equipment to complete their tasks.*
>
> *Most students should not have data or device problems, as the institution provides free data, and has played a big role in ensuring that students have suitable devices.*
>
> *Students need access to unlimited data so that they can perform the tasks required to become an industry ready graduate.*
>
> *Data is not enough and is restricted to Radio and TV where lecturers are unable to download YouTube videos for students and themselves and yet you are told to upload videos for students. This is needed to support study material for students and staff.*
>
> *The teaching and learning quality is one sided. As a lecturer you can plan accordingly and upload all the information and slides but if students fail to commit their institutional data to schoolwork, all of that becomes invaluable.*
>
> *I feel strongly that if Blackboard can be a zero-rated / free site for all the students in our institution, there will be a higher online class attendance. One-on-one meetings will also be possible.*

> *It is important that all first-year students upon registering be provided with devices and equipped with training to use those devices.*
>
> *Teaching and learning were terribly delayed. When we started with teaching and learning, the assessment was delayed by almost a month because some students were not allocated laptops and data.*
>
> *Short, simple and easily accessible resources (YouTube videos for lecturers) would help us improve.*

Many lecturers were cognisant of students' lack of resources and provided work in ways that were cellphone-friendly. Some lecturers also used social media, specifically WhatsApp, as a platform for consultations.

> *Consultations are usually done via WhatsApp and explanations are written on the platform, videos are shared, and voice notes are done when necessary.*
>
> *Poor students or students in far-off places didn't have internet, but all students do have a cellphone, so I made use of WhatsApp groups to communicate with my students.*
>
> *Daily WhatsApp groups kept conversation going but also gave the student a sense of security that the lecturer was available beyond the online lesson. As Coordinator of the team, I would have regular "check ins" with student experiencing challenges with learning.*
>
> *I have enjoyed much of it, but my main concern has been student access and quality of assessment. We are a UOT which caters for many disadvantaged students who only have cheap cellphones as devices for TLA. This has meant adjusting everything to be as cellphone friendly as possible.*
>
> *Data remains problematic even though the university has provided students with data. Some students use their phones to attend meetings - which is fine; however it is impossible to try to complete specialised assessment tasks on phones. This is a huge challenge. Students in our course require computers with specialised software. Licences were provided for those who have their own laptops and desktops. Whilst the labs eventually opened for access, attendance now remains problematic. Some students have highlighted the affordability of transport fare to come to the labs every day. My major concern is: 'Am I being fair in assessment if not all students can do the work to the best of their ability and to meet deadlines?'*

Though students were provided with the necessary resources, some lecturers felt that there was still a lack in student engagement:

> *The university has provided data and other infrastructure resources to facilitate learning. However, students do not engage with the content and as a result they do not achieve learning outcomes. They believe that teaching is equivalent to learning.*

3.2.1.2. Adapting learning materials

Emergency remote learning and teaching required lecturers to be innovative in creating and distributing digital academic sources, such as class notes or presentations, with which students could engage either synchronously or asynchronously. Lecturers' reflections on the benefits of such digital resources included the ability to revisit materials at a later stage; believing that the quality of their teaching was enhanced through digital aids; having the ability to track attendance digitally; and optimising class time by balancing digital sources with deeper discussions about the work.

In contrast, others commented on the challenges they experienced with using digital materials to teach. Their concerns included students' lack of access to and engagement with materials, as well as a lack of engagement

in virtual classes.

Many lecturers commented on how they provided their students with voiced-over slides, or other forms of digital learning material. For the lecturers quoted below, recorded lectures gave students the option to rewatch/relisten to lessons. Recordings also allowed students to support themselves in their academic endeavours. Many lecturers also indicated that they made use of online videos to supplement their teaching. Example comments are:

> *The major benefit for me is that I should be in a better position to transcribe my lectures. I speak off the cuff with many applied examples at least it is recorded offering opportunities to write books or teaching manuals. Students who miss classes can go back an actually listen to the lecturers in their own time.*
>
> *The presentations were also available with a voice recording as a low data option for students.*
>
> *My approach to teaching did however adapt to pre-recording lecturers which students could download and listen at any time.*
>
> *I believe that quality teaching has been provided to students in the form of a variety of resources to master the content of the module, for example an electronic version of the textbook, study guides, PowerPoint slides, readers, video lessons etc.*
>
> *With courses requiring fieldwork and field practicals it becomes difficult. Videos and YouTube helped a lot, but cannot replace the actual engagement in practice.*
>
> *One good thing that has come about through the 'forced' transition to online learning is learning to actively incorporate alternative resources, which I have never 'bothered' about, e.g. YouTube videos, apps (although these only benefitted students with internet access and suitable devices).*

Lecturers' narratives provide a clearer sense of the improvement that took place in the quality of their teaching once they adapted and created suitable materials for students. Many lecturers also felt that they had to put in more effort when teaching remotely to maintain or improve the quality of education. Example comments include:

> *The rapid change to a new format might have limited the quality of teaching and learning, however once we made the change and developed appropriate materials, I believe the quality became better and better.*
>
> *Students had access to all the notes and additional resources outside the textbook, including recorded lectures and availability of the teaching staff. Judging from the engagements during training sessions, lecturers were putting in a significantly high amount of effort into ensuring that the quality of the lectures given was of a high quality.*

Lecturers made some effort to present study material in ways that did not necessitate their being physically present to explain the work. Example comments include:

> *All study material must be amended so that students can read and comprehend the study material without assistance of the lecturer.*
>
> *It allows one to develop more detailed rubrics, guidelines and support for students to engage in a degree of self-learning. In so doing, provided students have the necessary resources to their disposal to access online teaching-and-learning resources.*
>
> *I have learned to reduce the amount of material I give to students and expect far less from them. I carefully annotate readings with extensive explanations (which has taken many hours of extra work), so that students can use "built-in" notes in the readings to help them cope with new*

material. I give very flexible deadlines for handing in assignments, which makes marking really tricky, but hard deadlines just seem to ramp up anxiety for the class.

Being able to record lectures and use technology to map attendance were useful tools for lecturers to implement:

I am grateful for the ability of MS Teams to record lectures and keep attendance records (the register was always very disruptive in my class). Recorded lectures have been hugely beneficial to students who were registered up to two months late.

The recordings of every meeting and class, plus the attendance lists generated in Teams is invaluable and I think this makes a very big difference for both staff and students so that things can be caught up on if you had an emergency.

Some lecturers preferred providing students with video presentations and having live discussion sessions. This trend was also noted as likely to continue after the pandemic, thereby committing some lecturers to more permanently implementing flipped classrooms. Some example comments include:

I like to record my lectures as video presentations and have Q&A sessions with students after they watch my recorded lecture. Students can download video lectures and replay them many times. This increases depth of their knowledge.

Because of the nature of the module (engineering graphics) and Load shedding problems, videos and PowerPoint slides were made and posted for students on my tutor for them to download and watch and practice before the arranged time for the online class. This makes it easier for them to understand the content or know what they are struggling with before the online class, and therefore what they are still struggling with can be addressed during the online class.

Lecturers provided students with support materials that would benefit students' studies. However, some concern was raised as to whether students actually engaged with the study material or whether there was a general lack of engagement in virtual classes when providing students with a range of materials. Some lecturers also stated that their students struggled to find the electronic version of the prescribed textbooks, or that students did not use their study guides to navigate modules appropriately:

I have tried to provide as many additional resources such as videos, online tutorials and practice problems to facilitate as many students as possible, however, I have noticed that you can lead a horse to water but you can't make it drink. If the student is unwilling/unable to engage there is very little that can be done.

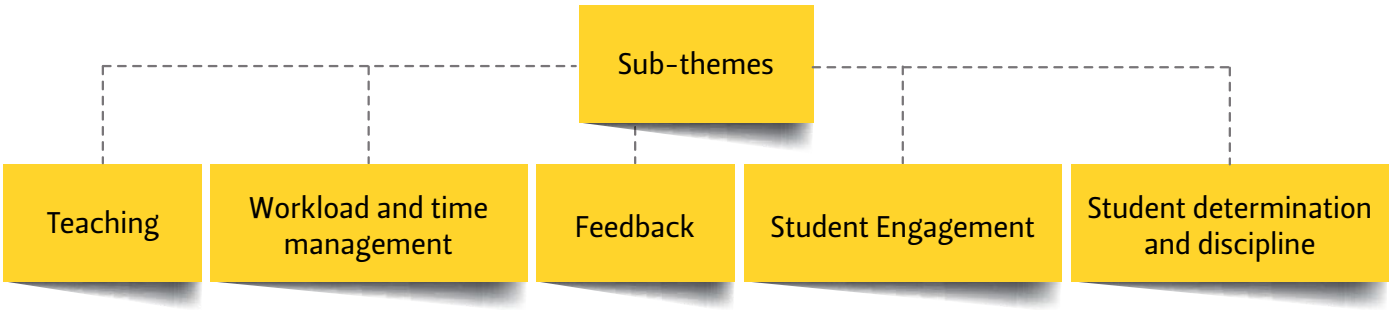
In classes, due to the need to limit data, we have been discouraged from hosting "too many" online classes in favour of pre-recorded asynchronous delivery, which makes it near impossible to determine if students are engaging with the materials and even more difficult to elicit responses.

Student took on jobs and listen to recordings of lectures after hours (or not). It is difficult to be sure learning took place.

Initially, I began with pre-recorded lectures whilst my students adjusted but this raised the issue that there was no engagement from my students directly.
I always incorporated visual elements, videos, viewings of documentaries, films etc. and this has resulted in students having to strictly rely on their textbook, tutorials and lectures for information and very little interaction.

Struggling to get textbooks in e-format was a big challenge too.

3.2.2. Adjusting pedagogical approaches



The sudden shift to emergency remote learning and teaching required lecturers to adapt their teaching approaches and content. The shift also had significant consequences on their workload and how they managed their time. This shift in focus also impacted upon other factors that play a key role in learning and teaching, including providing feedback as well as students' engagement, determination, and discipline. The sections below illustrate lecturers' experiences in this regard.

3.2.2.1. Teaching

In general, lecturers were overwhelmed with a significant increase in workload and found it difficult to connect with their students and keep track of their progress. While many lecturers still prefer face-to-face learning and teaching, there were many positive teaching experiences that resulted from emergency remote learning and teaching. These positive experiences are why the majority of lecturers believe that a blended approach to learning and teaching practices is best for the future.

Lecturers had to adapt to remote learning and teaching during lockdown; for many, it took a long time to adjust their thinking and teaching practices:

> *In the early stages of lockdown (March-June 2020), remote teaching and learning was extremely difficult as our students were generally without hardware, network, and/or data. I really had to improvise in teaching, learning, and assessment.*
>
> *I have adapted, but it requires so much more preparing and administering teaching and learning. Impact of lack of resourcing of students greatly impacts on progressing of content, as it is made your responsibility to individually manage students.*
>
> *We had to adapt quickly unprepared.*
>
> *Has opened my eyes towards institutionalising the e-learning and teaching approaches. Reflection and adaptation to the new normal and learning to adapt by yourself.*
>
> *The unexpected and drastic changes in our educational environment, as well as in many aspects of our lives, need us to not only adapt, but also to reconsider the purpose of education. We, as academics, must reframe our roles and teaching approaches and reconsider which technologies can actually meet the diverse needs of our students.*
>
> *More than 1 year later things are starting to ease up and I am starting to think more innovatively about my classes.*

Due to lack of student engagement, some lecturers commented that they felt disconnected to their students:

> *My teaching style has always been to use different engagement techniques to get students to be active participants in the teaching sessions. While my teaching style has not changed much, very*

few numbers of students bother to attend online lectures, and even fewer numbers participate in the online classes. Most times it feels I am all by myself with my lecture slides. I tend to answer my questions by myself despite students being logged on in the class!!

I miss the interaction with my students, hearing their ideas, seeing their faces and overall, the environment. Online teaching is a very lonely place.

Online teaching and learning doesn't allow for connection with the students, which is key for my module.

The 'connectedness' that is present with in-person face-to-face interactions is seriously missed and the pandemic has highlighted, for me, the importance of this aspect in the robustness of the T/L experience and made it very real, now that it has been limited by the ensuing conditions.

Law students benefit enormously from the kind of interactive teaching that I engage in in face-to-face teaching. We debate the law and students learn from one another and we can engage in higher order thinking skills like critical evaluation more easily and more thoroughly than in the online learning context. Students and I are more energised when they come to an actual class and engage with the material.

I also think that a lot of learning that happens in the daily face-to-face engagement within the learning community is lost in this approach.

During online classes, lecturers found it difficult to determine whether students understood the work or whether they struggled to keep up. This was because online and asynchronous classes severely affected lecturers' ability to draw on visual cues from students which signal understanding. Some example comments include:

As new students, you cannot even read their level of thought, body language and how they are responding to your lectures.

Personal interactions or attention was lacking in quality as seeing a name on a screen is not the same as seeing a face and being able to read more subtle ques that ultimately aid in enhancing the quality of teaching for example seeing if a student is shy can help you perhaps give them attention in areas of the work in a more empathetic manner, which is not required for other students.

Being able to get instant feedback by either simply observing their non-verbal behaviour, and/or asking them questions. I miss the informal communication that occurs during face-to-face teaching. I miss the instant feedback, the personal aspects of dealing with real people as opposed to faces on a computer screen. I miss the buzz I get when I teach face-to-face, the good feeling after a good lecture, and/or being able to help one or more students. Remote teaching is so impersonal.

Many lecturers had positive learning and teaching experiences, with some even claiming a preference for remote teaching. The adjustment to online platforms and integrating technology in to learning and teaching was much easier for lecturers who had been previously exposed to such experiences. For many, a positive outcome was developing digital skills and being more creative in their teaching styles. For others, the flexibility and convenience of online learning and teaching were positive outcomes of the remote learning and teaching experience. Some of the positive experiences of lecturers are shared here:

Although the shift to a new teaching and learning environment was overwhelming, I am proud of the lessons and skills that both my students and I have learned.

I LOVE the flexibility of the online platform, being creative in developing content, combining video, podcasts, texts, articles, pictures etc - creates more holistic concepts than just doing PowerPoint

face to face lectures, where time is wasted getting the class to settle down, and students disrupt lectures, spend time on their cellphones, walk in and out etc. I love the idea of recording my lectures, and students can watch multiple times in their own time. I love the online platforms which allow for such varied forms of assessments, assignments, group work, discussion boards, quiz etc - which cannot be done with traditional pen and paper exams. My students are reading the textbooks in far more detail. More individualised student attention with emails, discussion boards, MS teams, zoom meetings with particularly my postgrads. Great time saver not having to spend so much time travelling. No stress of whether my laptop will work in the venue with 300 undergrads waiting for the technician to connect the data projector.

One thing that stood out, was that I wrote aims, outcomes, terminology, and questions for each and every class for all my modules. That helped the students to focus on what is important.

Our department has been offering a distance program for some years so the transformation for us as academics was no problem.

I enjoyed teaching online in some ways as it lends to more creativity. You can do all sorts of other things like different platforms and assessments can be more strategic and include other aspects that broaden the horizons of students. Also, online webinars being available has broadened the availability of international knowledge for both staff and students.

It has shown me areas in which I can improve and boosted creativity in making sure learning outcomes are met. It really enforced focus on learning outcomes.

For lecturers, the quality of learning and teaching during emergency remote learning and teaching varied. Some felt that the quality of learning and teaching remained the same, while others were quite concerned about the lack of learning that seemed to be taking place. There were yet others who felt that the effort they put in to ensuring that learning took place actually made them better teachers. Some experiences are shared below:

It is much more taxing on one's concentration, and very difficult to keep track of everything. The loss of face-to-face contact is huge, and it definitely impedes my ability to teach well.

Quality varies at times because of the attendance and participation of students in online classes. The quality remained the same the only thing that changed was the classroom. it was beneficial for the student who might have missed the live session they were afforded the same opportunity to receive the lecture.

I feel that the quality of the teaching was the same as before, as all the work was still covered and there were now recordings of each lesson available as well.

The quality in general was good as it was the same way I would give it in class, however I just did it on PowerPoint voice recorded slides.

After a period of adjustment, the quality remained largely the same as with traditional teaching sessions.

Quality did drop but we insisted on some degree of face-to-face teaching & training around the patient. It's very important that skills are taught & these can never be by remote online teaching (but can be emphasised or clarified with theory).

Many lecturers still prefer face-to-face teaching over online teaching. Some activities that were done face-to-face were not possible during remote teaching, and many lecturers stated that face-to-face lectures cannot be replaced by remote teaching. Some of the lecturers' sentiments are shared here:

Although I personally adapted quite well to online teaching by prerecording lecturers and arranging contact sessions via Teams and Blackboard, it certainly was not as effective as having face-to-face lectures.

I believe that the quality of teaching although acceptable was not as good as face-to-face classes. As a teacher I would try to have more contact sessions so that the content can be discussed and debated.

I have learned that zoom etc can be a useful supplement to face to face interaction with postgrad research students. But it just cannot take the place of on-campus learning based on frequent interaction with peers and academic supervisors.

This is simply not working and there has been very little recognition of the fact that this is, in no way, a replacement for the teaching and learning which happens in traditional face-to-face higher education settings.

Remote teaching and learning can never replace face-to-face teaching and learning.

Teaching in the Visual Arts, I am not sure that there is really any way to replace face to face teaching as there are tacit and embodied skills required to progress in the Visual Arts (Fine Arts) Field.

Some lecturers stated that students also preferred discussions to be face-to-face, rather than in online formats.

Students feel more inclined to discuss work in a face-to-face situation.

Students at this university do much better with face-to-face teaching where they can engage with the lecturer.

Most students do not feel comfortable with online learning, they prefer face-face.

Generally, for most of my students, they need one on one interaction to deal with any academic issues that they may be facing.

I miss having face-to-face contact with students. Students have also mentioned that it is difficult for them to ask questions electronically and not have me physically there to explain to them.

The face-to-face class allowed for deeper discussion of difficult topics. There was time to work on a "safe space" and puzzle through difficult questions. I especially enjoyed discussions with the many students who walked with me after class, lined outside my office or sat in groups on the floor in my office discussing a concept.

In a face-to-face situation, the students would probably have asked for clarity by visiting the lecturer in the office or after class.

While many lecturers expressed a preference for face-to-face engagements with students, the SEP-TLF survey shows that 70% of academic staff prefer to continue in a blended learning format. This is mainly because lecturers recognise the value of incorporating technology into practice. Some viewpoints include:

Remote learning is a good idea when combined with face-to-face, using online learning alone is not a good idea especially for courses with practical components. Practical modules require the face-to-face interaction.

I am happy that covid19 propelled higher education into the online era. I do believe that online, flexible and blended learning is the way forward.

Future teaching and learning will take a blended approach where I can accept and mark assessments online. Should the conditions of the lecture venues not improve, I will also teach online even where face-to-face classes are possible (but have a consultation time for queries).

I have now become more comfortable with online teaching and most students seem to have warmed to the new normal. I guess going forward I can work with and would prefer engage with blended teaching and learning system.

There were many challenges at the beginning, for example connectivity (teacher and student), class activities, laboratory practicals, etc. But as time is progressing many of these challenges are being solved. It would help for institutions not to do away with blended learning going forward because with or without covid-19 I believe it's the future.

A hybrid option including block sessions alongside the online content would make the experience going forward potentially positive.

I feel the blended approach is definitely the way to go. Students adapted to this change and it safes them time and money. As a teach on a post graduate level students are comfortable with it although a cohort of students will prefer same face to face classes a few times during the semester.

3.2.2.2. Workload and time management

The transition to remote teaching was sudden, and lecturers did not have enough time to prepare content ahead of time. This created significant anxiety among lecturers, and they struggled to manage their time:

Well, if you could have material ready before a term starts, then you could spend all your time on deciding how to create activities that students will benefit from and implementing them. The problem was that it started so suddenly that we did not have time to prepare material ahead of time.

I am willing to experiment with more teaching and learning methods, however as indicated above, training and time are of the essence to properly implement these methods.

Lecturers further had to be cognisant of their time management as creating the additional study materials (videos/audios, guides, and extra reading materials) was time-consuming. However, compiling online study material was seen as a time investment since it allows time for student engagement. The additional administrative responsibilities of lecturers caused them to work additional hours. Lecturers' experiences are shared here:

Making Learning material/ videos and recordings of classes available work well but took extra time. Thus, material has to be provided in a class-to-class deadline and therefor, quality was often the victim of just getting material online.

I had to adjust to a much more informal way of lecturing and even revert to using WhatsApp's with voice notes at the beginning of the level 5 lock down period last year. I did however ensure that none of my students are being left behind. So, yes it took extra time, energy and input from my side, but with good outcomes in the end.

Generating the online content (lecture videos, online assessments, etc) was an enormous time investment, but the quality is generally good enough to reuse in the future. This means that time will be freed up to develop more effective strategies to stimulate student engagement and assessment methods.

While online teaching has challenged me to create some of the best assessments of my career, the administrative burden that it has necessitated has been extreme. I was routinely working 70-hour weeks in 2020 and have managed to reduce that to around 60-hour weeks in 2021. That said, the changes in assessment modality have required me to work longer days and weekends to meet my deadlines. This has left me with less time to engage with the students, and also to facilitate support activities for them in the courses.

It was exhausting and I had to work 16hours per day to stay ahead with the modules that I taught.

On a personal level, my research output has taken a considerable hit since remote teaching has come with increased administration. Additionally, marking takes far longer than on paper. This said, remote working has given me more time to be productive as my daily one-hour commute (30 minutes each way) has disappeared. I also work longer hours as I don't need to avoid peak traffic; I can easily continue working until 5pm or 6pm. This does, however, make it difficult to switch off sometimes and I might regularly find myself working until 8pm or 9pm and it is a struggle keeping weekdays and weekends separate.

Beyond managing their own time, lecturers had to teach students how to manage their time too. Example comments include:

To address the quality, we must teach students to take ownership, be flexible, manage time well and become critical readers and thinkers.

Most undergraduate students struggle with time management and self-regulation and especially now when there are few structures in place like contact lectures etc.

More time was spent teaching/ training those who "forgot or neglected" to learn when training was voluntary. This took away from the time that could be used for teaching. Time was wasted.

Remote teaching and learning has given students time and space to study at their own pace, in their own time, which helps them focus more, and thus I feel they learned well.

3.2.2.3. Feedback

Providing feedback to students is an important part of good pedagogical practice. During emergency remote learning and teaching, lecturers found it difficult to provide personal feedback to students. Additionally, lecturers relied on students' feedback to gauge their understanding of the content, and the appropriateness of their teaching techniques. Students provided both positive and negative feedback to their lecturers. However, because of the online format, feedback was often perceived as being mainly negative, since none of the usual interactions that would happen in a class environment, such as smiling, greeting or thanking the lecturer, occurred. Some lecturers believe that the quality of education can be enhanced if communication between students and lecturers is sound. An additional belief is that the quality of teaching could be enhanced if their colleagues evaluate their work. Some examples of these sentiments include:

I think quality could be enhanced if students communicate more, provide more feedback - a monologue is not effective.

The use of feedback from students helped greatly improve the quality of the teaching throughout the remote learning.

The quality of teaching was good despite the slow communication and feedback.
Feedback regarding these online sessions will be very valuable to a lecturer. You are sometimes left in the dark, because you did your best and receive no feedback from students regarding their understanding of the content explained.

Student's voice is critical, their feedback is vital for the lecturer to improve teaching and learning. Make use of various teaching strategies to enhance self-directed learning. Divide class into groups, group leaders are effective in the communication process between the lecturer and the students. Develop a toolkit for first-year students, how to survive.

The feedback from the students during 2020 has in my opinion, contributed to a more streamlined approach which is easier for the students and staff to navigate.

Teaching has become very difficult due to lack of feedback, and I'm sure that learning has become far harder too.

I think quality could be enhanced by having our peers evaluate our work and receiving more feedback from our students.

Overall, teaching was effective as judged from student feedback and evaluation.

The feedback from students have also been positive.

The student feedback at the end of 2020 for my own division was very positive.

Despite grumbles about workload, I had very positive feedback from most of the students.

Nevertheless, student feedback has been very positive, almost more so than before the epidemic.

I have received very positive feedback from my students.

My student evaluations are very positive and by all accounts it improved my first-year module.

Staff only get negative feedback and no positive feedback, as would normally happen in a class environment - smiles, greeting, thank you etc.

Students have really responded to personal feedback, it makes them feel like they have been 'seen', but this is not possible for big classes.

Giving feedback on assessments was challenging as it was harder to send individual responses to students as we would usually do. We have had to learn to give feedback in electronic format on our LMS which once we figured out how to do this was rather effective.

3.2.2.4. Student engagement

A lack of student engagement caused frustration for lecturers and demotivated them when they put in significant effort to help students cope with emergency remote learning and teaching. A lack of engagement further prevented lecturers from knowing whether learning took place or whether there were students who needed additional assistance. That said, some lecturers implemented innovative activities or assessments to engage their students, which showed some success and possible replicability in a blended learning environment beyond the pandemic.

Due to a lack of attendance and student engagement, however, some lecturers were not motivated to put more effort into their teaching activities. Lecturers were also left wondering whether students understood the content and whether there were students with learning disabilities who went unnoticed. Some experiences are shared here:

Students actually do not bother to attend live Teams lessons because they know that lessons are recorded and uploaded for future reference. This attitude demotivates me and diminishes my passion for lecturing.

Students are less engaged, they do not interact as they did in class, they just keep quiet until you are forced to just continue talking.

Also, the lack of student engagement makes one wonder if they understand the work.

Student engagement during online sessions was difficult to maintain, and it's impossible to know if students are actually paying attention unless there's a collaborative activity going on during the lesson.

Student engagement on the online platforms was extremely poor, so it was almost impossible to judge the students' progress and understanding of the subject matter, apart from through the formative assessments which, as stated above, had limited effectiveness in this regard.

Although we waved at the end of virtual lectures, I couldn't get to know each and everyone specifically. To me being able to identify every single student is important so as to build a relationship of trust with them.

Limited engagement with the students prevents one to identify those that have learning disabilities and in need of support.

Lecturers have shown great creativity in finding ways to engage with their students and assist the learning process. Creative solutions included: learning maps; online group work (using WIKIs); regularly updating content; developing interactive games; compiling assessments in a way that encouraged student engagement; and creating discussion platforms, amongst others. For some, the key to student engagement was also lecturer engagement. Some example comments are listed here:

Providing the students with activities to engage with the learning material proved to help.

New material/lessons were developed and uploaded on a weekly basis and students were orientated on the use of the online platform for their studies.

We created learning maps which planned out Learning, Activities, Marks and Time allocations, wrote the weekly outcomes, prepared and uploaded relevant warmers.

As a positive I have come up with (what I believe to be) interesting and authentic assignments to promote engagement, but the marking is very time consuming.

I believe online learning can take a place in the total educational package, but for earth science type subjects, I would advise that it be used as an information repository, a discussion platform, a site for interactive games or challenges, development of a WIKI, but not to replace lectures or practicals.

It has helped me to be more creative in delivering lessons and engaging students.

I enjoyed teaching online. When we are "back to normal" I will probably spend more time to supplement lectures with e-resources and change the lectures to be more engagement oriented and less "lecture." I was moving in that direction anyway, but the forced remote teaching experience definitely accelerated the process.

As much as I miss the face-to-face interaction, my student engagement and participation has gotten even better. I have had to find creative ways to ensure that the quality is still there and the student still experiences a classroom feel. Just to share, in my recent class a student commented to say that it is the first time in a long time that they are so engaged and that they feel like they are in a classroom. For me, this is amazing. It means something is working, students are engaged, students are talking. And we are making a difference irrespective of all that we are going through.

My approach in addition ensures that I constantly communicate with my students - not only to teach but to ask how they are - they appreciate this and ultimately engage more in 'class' and in online discussions.

I develop creative, interactive games simple enough for the students to participate in but designed in such a way that it is indeed a teaching tool.

In terms of the quality - touching base with your students sends the message that you care. In turn, you will see your engagement levels moving up. In terms of quality this is great. Having online forums is a plus - but you cannot simply just have a forum. You need to be involved in the process. Also, not just voice-over slides - that's not enough, we still need the live lectures as well. Always record the lectures so that students can go back.

In some cases, lecturers leveraged MS Teams or other online platforms to improve student engagement. Example comments include:

The uptake of MS Teams for "live" classes much improved engagement with the students and many were able to ask questions.

It is challenging but at the same time effective because it allows students to engage freely without fear as compared to face-to-face classes.

I did find that having a WhatsApp group as a support platform enhances students' interaction with me and increased their self-discipline and independent learning.

WhatsApp was most effective as students felt more free to communicate their responses in the group. It was used as a forum of encouragement and motivation as well.

Keeping lines of communication and engagement open with students on their terms (often WhatsApp/Telegram) while dealing with large groups (400-500 per class) has been a challenge.

I was a bit sceptical about teaching remotely because i cannot interact with the students directly, but I figured methods to engage with the students remotely such as chatroom on blackboard.

I think quality probably increased in our instance. We have a flipped-classroom approach, which research has shown to be effective.

I have mostly remote PG students, and they were struggling themselves with these issues. But we actually had more contact than before through regular online discussion groups, even if these were just checking in on how everyone was doing. There seems to be much potential in building small learning communities via online platforms, but we had to figure out things as we went along, without much help or support.

Students learned to use the Flipped Classroom and facilitation sessions were more insightful. During facilitation students engaged in discussions and you could even reach the more introverted students. Students learned to use Wikis for group work and blogs. Students brought the learning to the table. Students stayed in contact with me through emails and phone calls as well as WhatsApp groups and personal WhatsApp where they could ask questions when they were uncertain. I experience that students became engaged and self-directed.

Remote teaching definitely created opportunity for a different form of engagement, recordings and tools made certain aspects easier to follow and encouraged individual and group participation.

My experience has really been excellent. Students are embracing the on-line platform. All students participate effectively, even a student who would not normally participate in a face-to-

face interaction gets to participate effectively without being shy of his/her colleagues. It has been truly wonderful.

3.2.2.5. Student determination and discipline

Some lecturers were concerned about students' self-discipline and placed at least some responsibility for learning and teaching on students' shoulders. Examples of lecturers' perspectives include:

My main concern is the absence of self-discipline on the part of many of them.

The fact that recordings can be made on Blackboard is a plus, but then students need to exercise the self-discipline to access them when they miss scheduled sessions.

Students need the equipment and also need to be disciplined.

While some students excelled on their own, most reported a lack of motivation and engagement. More work needs to be done to get students to be independent and take their work serious.

Eventually the main problems were student self-discipline, student-staff communication, and staff morale (and everyone's mental health).

A lot of discipline could be instilled in students regarding their modules and attitude towards work schedules. This in return could make online studying a great success.

To improve learning, students need to learn better self-discipline. Some may require more discipline than others due to complex home life, but most needed more discipline and required better time management.

The ability of students to self-learn and self-discipline was poor.

Class representatives indicated that students were abusing their data and just having a "jol". They were unable to be disciplined about studying remotely, did not buy the textbooks, did not read study guides or e-communication, did not make use of the weekly consultation/support hour offered.

The students who wanted to learn, did. As with face-to-face classes, there were some who needed a bit of nudging and then got on with it, and others who just never did much of anything (and this is not just because of circumstances).

Unfortunately, the remote teaching means students are required to motivate themselves and manage their time.

Students are required to be self-motivated to success in remote teaching and learning.

It seems that independent learning and thinking are no longer possible and there is little effort from many students to read the recommended textbooks.

Some lecturers also commented that for blended learning to be successful, students would have to be able to self-study and become more independent learners. Example comments are:

I think students are becoming more self-sufficient and this is a positive development.

Students have to do a lot more on their own, but they are definitely overwhelmed.

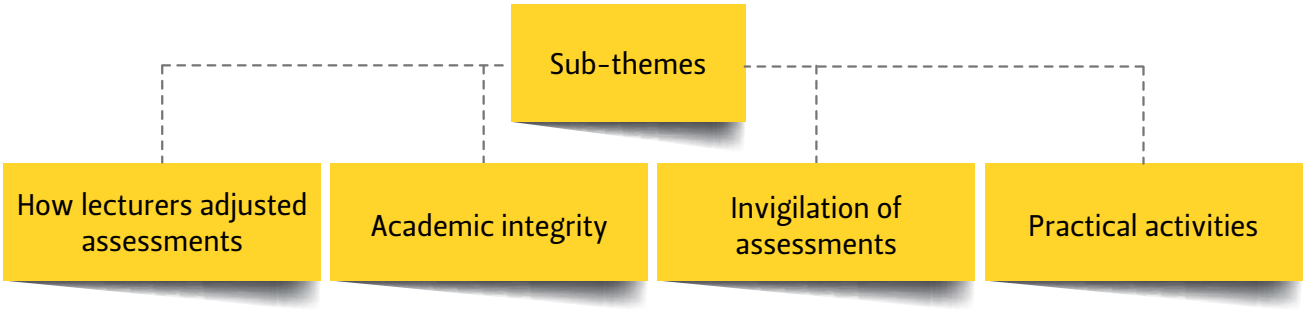
The whole experience confirmed my belief that, if a student does not take responsibility for their own learning, there is very little the lecturer (or the system) can do, to teach solid understanding.

The learning of students, especially where independent self-study is expected, is less optimal and non-compulsory activities is poorly participated by students, leading to unsatisfactory student learning which is reflected in their performance.

Personally, I feel online teaching is a wonderful means of teaching if you are dealing with students that are able to self-study.

The importance of self-study should be emphasized more.

3.2.3. Ensuring the quality of assessment practices



A significant number of academic staff who engaged with the SEP-TLF survey were concerned about the quality of learning taking place. Their concerns were also linked to academic dishonesty in assessments, which made it even more difficult to determine whether learning took place. The sections below illustrate how lecturers adjusted their assessment practices; how they expressed their concerns about academic integrity and the need for invigilation in online assessments; and how practical activities were impacted by remote learning and teaching.

3.2.3.1. How lecturers adjusted assessments

Lecturers had to adapt to a new way of creating assessments that are suitable for remote learning. The changes include changing staff and students' mindsets about assessments; experimenting with different types of questions; reflecting on the process of assessment; and identifying the core of what needs to be measured. Some of the lecturers' experiences include:

The first on-line assessment that I had to set felt like giving birth to a fourth child, because it was difficult to change my mind-set from HOW we assessed certain sections, into a way that could be done as effectively with a MC question, for example. I had always been of the opinion that Computer Programming cannot be tested on-line, without having to mark each answer personally, but when the situation forced us to do so last year, my thinking had to change. It has and I am glad to have gone through the whole process.

I used open ended, time based, project type assessments.

A re-evaluation of type of content - purpose of learning and clarity of outcomes. A rethink of ways to do assessment of and ensure credible reflective learning when doing practical work.

My approach to teaching changed drastically and the application of knowledge instead of the normal testing of a student's knowledge, formed the basis of all my online Assessments.
A mind shift is required to understand the amount of time that is required to deliver meaningful learning in an online environment and a shift in setting online assessments as open book

assessments and doing away with online quizzes as a form of meaningful assessment. I also think that the need for the exhibition of more understanding in assessment questions to counter cheating amongst the students is driving lecturers to consider their assessment more and think deeper about the types of tasks and questions that they set.

It has definitely forced me to develop materials that spell things out more clearly for students, and has made me re-evaluate the role of assessment.

I have changed my approach by including more information than usual in the study material, but I am compiling more complex assessments to 'friendly force' students to engage critically with the study material to be able to answer the questions.

I started thinking about how students could work on problems themselves, and most of the time I was surprised by the quality of work returned. I think I marked the best activity analysis assignments in all my 11 years at Wits in 2020, and I think that has to do with how the tasks are set up to take students through the thinking and analysis process - rather than just doing a lecture and expecting students to be able to apply from there.

It changed my approach completely. My objective is to help the students get insight and understanding and to develop creative problem solving skills. This means that my assessments must also reflect this and with online this implies assignments. I found that students prefer to "hunt" on the internet to find solutions to the problems they need to deal with. So I had to come up with assessment problems for which there would be with a very low probability of finding anything on the internet. That was extremely time consuming.

Many lecturers made use of continuous assessments during remote learning and teaching, and believe that continuous assessment can be used to determine what course work students do and do not understand. These lecturers noted that students learned more through assignments than tests:

The University also needs to seriously consider using continuous assessments to measure student performance over the semester to enable lecturers to pick up deficiencies quickly and also not have to rely on the final examination as much we do (e.g. ultimately we had to assess student performance based on the assessments the had completed during the semester as they couldn't write exams during lockdown. If we had planned with this understanding, I mind the assessments would have been more qualitative and covered different skills/knowledge). Lastly, invest in an online examination tool.

Weekly quizzes (multiple choice questions) ensure that students keep up with their prescribed work, and that they have a deep understanding of the learning material.

The major thing I struggle with is engagement. It's difficult to understand if the students are keeping up with the academic content and whether one needs to intervene. I have tried to include polling engagement activities and for the future, the students highlighted that more frequent assessments are helpful for them to understand their progress.

I think the teaching and learning was of a generally high standard as many lecturers, including myself, tried innovative ways to ensure that students grasped the content. There is, however, always room for improvement and I think with more continuous assessments you can determine what part of the work needs to be explained in another way to ensure students understand the work.

In the end, I know that my online assignments and interventions were BETTER learning experiences for the students than the originals (tests, reports and exams). I am proud of what I achieved, and despite grumbles about workload, I had very positive feedback from most of the students.

> *I found it relatively easy to switch from face-to-face teaching to remote/online teaching. My faculty has given me the option to assess my undergraduate modules continuously, which gives students a better chance of passing, seeing that marks are spread out more equally across a larger number of small assessments.*
>
> *They seemed to prefer the BB Collaborate recordings or the voice recordings. To ensure they are all continuously engaged, they wrote a small online class test after each unit.*
>
> *During semester one the world was such a mess my main focus was to try to force engagement so I did lots and lots of quizzes with MCQs that students could do repeatedly until they got them correct.*

Some lecturers compiled online tests through question banks, and limited the time given to students to write the tests in order to avoid cheating:

> *One way that I have addressed online assessments (which is specific to my discipline, statistics) is to use the exams package in R software, which allows one to create many randomised versions of each question and also automate the creation of the corresponding memos. These questions can then be deployed from R software to our e-learning platform, Blackboard. That has made a real difference because students cannot easily copy one another the way they inevitably do with take-home assignments.*
>
> *It was easy enough to set up different types of questions for online tests according to set levels of outcomes - in line with previous exams. This improved my second years' performance specifically.*
>
> *Short answer and essay question remain a challenge, because the students can copy from previous tests and memos. However, it just requires the lecturer to change the questions regularly.*
>
> *Have tried to make tests short so as to give them no time to cheat.*

In many cases, lecturers opted for multiple choice questions as this question-type forces students to engage with their study material. This also helped with the lecturers' workload:

> *I have discovered that where the subject content is suitable for assessing via multiple choice questions, this forces a student to read through all the study material because of the nature of the assessment.*
>
> *In 2021 my assessments are hugely simplified. A sharp increase in student numbers, to 900, has also informed the decision to simply assessments as there simply is not enough time to grade written assessments - the easier option is MCQs and online, self-marking quizzes. I have to conserve some energy for myself, not for research, but for my well-being. Research has been pushed to the very bottom of the list.*

In some modules, group assessments were an acceptable way of assessing students during remote learning:

> *Mixed responses to requiring students to work in groups (off-line). In some modules this worked really well, in others it didn't.*

Several lecturers granted students flexible deadlines for assignment submissions:

> *I give very flexible deadlines for handing in assignments, which makes marking really tricky, but hard deadlines just seem to ramp up anxiety for the class. A small core of the brightest students seems to manage regardless.*

Some lecturers were instructed to avoid giving certain types of assessments to students during remote teaching, and some lecturers stated that certain types of assessments are better suited to online contexts than others:

> *This year the faculty ruled that we were not allowed to use continuous assessment but had to return to a high stakes final exam, counting 50% of the course mark. I believe that this decision is unethical, and this has made me very cynical about my role in delivering remote teaching.*
>
> *I am focusing my efforts on delivering quality engaging teaching as effectively as possible, and I am doing what I can through formative assessment to encourage learning, but I do not believe that summative assessment can be meaningful or accurate under these circumstances. The addition of more technology (Proctorio, etc) only increases the illusion that we are controlling assessment, while increasing the burden of anxiety and inequality for students.*
>
> *I have also struggled with adjusting my assessments, but the students don't seem to have minded these. In fact, they enjoy the project-type assignments instead of tests.*
>
> *It has also pushed what was called "alternative" forms of assessment such a reflexive learning essays and asynchronous teaching into the mainstream and this one of the few good developments that have come out of remote teaching and learning.*
> *I had to move to 100% application and no theory at all because every student has access not only to their books but to the internet.*
>
> *The huge disconnect is with assessment, especially summative assessment, which feels disconnected with the goals of teaching and learning. We have to think about assessment in different ways if we are to continue to have remote learning. These punitive, antagonistic, high stakes, high risk assessments were problematic while we were doing face-to-face learning, since students and lecturers focus effort on these few activities. Now that we are remote they are a farce.*
>
> *When the right kinds of assessments were in place, good quality learning took place.*

Many lecturers were dissatisfied with the expectations regarding the remarking or reassessment of students whose results were unsatisfactory or whose assessments were not pass-worthy:

> *Students have developed the ideology that they are entitled to pass since they are learning remotely. As a result, they want reassessments for all assessments that they get less 50%. The institutional management is not making this easy either, since they seem to be bending to all students demands, in so doing, they forget the administration and strain this puts on lecturers.*

Lecturers showed concern regarding students' academic performance and whether or not students' marks reflected the quality of their learning:

> *The reported high performance by students reported during this time is not reflective of the actual learning that has happened, I believe, hence the call by our student body for online assessments. The Schools have not adapted their assessment tasks to the new space of remote teaching and assessing, and some student bodies have seen this loophole and are 'demanding' to be assessed in this fashion only as they may be believing that all the assessment tasks will be at the superficial levels that seem to have been adopted by some schools during this time.*
>
> *We have to admit, we are giving marks to certain students which they do not deserve, and they will get degrees for this. Unacceptable.*

3.2.3.2. Academic integrity

Some lecturers believe that the quality of the assessments was compromised during remote learning; they were concerned about the integrity of tests and assignments. Example comments include:

> *Students can work together during tests or exams, and that jeopardizes the integrity of assessments.*
>
> *The experience during 2020 was challenging, especially on issues of assessments. I believe the quality of the online assessment conducted during that time was compromised, which is still a challenge to date.*
>
> *Students can work together during tests or exams, and that jeopardizes the integrity of assessments.*
>
> *I cannot complain for now except that I am worried about the integrity of online assessments as students seem to be cheating during the assessments.*
>
> *I rely heavily on my ability to trust my students. But I often worry about the integrity of exams and tests. I've tried to adopt strategies that make it difficult for students to cheat undetected, but I am only ever 95% sure that nobody has cheated. For this reason, I try to structure questions that solicit critical and thoughtful responses, and that demonstrate student understanding and critical thinking, rather than knowledge acquisition and content regurgitation.*

Lecturers noticed that students copied and pasted information from their study material and other sources to answer assessment questions:

> *Not all students are attending, while their performance during assessment. They seem to bank on class recording and cut and pasting without proper reading and understanding of the question.*
>
> *Students proved very adept at transcribing the verbal component of recorded lectures, to the point that I received verbatim copies of my own words as exam answers. When asked to integrate information and apply it, students performed very poorly in assessment tasks.*
>
> *Quality suffered as result of students working together / copying during online tests.*
>
> *I thus merely set up MCQ and true and false questions. There is no point in setting questions requiring marking as the students merely copy from the internet.*

Lecturers implemented different strategies in an attempt to keep academic dishonesty at bay. For example:

> *The most difficult part of the online environment was developing assessments which were reliable and of the correct standard. Students still tended to cheat despite the use of the lockdown browser.*
>
> *I have improved my level and style of questions in assessing - less direct and more applied, which reduces the chance of copying and ensures that the pass rate is indicative of true knowledge acquisition. More can and should be done on this front though.*
>
> *Where written assessments could test knowledge and understanding, the quality of online assessments depended on assessing application and calculation type questions. This did manage to minimize students from "copying".*

3.2.3.3. Invigilation of assessments

Invigilation of assessments that are not face-to-face remain a challenge for lecturers, especially when students use cellphones, or when online assessments are open for a long period of time. Some concerns include:

> *The main concern is on how to make an invigilated environment for the assessment to assure that all of the summative evaluations reflect the actual performance of students.*
>
> *We need to develop tools to assess learning throughout eg quizzes and online assessments on a weekly basis.*
>
> *My biggest challenge at this stage is to get the institution's support to ensure security, validity and authenticity in the online summative assessment. The measures currently implemented include: 1) Timed assessments; 2) All students must write at the same time; 3) Each student receives a set of questions from a large pool of questions, ensuring they do not get the same questions; 4) questions are randomized; 5) One question at a time; 6) No backtracking is allowed. The only way I can ensure these measures are implemented is if the institution supports it. Currently, the most recent assessment instructions from the institution requires of us to keep the assessments open for 8 hours. This will seriously affect the validity/security.*
>
> *My only concern is on online assessments. We have not developed a fool proof way of assessing the students online where students cannot cheat.*
>
> *Additional layers added to security and monitoring esp for assessment purposes*
>
> *Only real issue is that students access the material mainly from their smartphones or devices and no proctoring or lockdown browsing is available on these devices during the taking of assessments.*
>
> *Online tests had to be opened for long periods due to poor access to remote areas where a high concentration of students reside. Most students used this opportunity to cheat the system due to a lack of security and monitoring.*

Many lecturers stated that there was an urgent need for invigilation software for online assessments:

> *Desperate need for invigilation software.*
>
> *If quality of assessment can be improved in terms of monitoring students' evaluations.*
>
> *In assessments, online assessments were held without proctoring software creating room for cheating. This creates serious challenges for subsequent modules.*
>
> *Proctoring is a huge problem.*
>
> *Students MUST use laptops with camera, not phones for classes. Then we can introduce proper proctoring and better functionality.*
>
> *Moderation centres around the country would be useful. Where students can go write proctored tests/exams without necessarily coming through to their institution.*
>
> *At least writing assessments in an environment with invigilation will limit the instances of academic dishonesty.*
> *Universities should invest in student devices to be able to load system that will unable or block students from accessing other sites when writing an assessment and recording the session of the assessment to monitor student activity at the time of assessment.*
> *Universities should invest in student devices to be able to load system that will unable or block*

students from accessing other sites when writing an assessment and recording the session of the assessment to monitor student activity at the time of assessment.

Utilization on recommended assessment practices to limit dishonesty in assessments were quickly implemented, but there was some trial and error in the beginning. Students are heavily resistant to the additional oversight and tracking that the LMS offers, and there is a heavy expectation from both the institution and particularly the students to 'do whatever is necessary' for students to pass.

3.2.3.4. Practical Activities

Where possible, practical activities had to be converted into online assignments during emergency remote learning and teaching. For the most part, however, lecturers found it difficult to transfer the skills and knowledge students develop in practicals to an online environment. Some of the challenges lecturers experienced are listed below.

Lecturers also stated that they did not have the tools to appropriately demonstrate experiments in the online environment, and even if they could to some extent do practical work online, having students physically present such work generally works better:

I do not have some tools to demonstrate some designs to students. It is difficult to adjust to online teaching when it comes to practical designs and laboratories. For students doing experiments in the laboratory is more beneficial than just watching them virtually.

I miss the practical application where I can model to the students.

Practical application by demonstrations is not possible and this valuable tool is posing a great gap in students understanding of the content.

I have also started giving them assignments that they need to present in creative ways, such as a video, advert, cartoon.. this way I know I am also helping them develop other skills.

Online teaching does not work at all for practicals. Most of my teaching involves practical work and I reverted back to in person teaching as soon as I could. I could see a definite decrease in student progress generally when teaching was done remotely. As soon as face to face classes commenced, they excelled immediately.

Lecturers were further concerned that remote learning would affect students' development of necessary practical skills and, as such, negatively influence their employability. Some examples of lecturers' concerns include:

In teaching of the science subjects there is no replacement for "hands-on" approach to practical work. The students will end up as theoretically skilled but lacking in practical skills. This will amplify the shortcomings inherited from school science teaching.

Students that are now engaged in practicals in Year 2 of their studies are completely unfit to work in a laboratory setting as confirmed by colleagues teaching in those modules.

The physical space of dialogue, interaction and learning with technology in a studio environment is very important. The experientiality of learning in a physical space greatly impacts on the development of knowledge and practical skill, and the participation between students in a conducive space proves beneficial.

It was, and still is, very difficult to engage in practical teaching practices which is a very important aspect for my module. This has led to practical sessions becoming more theoretical and directly

influencing the employability of the students in the near future.

I do not think there is one system that will fit all courses, you need hands on practicals for some very important subjects, that students need to master.
The practicals are also a concern. The students are way behind in terms of practical skills at third year due to having very few practicals last year. The class has also doubled meaning we have to split sessions over two weeks and decreasing the number of practicals we can hold. This will result in graduates with limited skills in the laboratory.

Most of the modules in the programme in which I teach are practical, or specialist studio based. These modules were impossible to teach remotely. The amount of theory that could be done online was not enough to make up for the practicals that were lost. Hard skills are what will get our students employed once they graduate, and these are not being given enough recognition.

Several lecturers from specific disciplines commented on the difficulties remote learning and teaching brought in terms of teaching practical skills. Example comments shared below are from visual and performing arts, natural and agricultural sciences, health sciences, and engineering lecturers.

Visual and performing arts lecturers experienced challenges when they presented their online classes:

In visual and performing arts, where many outputs are visual, work is diminished... more than that, core principles of live performance disciplines are eroded in an online environment...

I teach practical subjects, including 'Acting'. Teaching a student how to 'act' online is like teaching a person how to drive a car online. The students engage with material and online content as far as possible, but the knowledge they acquire remain cognitive - it is not embodied

The natural and agricultural lecturers stated that their practical sessions cannot be replaced with online lectures:

Finally, I definitely think that students are missing out on development in their practical skills, which cannot all be replaced by online content. Actually touching an animal and handling it throughout experiments cannot be replaced.

Remote teaching and learning is especially challenging to teach a student in biological sciences without having access to laboratories and physically working with biological material. This is a hands-on teaching experience, and for that you need to get real life exposure.

Health science lecturers were concerned about students' mannerisms around patients as well as their clinical skills:

Main concern around clinical teaching especially hidden curriculum, attitude, etiquette around patients, for health science students.

However, medicine is a practical hands on we somehow experienced decline in clinical acumen. Reduced face to face in 4th, 5th yrs initially esp 2020 was a negative. Students now at 6th yr show lots of deficiencies. We need Drs who are fit for purpose ie well trained, competent & knowledgeable to deal with health challenges and save lives!!!

I am not confident about the competence of the students who completed in 2020/2021 - our course relies mainly on demonstration of skills and face-to-face engagement at the bedside of the patients.

Teaching physical signs is a challenge. Use of skills centre during level 5 is totally inaccessible, this led to great loss of clinical skills. Innovation with paper cases did not truly do the trick as demonstrating clinical skills is a challenge.

The only challenge was the physical contact completing the empirical part of their studies due to various COVID restrictions. And to get permission to do interviews and practical work.

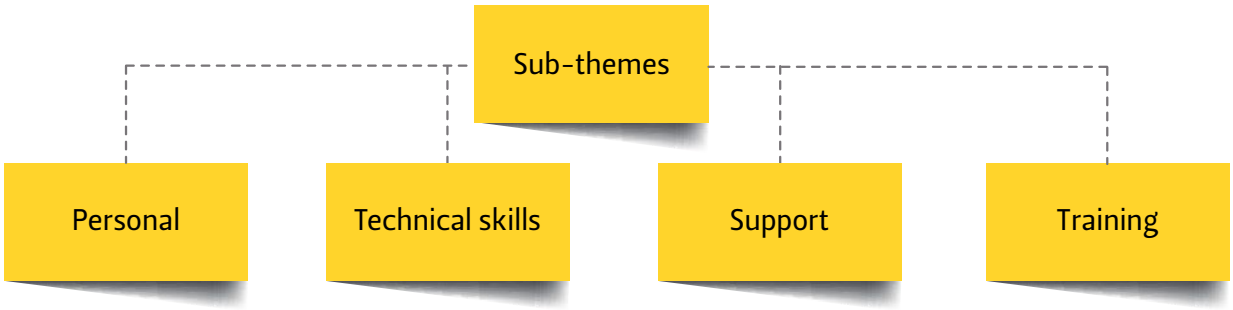
Students registered for Health Science modules have to prove their clinical competency in the real-life situation with real patients. I am very concerned that the over-use of virtual classrooms and online teaching will cause Health Sciences students to become Behaviouristic (task-orientated). Such a situation might have a negative clinical, follow-on, ripple effect on the Humanistic (person-centred) approach that are taught in a blended learning approach and which is the desired outcome for health orientated professions. In short, I do not think that online, virtual teaching and learning should become the "all and only" method of instruction for Health Sciences students.

Engineering lecturers could not assess their students' practical tests as this was not possible remotely:

Practicals and tests in the engineering environment cannot be delivered or assessed online, even in a simulated setting.

In future, the sciences/engineering must be allowed on campus for practical work - it is just as important as clinical work for medical students. It can be made safe.

3.2.4. Academic support and training needs



The professional development of lecturers is an important consideration for blended learning environments. Equally important to the effectiveness of lecturers in their professional capacity is whether they feel supported by institutions and the sector, both on a personal and professional level. The sections below explore lecturers' experiences in these domains during remote learning and teaching.

3.2.4.1. Personal

Many lecturers felt overworked and unappreciated by institutional management and students alike. As the primary contact with the institution, students expected lecturers to be available 24/7:

Honestly speaking, from the student's perspective it went well. However, I was burning myself out. Constantly concerned about the students, better explained as panic working.

During the first part of the year, I worked between 50 and 60 hours per week ON TEACHING ALONE. I had zero days off, including weekends, between March 1 and May 8th. I could not respond to emails from colleagues, I wrote no copy on any research papers, and I conducted essentially no data collection. Only teaching. And for this I had to accept a pay freeze (actually a 5% pay cut factoring in inflation) despite enormous rises in my workload and rises in the costs of consumer goods, such as electricity and internet, that I am paying for the University to use.

Mainly getting my lectures online and learning the online system (I had to take focus drugs to achieve the required outputs and there were times in the year when I did not have a rest day in several months).

I think that I have developed a lot during this time but I don't think that we get sufficient support as academics. We are at high risk of burn out.
Often, I worked until 00:00 or 3:00 in the morning, never really switching off from work. We also were not informed that we could take leave during lockdown, and our academic year was extended during December and into the new year, resulting in staff not having proper breaks and rest for over a year now. I'm feeling the effects of that now, bordering on burnout (if not already there).

During lock-down I realized that I cannot work an 8-hour work-day when working from home. I was getting emotionally and physically drained, and I asked my line-manager if I can only work 4-5 hours. I realized I get more done in 4-5 focused hours, while still maintaining emotional health, than in trying to work for 8 hours and burning out.

Students demanded 24/7 availability and became rude or even abusive with any attempt to enforce boundaries in terms of my time.

NO PERSONAL FREE TIME…WhatsApp, emails, SMS's and calls any time day night and over weekends…just no more respect for personal time. Most of us are burned out and no holiday to take a break…just going on and on and on!

A lot of extra work, and constant stress due to being forced to learn new tools at very short notice, a catastrophic syllabus, bullying from the side of administrators, no vacation, cable thefts, load shedding, water cuts.

Many lecturers struggled with time management especially when trying to balance work and their living environment:

Time management has been a personal challenge for me because home is a designated workspace now and there are no boundaries between family or students. Work takes longer hours now and the things I was supposed to work on (Research, PhD) now require extra motivation - It is also very difficult to focus with family around, emails and administration, students sending WhatsApp messages at all hours. It requires more time to focus, compared to when working at the university. The environment isn't as conducive at home.

It is difficult to determine a time when the workday ends and family life begins.

It was a good experience for me, accept that when you are working remotely more hours can be spent than face to face, challenge of balancing work duties and home chaos, struggling with office equipment.

Institutional wellness/ work-life balance aspects are band aid approaches…. no true adjustment in performance metrics/ requirements in my space…. they just place more responsibility on me to: get rest, exercise etc when the work demands do not allow for the time to be living a balanced life. I would not have got through my work in 2020 if I had not worked every weekend and late nights.

Access to library resources for students was also a problem as was the fact that boundaries between home and work blurred and I regularly worked 14 to 14 hours per day for seven days a week. I even developed circulation issues as a result of this. I feel I have been more of a deliverer of facts than a facilitator of discovery and critical thinking. Teaching no longer gives me joy.
Remote teaching has made it impossible for me to have a work/life balance: I constantly feel guilty about not working when I am cooking for my family or doing household chores, and the conversely, I feel guilty about not taking care of the house and my family when I work.

Lecturers who have young children found it challenging to work and keep their children entertained/busy at the same time:

> *I teach from home with two young children (2 and 6 yrs) and my husband goes to work most days. If the nanny is not available (travel ban, sickness, self-isolation etc), a lot of the responsibility fall on me to teach and entertain them during the day.*
>
> *I was able to implement good teaching methods online because of previous experience (Fees must Fall), but the isolation was a problem. So too was trying to teach from home with a 1 year old and a 4 year old. I had already moved to a flipped classroom/hybrid approach, so the technical side wasn't the challenge, more the mental side.*
>
> *I tried from my side to maintain the same quality teaching as during face-to-face teaching. The most challenging factor for me was work/life balance and my other responsibilities as a single parent.*
>
> *I found the work/family life balance very difficult during the higher levels of lockdown. With two small children and schools being closed it was almost impossible to work during the day. I did the majority of my work in the evenings when my kids were in bed. This meant I was working weekends to desperately try and keep up.*

Many lecturers experienced mental health issues, including increased levels of stress and anxiety. Lecturers also noted that their students were not coping well mentally. When they became aware of students with mental challenges, some lecturers tried to adapt their teaching techniques to accommodate the students. Some example comments are shared here:

> *The pandemic hit everyone hard, the psychological effect is severely underestimated.*
>
> *I have never struggled with mental health issues, but since online teaching I have had to deal with significant mental health challenges.*
>
> *It is very lonely. The lack of student engagement feels as though I am speaking to myself the whole time. I question my sanity at times.*
>
> *The effect of my mental health and work life balance was very negative.*
>
> *My entire work and social life happening on a screen is detrimental to my mental health.*
>
> *Mental health and students requiring time off due to suicide attempts seem to indicate that they are not coping well.*
> *Mentally, it has been very challenging, both for me and students.*
>
> *I also became vastly more aware of approaches to benefit individuals with ADHD, autism, etc. It has made me more vocal about content that has not changed in decades or has degraded as lecturers come and go in the module reducing and forgetting the original point and vocal about needing to be upgraded to fit with the original learning outcomes.*
>
> *Furthermore, our institution is for contacting teaching, so all of these changes are adding stress and there is so much administration required from the academics.*
>
> *The mental health of academic staff seems to be low on management's priority list. I have been struggling with depression and debilitating anxiety due to my heavy workload for more than two years now.*
>
> *Preparing and recording online lessons takes up significantly more time than contact lectures*

do, which also adds to stress and fatigue.

The teaching workload and stress levels are immense, whilst the demand to publish research has not diminished.
I have also experienced severe mental health problems, and I know several of my colleagues and students have also. We are working under a great deal of pressure and uncertainty.

3.2.4.2. Technical skills

Lecturers had to learn how to use certain technological tools for remote teaching, and many struggled to cope. However, many lecturers were positive about the fact that, although adapting was challenging, they learned new technological skills:

I had to learn multiple technological tools that will enhance my teaching and delivery whereas at the same time improving how best to develop content that is easy to consume by students.

Quality is dependent on your own approach if you put in allot the transition was not bad at all. If lecturers are digitally literate and use the learning management systems, it improved the functional usage of the systems. It is a learning experience that can only happen situationally.

I have grown significantly in respect of technology. 15 months ago, I would never have imagined that I could achieve the things I now do with my laptop.

I think many lecturers did their best to learn how to navigate and use the synchronous and asynchronous learning management systems.

As an older staff member, I had to embark on a steep learning curve in terms of technology.

I also think that there is a vast variety of skills - many colleagues seem to be lacking even basic Microsoft skills. And staff are often less well-versed in navigating online LMSes than students!

No orientation or guidelines were given. I had limited knowledge of the LMS and no knowledge of zoom or teams, but I had to teach myself to use these platforms so that I could engage with my students, and I am grateful in a sense that the situation forced me out of my comfort zone.

Although a major challenge to adapt and learn all the systems (as well as changing from Blackboard to D2L within this difficult situation), in hindsight it was good to be forced to learn new technologies and learning strategies for the future and permanent changed working environment.

Overall, remote working has come with considerable challenges, but it has forced me to learn new skills, serve my students more efficiently, and given me a clearer sense of myself away from the office.

3.2.4.3. Support

Some lecturers adapted well to remote teaching with the support or assistance of tutors and institutional support units. However, others commented on the need for administrative support:

I adapted and managed well; my institution made much support available, e.g. paid tutors.
With large numbers, we should have access to more tutor support to engage students in smaller groups to facilitate student learning.

More junior staff support is important.

Marking mathematics online is difficult. If the university has a bigger budget and can appoint more staff, it will help a lot.
During 2020, I was allowed to take my desktop home and I received invaluable technical support from the library technical support team.

The transition was difficult, but due to support from the institution it became manageable.

The teaching and learning support was excellent but management really couldn't care how the job got done.

With our first-year classes, the class numbers are high so it is difficult to manage these in an online environment because there is limited administrative support. I feel that online learning requires additional administrative support.

Administrative support is very crucial for lecturers because there is just too much work, and it is impossible to keep up with the administrative demands of remote teaching.

Some lecturers commented that they need support in terms of their wellbeing, even beyond the pandemic. Some experiences are shared here:

I feel like I am expected to deliver quality teaching, show compassion towards my students and their situations, produce publications and develop as an academic but receive little to no support in meeting my job requirements. I fear for my and my colleagues' mental health every day - I am afraid of applying for more leave (even though I seriously need it) because it would mean an even heavier workload on colleagues who I believe were burnt out even before the pandemic arrived in SA.

Theoretically, the University provides support for mental and physical health issues, but when I tried to access help for deteriorating mental health, my request was rejected.

No support for well-being of staff.
More continuous support is needed in making sure lectures are coping. As well as checking their wellbeing, as they're also affected by Covid 19.

While many lecturers felt supported by institutional support structures, they did not share the same sense of support from institutional management. Some lectures commented on the poor communication between management and lecturing staff, the lack of clarity regarding instructions, and the need for more transparent and regular conversations between institutional structures. Some example comments are shared here:

Academics were forced to print what was termed learning materials which later became a heap of printed PowerPoints. To me, this was a waste of resources as the printed material would not constitute quality learning material for students. Many academics cited that they were not prepared and it was exacerbated by a lack of clear guidelines from academic leaders as to what was needed.

As a lecturer, the lack of clear communication from management structures was frustrating and the additional workload linked to constant reporting was challenging.

Tone of communications from senior management has been aggressive and threatening, rather than supportive, which exacerbated the stress and anxiety of a very difficult and unexpected year.

There's a tendency to rush into existing strategic plans pre-pandemic which had not taken the pandemic conditions into effect...and expect the same results... there's an aggressive drive to

meet expectations which shift the focus from caring and mentoring the students but rather more attention to planned performance management programs which force a self-centred attitude and behaviour on all academics. This corrupts the academic project in ways that cannot yet be measured. What isn't even being discussed and is the elephant in the room, as the increasing trend for online based courses which are competing with the brick-and-mortar institutions course offerings... this is not being discussed with the lecturers and there is no apparent strategy for how this will be managed in the near future. Another case of side-lining on the people responsible for the core business of the institution by those supposed to be providing leadership and guidance.

Frequent communication between staff and management to listen to concerns and needs of lecturers.

Management was largely uncommunicative about how we should proceed.

Administrators at my institution have provided no support for these troubled times, and most of them keep repeating lies about the efficacy of online education despite real data contradicting them (e.g., high pass rates, lack of plagiarism).

Many lecturers commented on how they went about supporting their students. They assisted their students by helping with technical challenges; providing feedback; encouraging good work ethic; increasing the amount of communication on different platforms; and providing emotional support. Some experiences are shared here:

One of my students didn't know how to post a question on the forums for the LMS - so they didn't ask questions for an entire semester! I have realised that as the lecturer / course convener, we need to be much more active with online learning. With face-to-face, students will come speak to you after class or when they see you in the queue at the cafeteria. That doesn't happen - and students are shy / anxious, so don't reach out. I am trying to more actively communicate with my class - but it can be hard to keep up with emails.

I do reassure students a great deal and often get feedback that they are extremely relieved that there is a sense of support.

Encourage a work ethic in which students know that they as young adults are completely responsible for communicating any issue with lecturers.

Perhaps one of the greatest influences that remote teaching has had on my own teaching approach is an increase in communication with some of my students.

I went out of my way to accommodate students and organised private Zoom sessions with individuals.

Most of my time is spend helping students on WhatsApp, answering inquiries from students.

As part of the learning design we build in continuous "Pulse Checks" into the module where we asked students how they are doing, coping, their learning needs and how we can support them better etc. From the feedback we received it was clear that our students had sufficient guidance and support to complete the module.

Overall, the migration to online teaching platform translated into a significant increase in my workload and a need to provide the students with more support, both academically and emotionally.
Students don't normally give feedback to us and some only do so when they have challenges in meeting deadlines, I find myself having to also be involved in students personal issues at home to facilitate learning. This has taken a toll on me and I am also doing so much administration that I am falling behind with other tasks.

The biggest challenge during 2020 was being an emotional support to students and colleagues and having to deal with some serious mental issues on the side of the students.

I teach at the postgraduate and staff development level, so became an unofficial 'counsellor' for many of my 'students'.

A lot of time was spent trying to motivate and encourage students and trying to assist with issues and their general digital illiteracy. As a programme coordinator I often had to do the same for the staff members in programme.

Commenting on support needs beyond the pandemic, lecturers mentioned the need for technological support and resources to appropriately enable blended learning and teaching. Example comments include:

If we have to continue with remote T&L into 2022, I really suggest additional support / bridging initiatives for incoming 1st year students, as well as support with transitioning between the 1st and 2nd year of the existing / 2021 cohort.

I find that support for staff is dealt with as an afterthought, and that the upper structures of the university are disconnected from the coalface.

Overall, more institutional support is needed to create the time and resources that academic staff need to improve quality in future iterations.

We need more technological support through access to latest hardware and software as tools of the trade.

I think a better IT support structure would make a big difference.

Adequate IT support for academic staff. IT specialist should be employed to design discipline specific (appropriate) internet tools for academic staff to use for teaching.

3.2.4.4. Training

Some lecturers completed training courses prior to or during remote learning and teaching. Training mainly covered topics such as using digital platforms (including institutional Learning Management Systems); online teaching strategies; and conducting assessments. One lecturer mentioned that they found it challenging to receive training on these topics, and then immediately implement the strategies afterwards:

I made sure that I completed sufficient training courses for online teaching so that I could deliver the same excellent product that I did in class.

Training is still continuing on weekly basis on using different teaching platforms. I am now able to convert from one platform to another to cater for the subject at hand depending on the content being presented.

Further training and access to the online platforms might enhance student performance and the quality of T&L.

Due to teaching senior students already somewhat familiar with the LMS system, and personally implementing certain learning and teaching activities suggested and workshopped by the online workshops conducted by the Institution's Centre for Excellence in Teaching and Learning (CELT), the quality of teaching actually improved in my particular instance.

As we continued to attend workshops and research and practice different methods of assessing students, we kind of found better methods of testing them which improved the quality to a greater extent.

I had attended various short courses and workshops in integrating technology in TLAs (eLearning). Hence, I used all the knowledge gained therefrom to adapt to the technology-based remote T&L. I still have a lot to learn, but seldomly took the time to sit and struggle to learn how to use new technologies. The training provided by the university was generic and often in large groups, and afterwards, very little support was provided.

Our university provided training opportunities for transitioning to an online platform for T&L. I did all of the training and am grateful for the opportunity.

My institution had us register for 3 blackboard courses to get skills to teach online. The courses were enjoyable and skilled me with the ability to build courses online, conduct synchronous classes effectively and engage the students and quality assess the students.

Quality pf teaching could have been compromised in the beginning but as more LMS system training was offered it became much better.

However now in 2021 after the necessary training and support, teaching and learning remotely has been much easier.

With the training support offered by my institution to both lecturers and students there was some improvement.
Teaching quality was adequate for the course as the sufficient staff support and technological training was offered by [my] university.

Like I said earlier on, I was already an eLearning champion before the pandemic, hence I did not face any challenge when we were forced into remote learning. As if I knew that there will be a disruption to the traditional approaches to T&L, I had attended various short courses and workshops in integrating technology in TLAs (eLearning). Hence, I used all the knowledge gained therefrom to adapt to the technology-based remote T&L.
It was difficult to go on training at the same time implementing the learnt skills as we continued. This however became easier in 2020, as I gained more experience and was confident on what to do. Although I am still learning various means of improving the teaching and learning processes, the quality is much better.

The training needs for a more normalised, blended learning and teaching environment that were listed by lecturers include the need for policies and guidelines to guide learning, teaching, and assessment; learning and instructional design; optimising support structures, such as digital library resources; adapting curricula to different learning and teaching modes; improving the quality of learning and teaching; and developing the skills needed to navigate technology. Example comments are:

Teacher and student training needs to be prioritized by the university to assist lecturers to adapt to the new normal

Fast transition with little support. Need training.

There are no concrete policies and guidelines on how to administer remote teaching and learning, as well as, and especially on effective and credible assessment methods.
Staff support and training that is specific and needs based - but there also needs to be sensitivity for these interactions not to be during the working day.

The TLDC mistook training academics on the usage of LMSes as quality eLearning. To improve, the institution must have an eLearning Strategy, employ Instructional Designers who will assist academics transition their TLAs to online platforms and also train them on instructional design.

Since this was emergency implemented, very little could have been done to prepare for such a situation but going forward ensuring adequate infrastructure (reliable connectivity in residences and campuses), sufficient data allocation, social media etiquette training (students abuse things like class WhatsApp groups), lecturer in-depth knowledge on online teaching tools and lastly student knowledge and training on online library resources would help to enhance would go a long way in improving the quality of teaching and learning.

It is imperative that institutions pay acute attention to skilling staff/teachers to navigate the learning systems in institutions and not pay lip service to the training.

Continuous training and upgrading of electronic systems as well as exploring new teaching strategies e.g. utilising whiteboard and other available apps might be worthwhile for the future.

Need training on how to adapt course content to online environment and how to get a true reflection of retention in online tests.
In order to improve the quality of teaching and learning, training needs to be provided to both academics and students - how to teach and how to learn in this environment.

We are not equipped, be it in training, experience, institutional culture or infrastructure, for remote teaching. Few academics are formally trained teachers. Most have gained whatever teaching skill we have from practical, on the job experience. Such experience is 'hard wired' into those based at a residence university.

Staff needed ongoing training (not during a pandemic) to move to remote learning (both in teaching and designing materials). Institutions need dedicated departments for this, not just as an add-on to ICT or CLTD sections.

A multimodal learning manual was developed to overcome any uncertainty, indicating the adapted curriculum, timetable and year with all projects, deliverables, competencies, outcomes, assessment, class, consultation times and study guide. One comprehensive document providing all necessary information and learning material also linked to online platforms related to study material and learning strategies. Transparency, planning, forward-thinking, mentorship and passion towards new forms of teaching and learning and student development are key factors of success. Different approaches to online learning, making use of online learning management systems, making a video demonstration channel, using short videos lectures with consultation times and Q&A sessions, readily available material, availability of lectures and demonstrations, peer reflection groups, interactive demonstrations and one to one consultation and mentorship had a successful impact.

Section 4: Sectoral capacity and planning

All student success efforts are dependent on an enabling environment. This section reflects on the state of academic staff and enrolment planning as key aspects of an enabling environment for student success.

4.1. Student-staff full-time equivalent ratios

Table 13 and Figure 43 show the student-staff FTE ratios by university type for the years 2018 to 2021. At traditional universities, the ratio remained stable at around 21 across the four years. Comprehensive universities experienced a decline from 26 in 2018 and 2019, to 24 in 2020 and 2021. The ratio increased every year over the period 2018 to

2021 for universities of technology – from 28 in 2018, to 30 in 2019, to 31 in 2020, and to 33 in 2021. UNISA showed quite steep increases in the student-staff FTE ratio, from 46 in 2018 to 64 in 2019, increasing considerably to 83 in 2020, and declining to 72 in 2021. In total, the student-staff FTE ratio increased from 28 in 2018, to 29 in 2019, with a further increase to 31 in 2020, and a decline to 30 in 2021.

The lowest student-staff FTE ratios in 2021 were at SMHSU (7), WITS (13), UCT (14), RU (15), and SPU (17). Since UNISA is a distance university, its ratio was the highest at 72 in 2021, which is significantly higher than the 46 recorded in 2018. Other universities that had high student-staff FTE ratios in 2021 were CUT (43), MUT (42), UFH (35), DUT (35), TUT (35), UZ (34), and UFS (33). Universities of technology generally had higher student-staff FTE ratios than the other university types. The student-staff FTE ratio is seen as an indicator of the university's resourcing; lower student-staff FTE ratios are associated with a higher quality teaching and learning experience. It is related to the percentage of postgraduate versus undergraduate enrolments due to the supervisory requirements at postgraduate level. It is also related to the mix of enrolments in CESM categories, where the staff requirements differ for the various CESMs. CESMs that have laboratory or workshop requirements necessitate lower student-staff ratios. Visual and performing arts is also an area where a low student-staff ratio is required. The needs of staff and associated costs with lower student-staff cost is recognised in the funding framework's funding grid for teaching inputs. CESMs with lower student-staff FTE ratios are more costly to offer and are therefore in higher funding categories.

Table 13 Student-staff full time equivalent ratios by university types

University	University Name	2018	2019	2020	2021
Traditional Universities					
UCT	University of Cape Town	12	13	13	14
UFH	University of Fort Hare	36	35	35	35
UFS	University of Free State	28	30	34	33
UKZN	University of Kwazulu-Natal	23	28	25	23
UL	University of Limpopo	27	25	26	25
NWU	North-West University	29	29	27	25
UP	University of Pretoria	26	25	24	25
RU	Rhodes University	15	15	15	15
SU	University of Stellenbosch	20	20	20	20
UWC	University of the Western Cape	21	23	22	23
WITS	University of Witwatersrand	14	13	13	13
Traditional Universities Total		21	22	21	21
Comprehensive Universities					
UJ	University of Johannesburg	26	26	24	24
NMU	Nelson Mandela University	28	27	27	27
UNIVEN	University of Venda	30	29	27	25
WSU	Walter Sisulu University	33	33	28	29
UZ	University of Zululand	42	41	37	34
SPU	Sol Plaatje University	15	18	18	17
UMP	University of Mpumalanga	22	27	28	29
SMHSU	Sefako Makgatho Health Science University	7	7	6	7
Comprehensive Universities Total		26	26	24	24

Universities of Technology					
CPUT	Cape Peninsula University of Technology	24	24	25	24
CUT	Central University of Technology	40	39	39	43
DUT	Durban University of Technology	33	37	37	35
TUT	Tshwane University of Technology	25	26	31	35
VUT	Vaal University of Technology	26	28	27	28
MUT	Mangosuthu University of Technology	41	42	42	42
Universities of Technology Total		28	30	31	33
Distance University					
UNISA	University of South Africa	46	64	83	72
Distance University Total		46	64	83	72
Grand Total		28	29	31	30

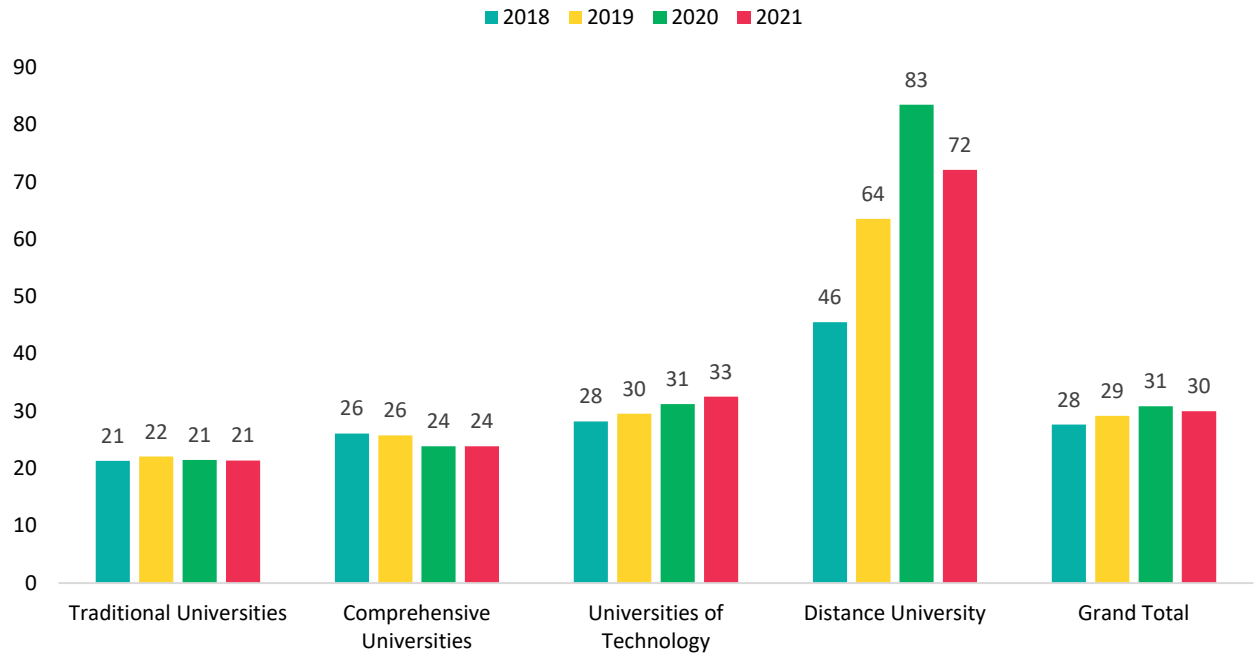


Figure 43 Student-staff ratio by institutional type

Table 14 shows student-staff FTE ratios by CESM. The student-staff FTE ratio for Public Management and Services and for Education were the highest in 2021 (56 and 52, respectively). Other high ratios include: Business, Economics and Management sciences (45); Law (44); Communication, Journalism and Related Studies (42); Psychology (41), and Computer and Information Sciences (40). The lowest ratios in 2021 were recorded for Military Sciences (1 – arguably because of limited offering of this field); Health Sciences (12); and Visual and Performing Arts (17).

Table 14 Student-staff FTE by CESM

	All universities (UNISA excluded)			
	2018	**2019**	**2020**	**2021**
010 Agriculture, agricultural operations and related sciences	22	23	22	21

	All universities (UNISA excluded)			
	2018	2019	2020	2021
020 Architecture and the built environment	24	25	24	24
030 Arts, visual and performing	16	17	17	17
040 Business, economics and management sciences	45	46	45	45
050 Communication, journalism and related studies	42	42	40	42
060 Computer and information sciences	36	37	39	40
070 Education	53	55	52	52
080 Engineering	24	25	24	24
090 Health care and health sciences	12	13	12	12
100 Family ecology and consumer sciences	20	26	25	25
110 Languages, linguistics and literature	30	32	32	32
120 Law	44	44	44	44
130 Life sciences	19	19	20	19
140 Physical sciences	21	21	20	20
150 Mathematics and statistics	29	29	26	28
160 Military sciences	0	0	1	1
170 Philosophy, religion and theology	27	25	25	25
180 Psychology	44	45	44	41
190 Public management and services	67	62	58	56
200 Social sciences	32	33	33	33
Grand Total	24	24	24	24

Table 15 shows UNISA's student-staff ratios. UNISA had high student-staff ratios in certain CESMs, including Education (153 in 2020), Law (285 in 2021), Psychology (183 in 2018), and Public Management and Services (158 in 2021).

Table 15 Student-staff FTE by CESM for UNISA

	All universities (UNISA excluded)			
	2018	2019	2020	2021
010 Agriculture, agricultural operations and related sciences	15	34	84	39
030 Arts, visual and performing	21	19	33	46
040 Business, economics and management sciences	25	26	46	60
050 Communication, journalism and related studies	8	32	73	65
060 Computer and information sciences	51	114	96	76
070 Education	143	194	153	130
080 Engineering	23	29	21	31

	All universities (UNISA excluded)			
	2018	2019	2020	2021
090 Health care and health sciences	43	67	63	97
100 Family ecology and consumer sciences	32	61	73	74
110 Languages, linguistics and literature	77	112	118	100
120 Law	97	168	197	285
130 Life sciences	48	102	98	75
140 Physical sciences	33	52	73	81
150 Mathematics and statistics	57	90	100	84
170 Philosophy, religion and theology	48	78	55	66
180 Psychology	76	183	127	127
190 Public management and services	61	91	126	158
200 Social sciences	48	67	83	85
Grand Total	46	64	83	72

4.2. Percentage permanent academic staff with PhDs

The percentage of permanent academic staff with PhDs at a university is highly correlated with research outputs and is an indicator of supervisory capacity at postgraduate level. Table 16 and Figure 44 show the percentage of permanent academic staff with PhDs by institution type for the period 2018 to 2021. In 2018 and 2019, 48% of permanent academic staff had a PhD qualification. This increased to 49% in 2020 and 51% in 2021. Traditional universities had the highest percentage of permanent academic staff with PhDs (61% in 2021), followed by UNISA (54%) in 2021. Comprehensive universities had 42% permanent academic staff with PhDs in 2021 and, in total, universities of technology had the lowest percentage of staff with PhDs (33%) in 2021. Among traditional universities, UL (35% in 2021) and the UFH (47%) had comparatively low percentages of permanent academic staff with PhDs. Compared to the other comprehensive universities, WSU (24% in 2021) and SMHSU (24% in 2021) had very low percentages of permanent academic staff with PhDs. Among the universities of technology, VUT (21% in 2021) and MUT (21% in 2021) had the lowest percentages of permanent academic staff with PhDs.

UP had the highest percentage of permanent academic staff with PhDs (72% in 2021) followed by WITS (68% in 2021) and UCT (62%). The percentage of permanent staff with PhDs at UNISA declined sharply from 54% in 2018 to 42% in 2019, but then increased again to 54% in 2020 and 2021. This fluctuation seems unlikely and might be explained by data quality challenges in 2019.

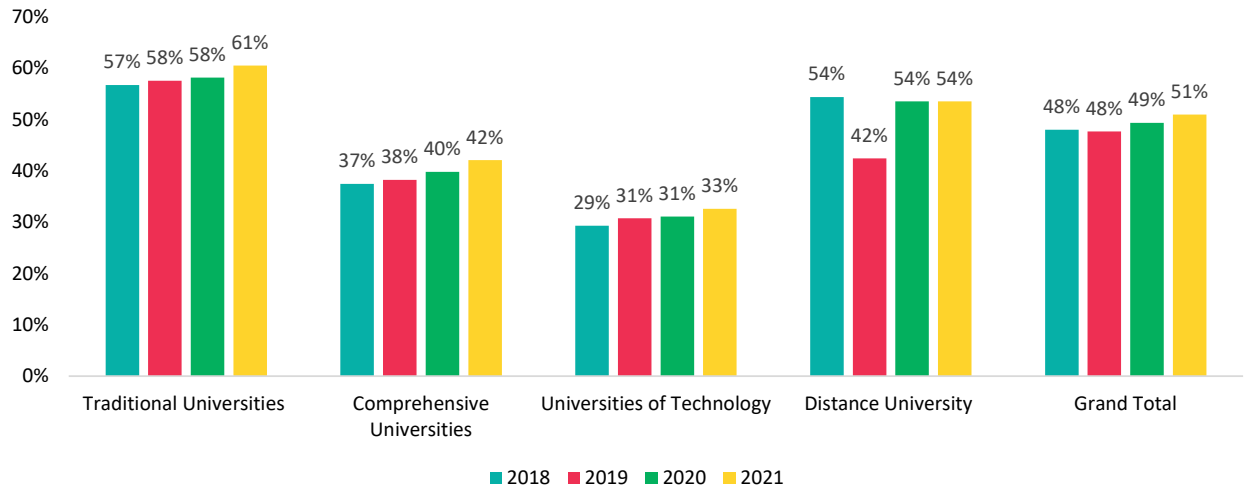


Figure 44 Percentage of permanent staff with PhDs

Table 16 Percentage of permanent staff with PhDs by institution

University	University Name	2018	2019	2020	2021
Traditional Universities					
UCT	University of Cape Town	64%	62%	61%	62%
FH	University of Fort Hare	47%	47%	47%	47%
FS	University of Free State	47%	49%	52%	55%
KZN	University of Kwazulu-Natal	56%	61%	61%	61%
UL	University of Limpopo	33%	33%	34%	35%
NWU	North-West University	52%	51%	49%	56%
UP	University of Pretoria	70%	70%	70%	72%
RU	Rhodes University	58%	59%	60%	63%
SU	University of Stellenbosch	57%	57%	64%	65%
UWC	University of the Western Cape	55%	60%	59%	62%
WITS	University of Witwatersrand	66%	66%	66%	68%
Traditional Universities Total		57%	58%	58%	61%
Comprehensive Universities					
UJ	University of Johannesburg	50%	50%	54%	56%
NMU	Nelson Mandela University	46%	45%	46%	47%
UNIVEN	University of Venda	42%	43%	45%	49%
WSU	Walter Sisulu University	13%	16%	20%	24%
UZ	University of Zululand	47%	47%	48%	48%
SPU	Sol Plaatje University	31%	42%	49%	55%
UMP	University of Mpumalanga	37%	46%	46%	48%
SMHSU	Sefako Makgatho Health Science University	20%	19%	20%	24%
Comprehensive Universities Total		37%	38%	40%	42%
Universities of Technology					
CPUT	Cape Peninsula University of Technology	30%	31%	31%	31%
CUT	Central University of Technology	40%	40%	40%	41%
DUT	Durban University of Technology	30%	32%	32%	35%
TUT	Tshwane University of Technology	32%	34%	34%	37%
VUT	Vaal University of Technology	20%	21%	21%	21%
MUT	Mangosuthu University of Technology	17%	20%	21%	21%
Universities of Technology Total		29%	31%	31%	33%
Distance University					
UNISA	University of South Africa	54%	42%	54%	54%
Distance University Total		54%	42%	54%	54%
Grand Total		48%	48%	49%	51%

4.3. Enrolment planning: penalties for under- and over-enrolments and possible impact on student success

A basic feature of the higher education funding framework is that it links the awarding of government higher education grants to national and institutional planning. This funding-planning link makes the funding framework essentially a goal-oriented mechanism for the distribution of government grants to individual institutions, in accordance with (a) national planning and policy priorities, (b) the quantum of funds made available in the national higher education budget, and (c) the approved enrolment plans of individual institutions (DHET, 2012).

The Ministerial Committee on the Review of the Funding of Universities (DHET, 2012) recommended that enrolment planning must remain as a key steering instrument for determining the size and shape of the higher education sector. The institutionally negotiated targets must also be linked to the funding of the universities. Teaching Input Units, and not headcounts, should be used as the basis for determining deviations from approved enrolment plans, since the latter could be misleading. It was the practice before the review that headcount deviations were used to determine deviations in funding.

The institutional share of the Teaching Input Grant is determined on the basis of approved six-year rolling enrolment plans (that are reviewed mid-term for the remaining three years). These plans result in projected Teaching Input Units based on historical ratios between full-time equivalents and Teaching Input Units per major field of study and qualification level. The projections of Teaching Input Units incorporate the effect of projected growth rates at various qualification levels and the projected growth in the major fields at various qualification levels. The combination of these growth rates in the projection of Teaching Input Units is aimed at ensuring that the generation of more Teaching Input Units as a result of higher funding and level weights, are acknowledged and projected as accurately as possible. Before 2020, the Teaching Input Units were projected based only on the ratio between full-time equivalent enrolments and Teaching Input Units per major field of study. However, from 2020 onwards, this was refined to also incorporate growth by qualification level. This was necessary, since universities that grew in major fields of study and higher qualification levels prior to 2020, generated more Teaching Input Units than the projected Teaching Input Units, the latter of which were only based on ratios between full-time equivalent enrolments and Teaching Input Units per major field of study. These universities were considered as "over-enrolled". However, it was actually the under-estimations of Teaching Input Units that affected such institutions, as the previous projection model did not consider growth in major fields of study at higher qualification levels. The DHET labels the projected Teaching Input Units as "funded Teaching Input Units" since the plan is to fund only these units per institution in alignment with the medium-term expenditure budget allocated by the National Treasury.

The funded Teaching Input Units are estimated based on projected full-time equivalent enrolments (separately for contact and distance because of different weightings and ratios), qualification level, and major field of study. The qualification levels are:

- Total undergraduate (National Qualification Framework [NQF] levels 5, 6 &7) (level weight of 1);
- Higher undergraduate (NQF level 8) (level weight of 2);
- Postgraduate to Masters level (NQF level 8) (level weight of 2);
- Masters (NQF level 9) (level weight of 3); and
- Doctoral (NQF level 10) (level weight of 4).

Within each qualification level, the full-time equivalent enrolments are projected by major field of study. This projection enables the use of historical ratios between full-time equivalent enrolments, at various qualification levels and the major fields of study, determined by the funding weights for the various CESM categories. The major fields of studies are:

- Science, Engineering, Technology;
- Business and Management Sciences;
- Education; and
- Other Humanities.

In essence, the Teaching Input Grant is allocated based on projected Teaching Input Units, but with corrections that have been introduced for under- and over-enrolments. Projected Teaching Input Units are used for financial predictability and budgeting purposes for the medium-term expenditure framework. The projections of first-time entering students are important for budgeting for NSFAS funds, which are impacted when large deviations occur. In the process of subsidy calculations (in this case the Teaching Input Grant), the actual Teaching Input Units generated by enrolled FTEs are compared to the funded Teaching Input Units (agreed upon during the enrolment planning process between the Minister and the councils of universities).

Other important considerations noted by the Ministerial Committee on the Review of the Funding of Universities (DHET, 2012) include:

- Universities that over-enrol considerably should not grow any further but rather maintain their enrolments to enable the DHET to fully fund all their enrolments before any further growth in enrolments should be allowed.
- The agreed upon Teaching Input Unit targets (funded Teaching Input Units) should be based on an overview of the performance of an institution in terms of outputs. In instances of poor success and throughput rates, growth should be limited to ensure that these universities pay more attention to student success rather than growth.
- Growth in the higher education system should be aligned with institutional capacity and available human and fiscal capacity, as well as available infrastructure, student accommodation, and equipment.

All three of these points are related to student success. Access to higher education should be managed in ways that ensure increases in student success. A balance needs to be struck between limited financial resources, pressures for increased participation rates, and enrolments. Furthermore, the adjustments to teaching input shares need to ensure financial stability in the system. Teaching and learning quality cannot be compromised for the sake of increased participation rates and the widening of access in the absence of sufficient funding allocations.

In instances where universities have under-enrolled (in terms of Teaching Input Units), they are over-funded, which comes at a cost to other institutions. These funds could have been distributed more equitably if all universities were within acceptable ranges of their approved funded Teaching Input Units. Over-enrolments could equally have a negative impact on other institutions, should shares be rapidly adjusted to fund all over-enrolments. This would lead to the further deterioration of the monetary value of Teaching Input Units, which are already not keeping pace with inflation due to the current unfavourable economic conditions.

To manage enrolment, enrolment plans are developed jointly between the institutions and the DHET within the context of system parameters and government priorities, and subsequently approved by the Minister and the university councils. Regarding unacceptable deviations between actual and funded Teaching Input Units, the DHET introduced corrective measures, which are outlined in the annual Ministerial statements. The section below, outlining the corrective measures and how they were introduced from the 2015/16 financial year, is quoted from the 'Ministerial statement on university funding: 2023/24 to 2025/26' issued by the DHET on 22 December 2022 (pages 10-11):

> *Each year, corrective financial measures are implemented on universities who do not stay within a reasonable limit of their Ministerially approved TIUs [Teaching Input Units]. Warnings to universities were initially provided in the Ministerial Statement on University Funding of November 2012 and in all subsequent annual Ministerial Statements. The Ministerial Statements on Student Enrolment Planning from 2009/10 onwards also indicated that the Department would make downward adjustments for universities who under-enrol more than 2% of their enrolment target. Under-enrolments adversely affect access to students, especially poor and disadvantaged students. Over-enrolments impact on the quality of teaching and learning provided to students, negatively impact on the TIU shares amongst universities and the rand-value of TIUs in future enrolment planning, and also adversely impact on the NSFAS to be able to properly cater for poor and missing middle students.*

For the 2015/16, 2016/17, 2017/18, 2018/19 and 2019/20 financial years, the Minister has approved deviations in under-enrolment of 5%, 4%, 3%, 2% and again 2% from the Ministerial approved funded teaching input units as acceptable for 2013, 2014, 2015, 2016 and 2017 enrolled student data respectively. In all of the above five years, one third of the units exceeding the approved acceptable deviation were removed from the funded units of a university which had under-enrolled beyond the acceptable deviation.

For the 2020/21, 2021/22 and 2022/23 financial years, the Minister approved deviations in over-enrolment in both first-time entering (FTEN) enrolled students and in TIUs of 5%, 4% and 3%, as acceptable for 2018, 2019 and 2020 enrolled student data respectively. For each of these 3 financial years, the acceptable range for under-enrolment in TIUs remained at 2%. For the 2023/24 financial year the allowed deviations remained at 3% for over-enrolment and 2% for under-enrolment. In all of the above four years, one third of the units exceeding the approved acceptable deviation were removed from the funded units of a university which had over-enrolled or under- enrolled beyond the acceptable deviation.

The following important points must be kept in mind when looking at these corrective measures and the actual impact on universities:

- The penalties for first-time entering students are based on headcount deviations. This makes sense since 1) NSFAS allocations are based on headcounts, and 2) first-time entering student projections in the enrolment plans are based on headcounts and not FTEs.
- As shown in Tables 17, 18 and 19, the deviations became much bigger for 2020 and 2021, which determined the subsidy allocations for the subsequent financial years (2022/23 and 2023/24). There were, however, similarly large deviations in previous years before the corrections were brought in. These were the first two years for which Teaching Input Units were projected based on the new model, where projected growth at the various qualification levels was also brought into the projection model together with the projected growth in major field of study within the levels.
- The analyses in Tables 17, 18 and 19 show that the projections for full-time equivalent enrolments at higher undergraduate levels (NQF level 8) were too high at many universities for the years 2020 to 2025, and too low at undergraduate levels (NQF levels 5, 6 &7). The analyses will further show that universities tend to over-project the growth at Master's level.
- The "under-enrolments" are thus, to a large degree, an over-estimation of FTE enrolments which leads to an over-estimation of funded Teaching Input Units. This incorrect projection was brought to the attention of universities during the 'Midterm review of ministerial enrolment targets' workshop arranged by the DHET on 20 April 2022 and universities were requested to make the necessary corrections to their projections and targets for the years 2023 to 2025. The deviations are expected to be much fewer from 2023 due to these corrections.
- Actual deviations also occurred due the impact of the COVID-19 pandemic and the decline in international and postgraduate students. It was especially noticeable at Master's level (NQF level 9).
- Universities that "under-enrol" still receive more funding than they would have received if only actual Teaching Input Units were funded. This is because only a third of the deviation is deducted from the funded Teaching Input Units and the actual impact is further softened by redistributing the funding of the penalised units back to all universities. Institutions therefore still receive considerable amounts of funding for enrolments not achieved, or as mentioned above, for over-projection of FTEs.
- When looking only at the impact of over-enrolments, these are not funded at all by the DHET, and thus do not impact negatively on the subsidy allocated to other institutions. The DHET, however, argues that it impacts the learning and teaching quality at an institution.
- The subsidy for financial year, "n", is based on the actual data of year "n-2". For example, 2018 data are used for the subsidy allocation for the financial year 2020/21.
- SPU and UMP currently receive separate allocations and are not part of the Teaching Input Funding grid. They were fairly recently established and do not generate enough Teaching Input Units, Teaching Output Units, or Research Output Units to be financially sustainable.

The actual Teaching Input Units generated by the FTE enrolments compared to the targets for the academic years 2018 to 2021 are shown in Table 17. The percentages of over/under enrolments in funded Teaching Input Units and first-time entering students are shown in Table 18, and universities that received penalties for the financial years 2020/21 to 2023/2024 are shown in Table 19.

In the 2020/21 financial year (2018 Teaching Input Units), the implementation of the corrections was done in the following way: the institution had to be over-enrolled in both Teaching Input Units and first-time entering students by more than 5%, or under-enrolled in both Teaching Input Units and first-time entering units by more than 2%. If the institution was under-enrolled in one of the variables and over-enrolled in the other variable, there was no correction. This, however, does not make sense and does not appear to be fair, since some institutions were considerably over-enrolled in one of the variables and considerably under-enrolled in the other variable. Only five institutions were penalised, since they were under-enrolled in both variables or over-enrolled in both variables. These institutions were DUT, NMU, UNISA, UNIVEN, and MUT. In the 2021/22 financial year (2019 Teaching Input Units) the over-enrolment allowance was brought down to 4% and the same methodology of corrections were applied. The following universities were penalised: CPUT, UFH, NMU, UNISA, UNIVEN, and SMHSU. In the financial years 2022/23 and 2023/24 the criteria for penalising were not the same as in the financial years 2020/21 and 2021/22. Looking at the universities that were penalised, the only conclusion that can be made is that universities that had an under-enrolment percentage of more than 2% were all penalised. Most universities had an under-enrolment percentage of more than 2%. And, while most of them also had an under-enrolment of more than 2% in first-time entering student enrolments, some did not. UL, for example, had an under-enrolment of 11.8% in Teaching Input Units and a 0.1% growth in first-time entering students, but was also penalised. This changed penalisation criteria seems to be fairer than those criteria applied in the 2020/21 and 2021/22 financial years, which were the two years when under-enrolments increased drastically.

Table 17 Actual Teaching Input Units and targets

Institution Number	University Name	Actual				Targets			
		2018	2019	2020	2021	2018	2019	2020	2021
	Funding Year	**2020/21**	**2021/22**	**2022/23**	**2023/24**	**2020/21**	**2021/22**	**2022/23**	**2023/24**
H01	Cape Peninsula University of Technology	60 073	59 254	53 318	53 664	60 406	62 333	61 968	66 796
H02	University of Cape Town	73 884	73 395	71 452	72 601	70 500	71 402	72 353	72 552
H03	Central University of Technology	33 465	33 610	30 330	31 831	27 533	29 502	34 217	35 414
H04	Durban University of Technology	53 494	62 089	58 822	57 642	48 653	51 087	52 276	53 028
H05	University of Fort Hare	32 716	30 180	28 760	28 515	30 035	31 742	33 855	34 600
H06	University of Free State	67 279	67 350	68 347	67 937	57 526	59 252	68 362	69 126
H07	University of Johannesburg	94 595	97 523	89 796	93 953	90 356	91 848	96 415	97 617
H08	University of Kwazulu-Natal	99 852	100 499	95 295	87 964	96 298	99 494	97 394	95 776
H09	University of Limpopo	42 323	42 400	42 818	43 305	40 571	41 046	48 522	50 741
H10	Nelson Mandela University	50 669	50 937	49 435	48 439	52 978	54 265	54 194	55 594
H11	North-West University	89 792	92 640	88 486	85 984	82 545	82 701	93 262	93 529
H12	University of Pretoria	116 939	119 960	118 531	121 345	117 324	119 818	120 592	122 197
H13	Rhodes University	18 162	18 178	18 528	17 881	17 845	17 985	20 007	20 354
H14	University of South Africa	187 661	164 487	206 027	199 660	166 604	168 112	178 079	178 556
H15	University of Stellenbosch	80 667	81 898	82 701	82 844	77 680	78 627	83 090	84 431
H16	Tshwane University of Technology	101 257	105 128	93 168	83 760	101 083	104 937	121 015	123 867
H17	University of Venda	36 759	36 221	30 618	32 292	32 590	33 502	37 666	38 419
H18	Vaal University of Technology	32 978	36 583	32 813	30 972	31 225	32 302	33 925	37 056
H19	Walter Sisulu University	49 692	51 563	43 954	45 494	43 086	44 372	48 759	47 682
H20	University of the Western Cape	45 658	47 032	46 603	49 963	44 850	46 192	51 959	54 263
H21	University of Witwatersrand	95 514	97 085	99 213	102 852	84 820	87 362	106 591	107 015
H22	University of Zululand	32 400	33 509	32 003	30 068	20 925	19 983	32 486	33 623

Institution Number	University Name	Actual				Targets			
		2018	2019	2020	2021	2018	2019	2020	2021
	Funding Year	**2020/21**	**2021/22**	**2022/23**	**2023/24**	**2020/21**	**2021/22**	**2022/23**	**2023/24**
H25	Mangosuthu University of Technology	19 417	20 622	20 476	20 013	20 370	21 509	18 399	18 902
H26	Sefako Makgatho Health Sciences University	21 806	21 369	20 859	26 593	22 076	24 060	25 012	25 657
Grand Total		**1 537 053**	**1 543 514**	**1 522 352**	**1 515 575**	**1 437 880**	**1 473 434**	**1 590 399**	**1 616 794**

Source: Calculated from DHET (2020d), DHET (2023)

Table 18 Percentages over/under enrolments in funded TIUs and first-time entering students

Institution Number	University Name	Actual				Targets			
		2018	2019	2020	2021	2018	2019	2020	2021
	Funding Year	**2020/21**	**2021/22**	**2022/23**	**2023/24**	**2020/21**	**2021/22**	**2022/23**	**2023/24**
H01	Cape Peninsula University of Technology	-0.6%	**-4.9%**	**-14.0%**	**-19.7%**	-27.3%	**-27.0%**	**-3.1%**	**-2.6%**
H02	University of Cape Town	4.8%	2.8%	-1.2%	0.1%	-7.1%	-0.5%	-1.6%	4.1%
H03	Central University of Technology	21.5%	13.9%	**-11.4%**	**-10.1%**	-3.2%	-3.4%	**-12.0%**	**-8.7%**
H04	Durban University of Technology	**9.9%**	21.5%	12.5%	8.7%	**5.9%**	1.3%	-5.6%	-15.4%
H05	University of Fort Hare	8.9%	**-4.9%**	**-15.1%**	**-17.6%**	-3.6%	**-10.0%**	**-10.9%**	**-18.9%**
H06	University of Free State	17.0%	13.7%	0.0%	-1.7%	3.4%	-13.3%	-1.3%	-0.1%
H07	University of Johannesburg	4.7%	6.2%	**-6.9%**	**-3.8%**	-1.9%	0.3%	**-2.3%**	**3.3%**
H08	University of Kwazulu-Natal	3.7%	1.0%	**-2.2%**	**-8.2%**	-4.3%	-10.7%	**-8.8%**	**-18.0%**
H09	University of Limpopo	4.3%	3.3%	**-11.8%**	**-14.7%**	-1.3%	-1.8%	**0.1%**	**-14.7%**
H10	Nelson Mandela University	**-4.4%**	**-6.1%**	**-8.8%**	**-12.9%**	**-10.6%**	**-13.5%**	**-20.7%**	**-14.2%**
H11	North-West University	8.8%	12.0%	**-5.1%**	**-8.1%**	-17.0%	-22.0%	2.1%	-21.3%
H12	University of Pretoria	-0.3%	0.1%	-1.7%	-0.7%	-0.2%	-2.9%	7.6%	19.5%
H13	Rhodes University	1.8%	1.1%	**-7.4%**	**-12.2%**	-18.8%	-11.3%	**15.6%**	**-4.8%**

Institution Number	University Name	Actual				Targets			
		2018	2019	2020	2021	2018	2019	2020	2021
	Funding Year	**2020/21**	**2021/22**	**2022/23**	**2023/24**	**2020/21**	**2021/22**	**2022/23**	**2023/24**
H14	University of South Africa	**12.6%**	**-2.2%**	**15.7%**	11.8%	**24.1%**	**-11.3%**	**35.4%**	-36.8%
H15	University of Stellenbosch	3.8%	4.2%	**-0.5%**	**-1.9%**	1.6%	-1.9%	**-4.9%**	**-6.3%**
H16	Tshwane University of Technology	0.2%	0.2%	**-23.0%**	**-32.4%**	-10.2%	-22.2%	**-22.0%**	**-20.9%**
H17	University of Venda	**12.8%**	**8.1%**	**-18.7%**	**-15.9%**	**7.2%**	**10.5%**	**-26.0%**	**-18.8%**
H18	Vaal University of Technology	5.6%	13.3%	**-3.3%**	**-16.4%**	2.2%	-9.2%	**-22.7%**	**-11.1%**
H19	Walter Sisulu University	15.3%	16.2%	**-9.9%**	**-4.6%**	-3.3%	-3.0%	**-29.5%**	**-3.2%**
H20	University of the Western Cape	1.8%	**1.8%**	**-10.3%**	**-7.9%**	0.8%	**7.3%**	**-2.1%**	**-1.5%**
H21	University of Witwatersrand	12.6%	11.1%	**-6.9%**	**-3.9%**	-8.4%	-17.4%	**-6.1%**	**1.7%**
H22	University of Zululand	54.8%	67.7%	-1.5%	**-10.6%**	-5.6%	-5.2%	-10.3%	**-10.1%**
H25	Mangosuthu University of Technology	**-4.7%**	**-4.1%**	11.3%	5.9%	**-18.1%**	**-18.1%**	2.6%	-21.9%
H26	Sefako Makgatho Health Sciences University	-1.2%	**-11.2%**	**-16.6%**	3.7%	10.2%	**-25.0%**	**-24.8%**	-4.5%
Grand Total		**6.9%**	**4.8%**	**-4.3%**	**-6.3%**	**1.9%**	**-10.7%**	**4.5%**	**-16.9%**

Source: Calculated from DHET (2020d), DHET (2023)

Table 19 Universities that received penalties for the financial years 2020/21 to 2023/2024

Funding Year		**2020/21**		**2021/22**		**2022/23**		**2023/2024**	
Institution Number	**University Name**	5% over & 2% under allowed		4% over & 2% under allowed		3% over & 2% under allowed		3% over & 2% under allowed	
H01	Cape Peninsula University of Technology			Under	1 832	Under	7 411	Under	11 796
H02	University of Cape Town								
H03	Central University of Technology					Under	3 202	Under	2 875
H04	Durban University of Technology	Over	2 408						
H05	University of Fort Hare			Under	927	Under	4 419	Under	5 393

Funding Year		2020/21		2021/22		2022/23		2023/2024	
Institution Number	**University Name**	5% over & 2% under allowed		4% over & 2% under allowed		3% over & 2% under allowed		3% over & 2% under allowed	
H06	University of Free State								
H07	University of Johannesburg					Under	4 690	Under	1 711
H08	University of Kwazulu-Natal					Under	151	Under	5 896
H09	University of Limpopo					Under	4 733	Under	6 422
H10	Nelson Mandela University	Under	1 249	Under	2 242	Under	3 676	Under	6 043
H11	North-West University					Under	2 911	Under	5 674
H12	University of Pretoria								
H13	Rhodes University					Under	1 079	Under	2 066
H14	University of South Africa	Over	12 727	Under	263	Over	22 606		
H15	University of Stellenbosch								
H16	Tshwane University of Technology					Under	25 427	Under	37 630
H17	University of Venda	Over	2 540	Over	1 379	Under	6 295	Under	5 359
H18	Vaal University of Technology					Under	434	Under	5 343
H19	Walter Sisulu University					Under	3 829	Under	1 235
H20	University of the Western Cape					Under	4 317	Under	3 215
H21	University of Witwatersrand					Under	5 246	Under	2 022
H22	University of Zululand							Under	2 882
H25	Mangosuthu University of Technology	Under	545	Under	457				
H26	Sefako Makgatho Health Sciences University			Under	2 210	Under	3 653		
Grand Total			**19 469**		**9 311**		**104 080**		**105 561**

Source: Calculated from DHET (2020d), DHET (2023)

A third of the actual Teaching Input Units that universities deviated from (in terms of the allowed percentages of deviations) are deducted from the funded Teaching Input Units. The funding generated by the penalties is then allocated back to all universities, including those that have been penalised. This makes the penalty much less. For those universities that have large enrolments, this redistribution results in no penalty at all after the redistribution takes place. In some cases, even though universities were under-enrolled, they received additional funding from the redistribution of the penalties. The final impact of the penalties is shown in Tables 20 and 21. These tables show the actual rand value of the over- or under- enrolments, the actual penalty, and then the difference between the total rand value and the final penalty. It is evident that the penalties were small compared to the actual rand value of the over- and under-enrolment.

Table 20 Actual penalties and difference between rand value and penalty, 2020/21 and 2021/22

Funding Year		**2020/21**				**2021/22**			
Institution Number	University	5% over & 2% under allowed	Rand value of over-/under-enrolment (R*000)	Actual penalty	Difference between total rand value and penalty	4% over & 2% under allowed	Rand value of over-/under-enrolment (R*000)	Actual penalty	Difference between total rand value and penalty
H01	CPUT					Under	29 504	-7 550	21 954
H02	UCT								
H03	CUT								
H04	DUT	Over	37 327	-9 080	28 247				
H05	FH					Under	14 926	-3 813	11 114
H06	UFS								
H07	UJ								
H08	UKZN								
H09	UL								
H10	NMU	Under	19 362	-2 760	16 602	Under	36 106	-9 970	26 136
H11	NWU								
H12	UP								
H13	RU								
H14	UNISA	Over	197 270	-54 347	142 923	Under	4 236	0	4 236
H15	SU								
H16	TUT								
H17	UNIVEN	Over	39 364	-10 891	28 474	Over	22 203	-6 127	16 077
H18	VUT								
H19	WSU								
H20	UWC								
H21	WITS								
H22	UZ								
H25	MUT	Under	8 451	-1 398	7 053	Under	7 359	-1 685	5 673

Funding Year		2020/21				2021/22			
Institution Number	University	5% over & 2% under allowed	Rand value of over-/under-enrolment (R*000)	Actual penalty	Difference between total rand value and penalty	4% over & 2% under allowed	Rand value of over-/under-enrolment (R*000)	Actual penalty	Difference between total rand value and penalty
H26	SMHSU					Under	35 584	-10 802	24 782
Grand Total			**301 774**	**-78 475**	**223 298**		**149 919**	**-39 946**	**109 972**
Teaching Input Unit Rand Value For Approved TIUs (R*000)			15.500				16.101		

Source: Calculated from DHET (2020d), DHET (2023)

Table 21 Actual penalties and difference between total rand value and penalty, 2022/23 and 2023/24

Funding Year		2022/23				2023/24			
Institution Number	University	3% over & 2% under allowed	Rand value of over-/under-enrolment (R*000)	Actual penalty	Difference between total rand value and penalty	3% over & 2% under allowed	Rand value of over-/under-enrolment (R*000)	Actual penalty	Difference between total rand value and penalty
H01	CPUT	Under	114 169	-17 617	96 552	Under	179 542	-38 560	140 982
H02	UCT								
H03	CUT	Under	49 332	-5 056	44 275	Under	43 760	-2 919	40 841
H04	DUT								
H05	FH	Under	68 065	-11 564	56 501	Under	82 089	-16 255	65 834
H06	UFS								
H07	UJ	Under	72 252	8 501		Under	26 040	24 182	
H08	UKZN	Under	2 327	32 665		Under	89 739	1 854	
H09	UL	Under	72 917	-8 179	64 738	Under	97 740	-16 123	81 618
H10	NMU	Under	56 621	- 677	55 944	Under	91 977	-12 516	79 462
H11	NWU	Under	44 846	16 756		Under	86 364	2 243	
H12	UP								
H13	RU	Under	16 622	1 209		Under	31 447	-3 823	27 624
H14	UNISA	Over	348 234	-57 491	290 743			60 464	
H15	SU								
H16	TUT	Under	391 687	-91 902	299 786	Under	572 752	-153 220	419 532

Funding Year		2022/23				2023/24			
Institution Number	University	3% over & 2% under allowed	Rand value of over-/under-enrolment (R*000)	Actual penalty	Difference between total rand value and penalty	3% over & 2% under allowed	Rand value of over-/under-enrolment (R*000)	Actual penalty	Difference between total rand value and penalty
H17	UNIVEN	Under	96 966	-20 103	76 863	Under	81 569	-14 785	66 784
H18	VUT	Under	6 681	9 378		Under	81 317	-15 161	66 156
H19	WSU	Under	58 989	-3 351	55 638	Under	18 791	9 743	
H20	UWC	Under	66 509	-4 814	61 695	Under	48 941	1 698	
H21	WITS	Under	80 816	9 078		Under	30 781	25 749	
H22	UZ					Under	43 867	-3 562	40 305
H25	MUT								
H26	SMHSU	Under	56 272	-10 583	45 689			8 688	
Grand Total			**1 603 307**	**-153 751**			**1 606 718**	**-142 303**	
Teaching Input Unit Rand Value For Approved TIUs (R*000)			15.500				16.101		

Although declines in international student enrolments and in postgraduate enrolments contributed to under-enrolments, the biggest contributing factor to the perceived under-enrolments was the over-projection of full-time equivalent enrolments in the higher undergraduate level qualifications (NQF level 8) by universities in their 2020 to 2025 enrolment plans.

Table 22 and Figure 45 show the deviations of contact and distance FTE enrolments from the proposed targets for 2020 by qualification level (SPU & UMP excluded). For the higher undergraduate level enrolments, at NQF level 8, there was an average annual decline of 24.9%. This level of full-time equivalent enrolments consists of four-year undergraduate qualifications, with the fourth year at NQF level 8. It also included the BTech qualifications that were being phased out. The fourth year of these four-year qualifications get a level weight of two in the generation of the Teaching Input Units. The BTech qualifications also were given a level weight of two in the generation of Teaching Input Units. The impact of the phasing out of the BTech can be seen in the average decline in the FTEs over the period 2016 to 2020 (-24.9% on average per annum). The BTech qualifications were replaced by advanced diplomas, which were no longer weighted by a factor of two but by a factor of one. The proposed target for higher undergraduate levels (NQF 8) for 2020 (and for all the years of the 2020 to 2025 enrolment plan) were projected to increase over the period. The actual FTE enrolments in 2020 was 14 228 compared to the target of 51 663. The actual FTE enrolments for this qualification level was 72.5% below the target. From this analysis it becomes clear that most universities that offered the BTech qualifications that were being phased out should have projected lower FTE enrolments instead of increases at a high rate. These incorrectly projected FTE enrolments generated Teaching Input Units that were far too high, since they receive double the weighting of the FTE enrolments of NQF levels 5, 6 and 7. This mistake was corrected in setting enrolment targets for 2023 to 2025 during the mid-term enrolment targets review. The sizable deviation should thus not occur from 2023 onwards. This explains that a significant portion of the perceived under-enrolments were the result of overestimated Teaching Input Units projections because of overestimated FTE enrolment projections for the higher undergraduate levels (NOF level 8). The term “corrections” is thus more appropriate in this instance than the term “penalties”. Unfortunately, these significant deviations will still be seen in the 2022 data and the 2024/25 financial year, since the mid-term review

could only change the targets for 2023 to 2025.

It is evident that the DHET considered financial stability and predictability as important because these corrections were small in terms of the actual rand value of the deviations, and because the penalties were redistributed to all universities in the teaching grant allocations. That these corrections could have a considerable impact on student success is questionable. The "over-enrolments" at NQF levels 5, 6 and 7 would also not have occurred to this extent if the sector kept in mind the fact that the FTE enrolments of the advanced diplomas were replacing the B Techs (and thus should have been projected in this category).

The large deviations in first-time entering students in years 2020 and 2021 were most probably the result of the impact of the Covid-19 pandemic, and the fact that a large number of potential first-time entering students for residential universities opted to register at UNISA or private institutions in 2020 instead.

Table 22 Deviations of contact and distance FTE enrolments from proposed targets in 2020 by qualification level (SPU & UMP excluded)

Contact and distance	2016	2020	Proposed target 2020	Avg annual growth rate 2016 to 2020	FTEs over- or under-enrolled	% Over-or under-enrolment for 2020
UG (NQF levels 5, 6 &7)	559 068	680 649	611 359	5.0%	69 290	11.3%
HU (NQF level 8)	44 741	14 228	51 663	-24.9%	-37 435	-72.5%
PG to M (NQF level 8)	50 491	69 019	68 852	8.1%	168	0.2%
Masters (NQF level 9)	20 083	22 138	23 913	2.5%	-1776	-7.4%
Doctors (NQF level 10)	9 161	10 665	10 648	3.9%	16	0.2%
Total	**683 544**	**796 698**	**766 435**	**3.9%**	**30263**	**3.9%**

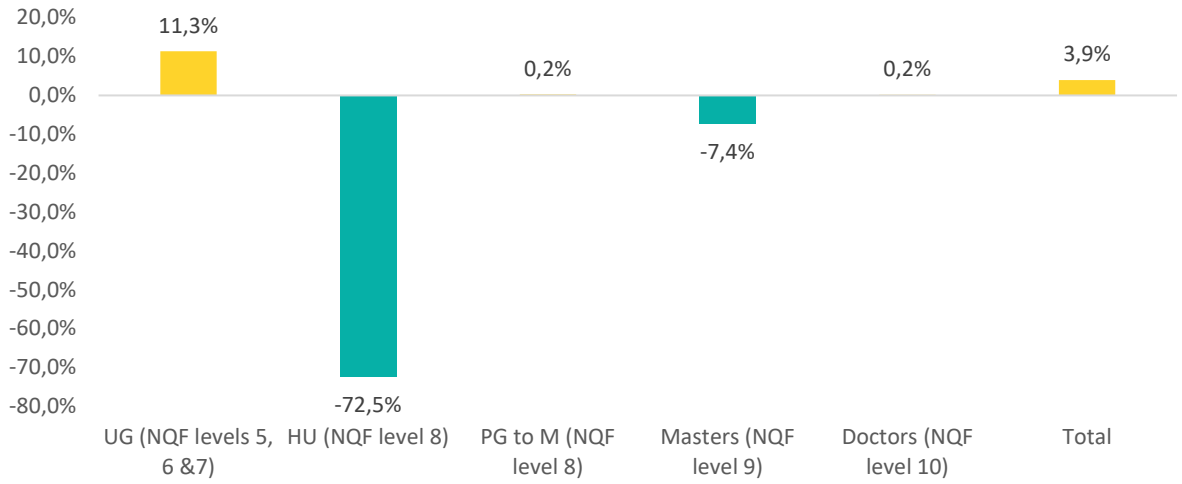


Figure 45 Deviations of contact and distance FTE enrolments from proposed targets in 2020 by qualification level (SPU & UMP excluded)

Section 5: Implications of findings for planning, funding and quality in higher education

This section synthesises the four preceding sections. It reflects on the implications of the information shared in this report for planning, funding, and quality in the sector, as well as how it relates to the future of student success work.

An important question asked in several fora after 2020 was how the seeming increase in success rates during the pandemic could be explained. The HEMIS data analyses confirmed that success rates increased steeply during 2020 when universities had to move to emergency remote learning and teaching. This, however, does not necessarily imply that more learning took place or that learning improved. Pikoli (2020) notes that academics attribute the improved performance to a combination of factors, namely the number of assignments, allowing students to submit assignments multiple times, and lenient marking. The qualitative data from the SAULM and SEP-TLF surveys also tell a story of the significant challenges students had with accessing content (poor network or connectivity, inappropriate devices, the cost of data, and a lack of digital skills), as well as staff concerns about the quality of learning and integrity of assessments taking place. It is thus unlikely that the increased success rates were a direct response to better quality learning and teaching. For the most part, after the pandemic, success rates returned to normal (i.e., similar rates than the years preceding 2020).

Data trends that stood out from the analyses include that only 30% of students enrolled in three-year bachelor's degrees at contact institutions graduate in minimum time, and cumulatively less than 60% graduate after an additional two years (CHE, 2021c). While retaining students in the system is vital to improve throughput rates and to ensure that students graduate successfully, it is just as important to balance enrolment and graduate growth. Unfortunately, there have been several changes in the student population between 2018 and 2021, including a 20% decline in first-time entering students accessing the public higher education sector, a 26% decline in international students, a 4% decline in postgraduate students, around 20% fewer Indian and White student enrolments, and 34% fewer male student enrolments than female students.

Turning to throughput, the sector shows a 3% growth in graduates between 2018 and 2021, with universities of technology showing a graduate growth rate of more than 10% during this time. Postgraduates show a 6% decline in graduate growth rate. Economic challenges, family responsibilities, the decline in international student numbers, and difficulties with postgraduate supervision could all account for the decline in postgraduate growth during this time. This trend is concerning, especially because more postgraduate enrolments are needed to create a future generation of academics and researchers, and for knowledge production, innovation and job creation.

Another aspect of student success that needs more focus is employability. Although graduate attributes and employability feature in the literature and have been part of the work on conceptualising student success in the South African context, this area of research has not received adequate attention, arguably because of the significant return on investment, and the low unemployment rate of graduates. Out of all people unemployed, only 2.7% are graduates, compared to 6.9% who obtained other tertiary qualifications, 38.2% who completed matric, and 51.5% who did not complete their schooling (Statistics South Africa, 2022). There is also a lack of research on the preparedness of graduates for the workplace. As shown earlier from the SASSE data, less than a quarter of students engage in practical work experience while studying. The SAULM and SEP-TLF data also speak to the difficulties of implementing practicals without physically attending them, or without expensive, innovative technologies, such as virtual reality or artificial intelligence. While some reference to desired graduate attributes for employability featured in the data, there seems to be a need for intentional curriculum and programme design to scaffold the development of desired attributes.

There is little doubt that the sector is moving towards leveraging technology to increase its resilience to disruptions, and to actively participate in an ever-increasing digital world. Discussions on student success should therefore include what best practices in learning, teaching, and assessment should be adopted to ensure the quality of blended learning environments. The complex interplay between personal attributes and motivations,

socioeconomic circumstances, and an array of institutional factors make it difficult to determine what factors impact students' ability to navigate their studies successfully. From the literature shared earlier, several factors contribute to supporting students' success. These factors include initiatives associated with student engagement, such as tutorials or peer learning, academic advising, and effective teaching practices. Funding has been shown to be beneficial for some in terms of student success, but not for others, thereby emphasising the complexity of the interplay between personal, socioeconomic, and institutional factors that need to align. Currently, student success scholarship does not speak directly to the key priorities identified in this report. Success literature mainly focuses on supporting first-year students, students' academic achievements as proxy for success, and equity.

General recommendations regarding student success work in higher education

- More research is needed to explore trends in private higher education institutions, as well as tracking potential students with bachelor's passes. These explorations are necessary to understand the decline in first-time entering enrolments as well as to determine where/whether certain social groups are engaging in higher education, if not in the public sector.
- Research into the factors that contribute to the widening gap in enrolments and the success rates of females and males, with a focus on the two most at-risk groups, African and Coloured males, would be valuable to address equity gaps.
- Research into the reasons for the decline in postgraduate enrolments and graduate growth could assist in informing recommendations for interventions that can improve growth in postgraduate enrolments.
- Research into the significant decline in international students is needed.
- There is a need to better articulate how higher education contributes to the personal and professional development of graduates as critical citizens and future leaders as they enter the workplace. More research is also needed on graduate employability, the alignment of attributes developed in higher education vs. the attributes desired by employers, and the potential of leveraging technology to simulate practical experience. Higher education institutions could also be more transparent about the attributes they are developing in students and how such attributes will contribute to the careers of graduates and broader national priorities.

Other key findings are framed by considerations for planning, funding, and quality in higher education.

5.1. Considerations for planning in higher education

Beyond student data, this report also shows trends in student-staff ratios and the percentage of academic staff with PhDs. Compared to international trends, the majority of public sector institutions in South Africa are understaffed. The normative student-staff ratio in public higher education institutions in countries that form part of the Organisation for Economic Cooperation and Development (OECD) is 15 students for every staff member (OECD, 2022). In South Africa, student-staff ratios in traditional universities are around 21:1, with universities of technology exceeding a ratio of 30:1. In addition, the percentage of full-time academic staff with PhDs in the system ranges from 33% in universities of technology in 2021, to 61% in traditional universities. This percentage is far below the target of 75% by 2030 set by the National Planning Commission. The lack of supervisory capacity might also be contributing to low enrolments at postgraduate level.

An important finding from both quantitative and qualitative analyses is the need to build capacity in enrolment planning and management, instructional and learning design, administrative support, as well as capacitating students and staff with the necessary digital skills, competencies, and knowledge to leverage technology in teaching and learning. In addition, advancing data analytics in the sector, while balancing the potential of technology with the possible threats to academic integrity and learning posed by artificial intelligence-driven technologies, are also factors that need to be considered as part of planning processes.

Technology can play a key role in creating a more resilient system to counter the effects of disruptions, and to advance the post-school education and training sector towards the Fourth Industrial Revolution (4IR). A recent task team produced an extensive report illustrating how planning for a more technologically-enhanced education and training system requires thinking about how technology can be infused in the everyday business

of the sector to enhance its resilience, facilitate learning and teaching, and contribute to the employability of graduates, while being cognisant of the persistent social inequalities that could easily be exacerbated by unequal distribution of resources, skills, and infrastructure (DHET, 2020b). This is an important consideration, especially considering the experiences shared in the SAULM survey, where those living in rural areas, or areas poorly serviced by network providers, experienced network connectivity as a significant barrier to accessing learning. In addition, there were certain students who had a much more difficult time adjusting to remote learning and teaching: those without appropriate devices to work on; those who did not have the adequate digital skills to work with technology; those who could not access technical support; and those who could not afford fast, reliable internet. Often, it is the same group of students who are confronted with these and other socioeconomic challenges. This serves to further widen the equity gap. Therefore, it is important to ensure that institutions have access to relevant resources (hardware, software) and human capacity to facilitate learning and teaching with these specialised technologies.

Another important consideration for digital inequality is how engagements with technology might fuel existing language inequalities in the higher education sector. Language and literacy are strong predictors of students' epistemological access and success (Abed, Ajoodha & Jadhav, 2020). Therefore, it is important to support the implementation of the *Language Policy Framework for Higher Education*, which seeks to "promote multilingualism as a strategy to facilitate meaningful access and participation by university communities (students and staff) in various university activities, including cognitive and intellectual development" (Republic of South Africa, 2020, 5). The implementation of the national language policy could act as a buffer to potentially widening language and literacy inequalities that technology might cause. This is particularly true if institutions ensure that UDL principles are implemented in the design, development, and implementation of curricular and co-curricular programmes.

Other considerations for planning stem from well-known challenges in higher education that were again brought to the surface during the pandemic. These considerations include concerns about first-time entering students' ability to adjust to the expectations placed on them in higher education; a lack of intentional alignment between academic and career attributes; and the quality of assessments that directly reflect on the quality of learning that takes place. This leads us to ask the following questions: Should there be a stronger focus on supporting students to develop life skills? Do these findings point to an urgent need for better programme design in the system? Do our assessment practices develop the higher order cognitive skills that are needed to be a critical citizen and an employable worker?

Recommendations to guide planning

- Align national policies to ensure that the digital divide is addressed. National electricity infrastructure (loadshedding) and network connectivity have a significant negative impact on students and therefore undermine social justice imperatives. It is difficult to see how creating an equitable learning and teaching environment within a 4IR world is possible without such alignment. This has implications for policies on infrastructure, funding, digital skills development, device and data allocation for students, and education policies in general.
- Put good pedagogy into practice. The SAULM and SEP-TLF qualitative data show that good pedagogy-related practices stand out as contributors to students' successful movement through the system. Therefore, recommendations might include:
    - Be transparent and communicate well. This implies better communication between institutional management and staff to align expectations with capabilities and resources. It also necessitates better communication between lecturers and students to align expectations about roles, responsibilities, and boundaries.
    - Design pedagogy to leverage the best of both worlds. For example, using technology to create interest, develop skills, widen knowledge bases, and create a sense of responsibility in learning, while using classrooms as spaces for discussions and peer interactions.
    - Use learning and instructional design resources to optimise the quality of teaching and learning and enhance student engagement on digital platforms.
    - Provide relevant training to students and staff in the use of educational technology to facilitate learning and teaching and provide appropriate support in the form of access to hardware,

software, and data.
    - Provide training and support to lecturers in best blended learning assessment practices, as well as keeping up-to-date with the latest trends and security concerns regarding technology that might enable academic dishonesty.
- Be cognisant of equitable practices. Institutions have a responsibility to continue monitoring social inequities by developing and implementing supportive policies, mainstreaming a UDL approach to learning and teaching, supporting student and/or staff societies that promote equity in the institution, and ensuring that new avenues of inequities, such as digital inequities, do not widen existing inequities.
- Plan for capacitation. The HEMIS and survey data highlighted the need for careful capacitation planning at an institutional and sectoral level. This includes capacity in enrolment planning and management, instructional and learning design, administrative support, capacitating students and staff with the necessary skills and knowledge to leverage technology in teaching and learning, and academic staff capacitation.
- Invest in more sophisticated data analytics to better understand students' progression through the system, and to identify key areas in which to intervene. While all institutions have some form of data management system in place to report to the DHET, there is a growing need for more sophisticated analyses. While much of the responsibility to plan for capacity falls on institutions, national support is needed to guide institutions on creating quality guidelines (e.g., where to invest in capacity building) and facilitating capacity development at a national scale, where appropriate.
- Plan for the rapid evolution of more sophisticated artificial intelligence technology, such as ChatGPT, especially since it has already forced higher education institutions to adapt assessment and learning and teaching approaches. Planning for the sector needs to balance two factors: 1) leveraging technology to enhance the efficiency of systems and preparing students for a world of work in the 4IR; and 2) the possible threats to academic integrity and learning that accompany technology.

5.2. Considerations for funding in higher education

It is evident that the DHET considers the financial stability and predictability of the sector as important. This can be evidenced by the fact that the financial corrections of under- and over-enrolments were small in terms of the actual rand value of the deviations, and the fact that penalties were redistributed to all universities in the teaching grant allocations. That these corrections could have a considerable impact on student success is questionable. It is furthermore noted that the perceived under-enrolments were mostly caused by over-projections of FTE enrolments in the higher undergraduate category (NQF level 8) by not considering the phasing out of the B Tech qualifications. The significant deviations in first-time entering students in years 2020 and 2021 were most probably the result of the impact of the Covid-19 pandemic. The under-enrolment at Master's level was a direct result of the decline of international students and the overall decline in postgraduate enrolments due to the financial difficulties caused by the economic downturn because of the pandemic.

The financial implications of a more technologically enhanced system require innovative responses. While infrastructure and resources, including capacity building in key areas, will require a significant investment, existing budgeting allocations could be redirected, or innovative partnerships could be formed to lessen the impact. For example, in its report on the implications of the 4IR for the Post-School Education and Training (PSET) system, the Ministerial task team proposed including agile funding models, such as Social Impact Bonds (SIBs), where partnerships between public and private sectors result in targeted funding for the improvement of social outcomes (DHET, 2020b). An institutional-level example might include an investor providing funding to an institution to roll out a scaled initiative to enhance graduate employability. Once the social outcome has been achieved, the institution pays investors back. This arrangement implies that the intervention includes planning for institutional self-sufficiency in being able to pay back investors. The success of these arrangements lies in the planning and targeted focus on reaching specific social impact outcomes. Other critical questions on funding that could be tabled for discussions include:

- How can the DHET facilitate national partnerships with other ministries and industries to bridge the digital divide, and allow equity of access to networks, devices, data, and digital literacy skills?
- Should infrastructure grants be refocused on bridging the digital divide?

- Should the UCDG intentionally focus on enhancing programme design capacity in the sector?
- How are student funding sources being reimagined to align with national and institutional priorities?

5.3. Considerations for quality in higher education

The SEP-TLF and SAULM data speak clearly to the need for guidelines on quality blended learning and teaching. Taking the framework for institutional audits (CHE, 2021a) as a guide for good practices in quality standards in higher education, Table 23 reflects on how the student success work mapped out throughout this report aligns with these standards.

Table 23 can be used to inform the intentional design of programmes and interventions to enhance quality promotion and capacity development at institutional level. The report also points to the need to create a better network between institutional planners and quality assurance professionals to help build a new generation of higher education specialists that will enable the effective implementation of the QAF.

Table 23 Aligning the report findings with the CHE framework for institutional audits (CHE, 2021a)

Focus area	Standards	Implications of the findings of this student success report for selected standards
Focus area 1: Governance, strategic planning, management and leadership support the core academic functions	**Standard 1:** The institution has a clearly stated vision and mission, and strategic goals which have been approved by appropriate governance structures, subject to comprehensive stakeholder engagement. **Standard 2:** The stated vision, mission and strategic goals align with national priorities and context (e.g., transformation, creating a skilled labour force, developing scarce skills areas and a critical citizenry, and contributing to the fulfilment of national goals as informed by the NDP and related national planning), as well as sectoral, regional, continental and global imperatives (e.g., Africa Vision 2063 or the Sustainable Development Goals). **Standard 3:** There is demonstrable strategic alignment between the institution's quality management system for core academic activities across all sites and modes of provision and its vision, mission and strategic goals, as well as its governance and management processes. **Standard 4:** There is a clear understanding of and demonstrable adherence to the different roles and responsibilities of the governance structures, management and academic leadership.	At a strategic level, national and institutional policies need to align to recognise the importance of and commitment to ensuring that all students and staff have access to the necessary infrastructure, resources, support, and skills to participate equitably in a technologically-enhanced higher education system. National policies and programmes such as the UCDG need to ensure that creating equitable environments that enable student success is a social justice imperative in the face of ever-increasing pressures created by some research-focused ranking systems.

Focus area	Standards	Implications of the findings of this student success report for selected standards
Focus area 2: The design and implementation of the institutional quality management system supports the core academic functions	**Standard 5:** A quality assurance system is in place, comprising at a minimum of: (i) governance arrangements (ii) policies (iii) processes, procedures and plans (iv) instructional products (v) measurement of impact (vi) data management and utilisation as these give effect to the delivery of the HEI's core functions. **Standard 6:** Human, infrastructural, knowledge management and financial resources support the delivery of the institution's core academic functions across all sites of provision, in alignment with the concomitant quality management system, in accordance with the institution's mission. **Standard 7:** Credible and reliable data (for example, on throughput and completion rates) are systematically captured, employed and analysed as an integral part of the institutional quality management system so as to inform consistent and sustainable decision-making. **Standard 8:** Systems and processes monitor the institution's capacity for quality management, based on the evidence gathered.	Quality assurance systems need to prioritise students' success as a social justice imperative. Of particular importance for student success in this focus area is moving beyond data management towards more sophisticated data analytics to track progress, identify areas of improvement, measure impact of interventions, and inform decisions. Equity needs to be a key feature of such analytics, as well as data governance procedures to ensure ethical and legal compliance.
Focus area 3: The coherence and integration of the institutional quality management system supports the core academic functions	**Standard 9:** An evidence-based coherent, reasonable, functional and meaningfully structured relationship exists between all components of the institutional quality management system. **Standard 10:** Evidence-based regular and dedicated governance and management oversight of the quality assurance system exists. **Standard 11:** Planning and processes exist for the reasonable and functional allocation of resources to all components of the institutional quality management system. **Standard 12:** The quality assurance system achieves its purpose efficiently and effectively.	

Focus area	Standards	Implications of the findings of this student success report for selected standards
Focus area 4: Curriculum development, learning and teaching support the likelihood of student success	**Standard 13:** An effective institutional system for programme design, approval, delivery, management and review is in place. **Standard 14:** There is evidence-based engagement at various institutional levels, among staff, and among staff and students, with: a. curriculum transformation, curriculum reform and renewal; b. learning and teaching innovation; and c. the role of technology (1) in the curriculum, (2) in the world of work, and (3) in society in general. **Standard 15:** The students' exposure to learning and teaching at the institution, across all sites and modes of provision, is experienced as positive and enabling of their success. **Standard 16:** Institutions engage with and reflect on the employability of their graduates in a changing world.	Lecturers highlighted the need for improved blended learning and teaching design, administrative support, training in using technology in learning and teaching, and guidelines for quality pedagogy in blended learning environments (including engaging students and designing and administering quality assessments). This implies dedicated capacity building in curriculum design practices, intentional continuing professional development programmes for lecturers, development and alignment of national and institutional policies or guidelines on good practices in blended learning and teaching, and significant efforts to rethink assessments in a digitalised system. Learning from the data presented in this report, promoting good pedagogy-related practices that support student success is important. As noted earlier, such good practices include: • Being transparent and communicating well; • Designing pedagogy to leverage the best of both worlds;

Focus area	Standards	Implications of the findings of this student success report for selected standards
		• Using learning and instructional design to optimise the quality of learning and teaching, and to enhance student engagement on digital platforms; • Providing relevant training to students and staff in the use of educational technology to facilitate learning and teaching, and providing appropriate support in the form of access to hardware, software and data, as well as providing technical support; and • Provide training and support to lecturers in good assessment practices in blended learning environments, as well as keeping up to date with the latest trends and security concerns regarding technology that might enable academic dishonesty. There needs to be intentional integration of digital skills and competencies for students and staff. For students this will form part of the attributes they develop for employability or postgraduate studies, and for staff, this creates a better quality learning and teaching approach that aligns with a 4IR world. Quantitative and qualitative data representing the student voice is critical for curriculum transformation and creating environments that optimise student success. For example, the SASSE provide

Focus area	Standards	Implications of the findings of this student success report for selected standards
		critical data to address the key challenges of student engagement. Student engagement research shows that remote learning and teaching responses during the COVID-19 pandemic undermined the development of relational engagement (student-staff interaction and collaborative learning). SEP-TLF staff perspectives confirm this. It is therefore critical to develop blended learning and teaching approaches that use technology to improve relational engagement but also to find the optimal blend between face-to-face and online learning and teaching. Expanding the definition of student success to include employability is a critical step. In addition, intentional efforts to provide evidence of the integration of graduate attributes in qualification programmes is vital, as are conversations on how to align employer expectations with the purpose and approaches used in higher education.

6. Conclusion

This report aimed to provide a comprehensive analysis of student success literature and the experiences of students and staff during emergency remote teaching and learning. It did this to contribute to the RELATE project as well as the CHE's continuing work on the QAF, which already includes a strong focus on leveraging technology in the higher education system.

As part of the analysis, the definition of student success was revisited. The following factors encapsulate what student success should mean: targeting persistent low throughput rates; addressing past equity gaps that remain and new equity gaps that have formed; and determining whether graduates are equipped with the appropriate knowledge and skills to lead economic and social change in the country.

Positioning these student success focus areas within a higher education system that needs to leverage technology to become more resilient to disruptions and produce graduates who can contribute to a technologically advanced workforce, compels us to reflect on the implications for planning, funding, and quality in the sector.

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Appendix 1: University types

Traditional Universities

Institution Number	University	University Name
H02	UCT	University of Cape Town
H05	UFH	University of Fort Hare
H06	UFS	University of Free State
H08	KZN	University of Kwazulu-Natal
H09	UL	University of Limpopo
H11	NWU	North West University
H12	UP	University of Pretoria
H13	RU	Rhodes University
H15	SU	University of Stellenbosch
H20	UWC	University of the Western Cape
H21	WITS	University of Witwatersrand

Comprehensive Universities

Institution Number	University	University Name
H07	UJ	University of Johannesburg
H10	NMU	Nelson Mandela University
H14	UNISA	University of South Africa
H17	UNIVEN	University of Venda
H19	WSU	Walter Sisulu University
H22	UZ	University of Zululand
H23	SPU	Sol Plaatje University
H24	UMP	University of Mpumalanga
H26	SMHSU	Sefako Makgatho Health Science University

Universities of Technology

Institution Number	University	University Name
H01	CPUT	Cape Peninsula University of Technology
H03	CUT	Central University of Technology
H04	DUT	Durban University of Technology
H16	TUT	Tshwane University of Technology
H18	VUT	Vaal University of Technology
H25	MUT	Mangosuthu University of Technology

Distance University

Institution Number	University	University Name
H14	UNISA	University of South Africa

Appendix 2: Student access and success indicators that were analysed for this study

Indicator	Definition	Trends analysed by	Years covered	Motivation
First-time entering undergraduate student enrolment growth.	% increase or decrease in enrolments of first-time entering undergraduate students.	Population group; gender; university type.	2018 to 2019; 2019 to 2020; 2020-2021.	Access to Higher Education: To determine whether there was a decline or increase in first-time entering students especially from 2019 to 2020, and 2020 to 2021, and to note the change in enrolment patterns.
Enrolment growth by level (undergraduate, postgraduate, occasional, total).	% increase or decrease in enrolments.	National and international students; population group; gender; university type.	2018 to 2019; 2019 to 2020; 2020-2021	Some universities experienced declines in enrolment, especially at postgraduate level, and a sharp decline in international students can be seen.
Success Rate	Success rate is defined as the completed full-time equivalents expressed as a percentage of the enrolled full-time equivalents.	Population group; gender; undergraduate and postgraduate level; university type; major field of study; CESM.	2018, 2019, 2020, 2021.	There was a significant increase in success rates in 2020. There is a need to establish the trends for various groups and universities. Some fields of study/ CESMs however experienced the opposite.

Indicator	Definition	Trends analysed by	Years covered	Motivation
Retention from one year to the next.	The percentage of students that were enrolled in year n that proceeded to year n+1 who did not graduate in year n.	Population group; gender; undergraduate and postgraduate level; university type; major field of study.	2018 – 2019; 2019 – 2020; 2020-2021.	Provides an estimate of how many students dropped out without completing their qualifications. It is acknowledged that students could return later, but normally these are small numbers.
Growth in graduates.	The percentage growth in graduates.	Population group; gender; undergraduate and postgraduate level; university type; major field of study.	2018 – 2019; 2019 – 2020; 2020-2021	To observe trends before COVID-19 impacted as well as the trend from 2019 to 2021.
Student-staff full-time equivalent ratios.	The ratio of full-time enrolled students to full-time equivalent academic staff members.	University type; university	2019, 2020,2021.	To observe trends before COVID-19 impacted as well as the trend from 2019 to 2021.
% Permanent academic staff with PhDs.	The permanently appointed academic staff (instruction/ research staff) with PhDs.	University type; university.	2019, 2020, 2021.	It gives an indication of the research capacity and postgraduate supervisory capacity of a university.

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