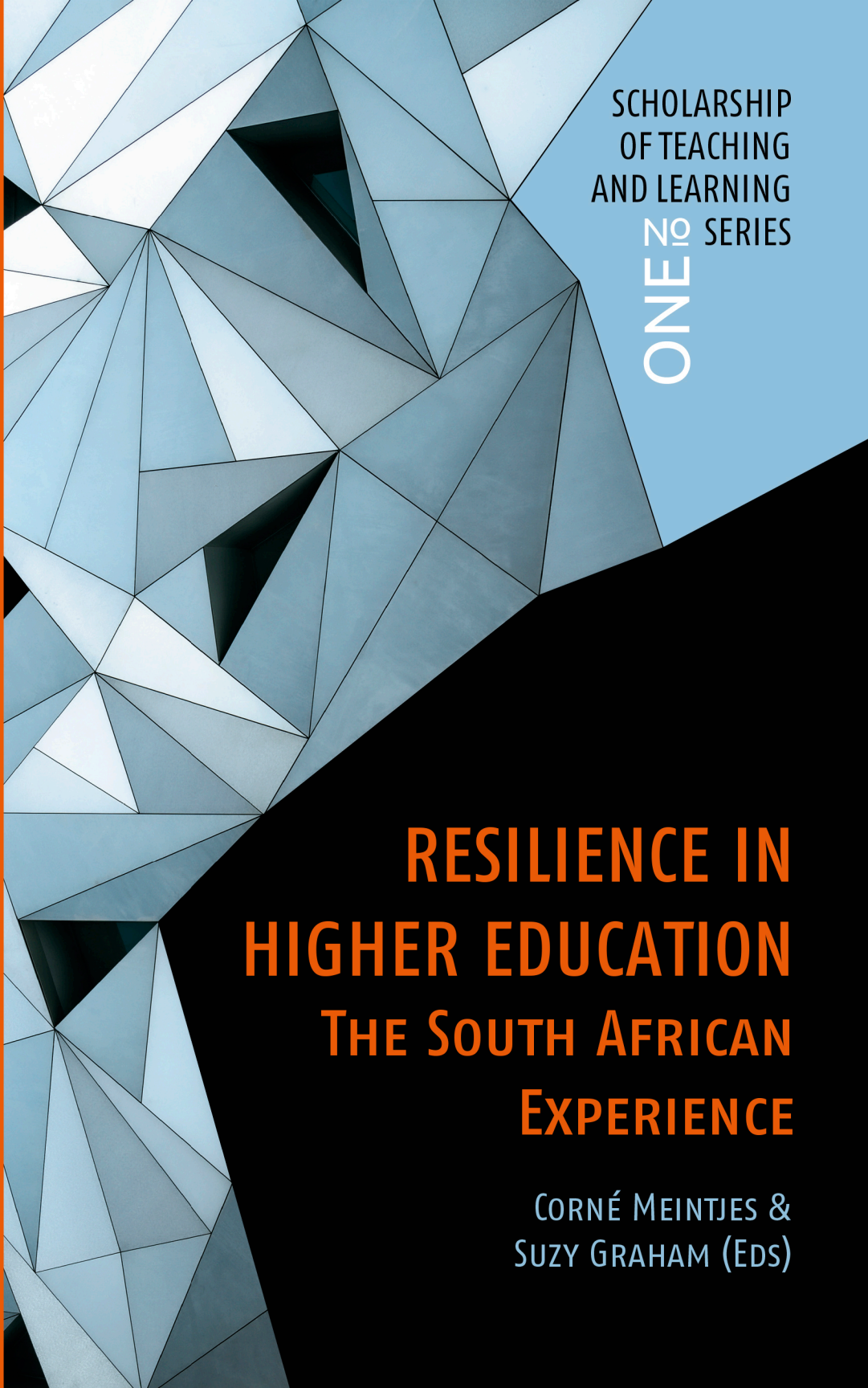


RESILIENCE IN HIGHER EDUCATION

The South African Experience

Corné Meintjes &
Suzy Graham (Eds)

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Resilience in Higher Education

The South African Experience

Corné Meintjes, Suzy Graham (Eds)

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Foreword

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South African higher education occupies a uniquely complex and demanding space. Our universities are shaped by a legacy of inequality, persistent socioeconomic challenges, and an ongoing transformation agenda, all while carrying the responsibility of knowledge production, skills development, and social mobility in a fragile national context. Public higher education institutions are expected to widen access, ensure student success, respond to global and technological shifts, and contribute meaningfully to national development – often within constrained resource environments. In this context, resilience is no longer a peripheral concern; it has become central to the sustainability and purpose of the South African academic project.

Resilience in Higher Education: The South African Experience offers a timely, thoughtful, and necessary scholarly response to these realities. The volume acknowledges that the pressures facing South African Higher Education institutions (HEIs), such as student poverty and food insecurity, mental health challenges, level of preparedness, and funding instability, cannot be addressed solely through individual effort. Instead, the book positions resilience as a collective, systemic undertaking that must be deliberately cultivated through teaching and learning practices, institutional structures, and supportive academic cultures.

At the University of Johannesburg (UJ), as at many South African universities, the academic project is deeply connected to issues of equity, access, and success. Serving a diverse student body drawn largely from historically marginalised communities requires more than academic excellence in the traditional sense; it requires pedagogical courage, contextual responsiveness, and an ethic of care. This volume speaks directly to that imperative. The

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chapters demonstrate that resilience in higher education emerges through intentional curriculum design, inclusive pedagogies, assessment practices that enable growth, mentoring and tutoring programmes, recognition of Indigenous Knowledge Systems, and institutional responsiveness to students lived realities.

What makes this book particularly significant for the South African higher education sector is its grounding in the Scholarship of Teaching and Learning (SoTL). The contributors do not treat resilience as an abstract or imported concept, but as a lived experience shaped by local histories, institutional cultures, and socioeconomic conditions. Through rigorous scholarship and practicebased inquiry, the book illustrates how SoTL can serve as a powerful vehicle for transformation- bridging policy aspirations with classroomlevel practice and offering evidenceinformed strategies that are contextually relevant to South African context.

The necessity of this book is further underscored by the changing nature of academic work in South Africa. Lecturers, academic developers, and professional staff are increasingly required to navigate uncertainty, disruption, and emotional labour while sustaining quality teaching and learning. This volume recognises that resilient universities require resilient staff, supported by coherent systems, professional development, and shared purpose. In doing so, it broadens the conversation beyond student resilience alone and invites institutions to consider resilience as a property of the entire higher education ecosystem.

I welcome this volume as an important contribution to national and institutional conversations about student success, transformation, and sustainability in South African higher education. It challenges us to reflect critically on how our policies, curricula, pedagogies, and support structures either enable or undermine resilience. It also reminds us that transformation is not achieved through compliance or rhetoric, but through sustained scholarly engagement with teaching and learning in context.

Resilience in Higher Education: The South African Experience affirms that resilient HEIs are those that recognise their social responsibility, design learning environments with intention and care, and remain responsive to the complex realities of the communities they serve. In this sense, the book is not only

significant – it is essential reading for anyone committed to the future of higher education in South Africa.

Introduction

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Higher education is currently situated within a context marked by volatility, uncertainty, complexity, and ambiguity. The COVID-19 pandemic has both revealed and deepened persistent structural inequalities within teaching and learning systems. While this book focuses on the South African context, many of the challenges it addresses, such as socio-economic disparities, uneven access to technology, and the legacies of historical injustice, are echoed across higher education systems worldwide. South African universities, like their counterparts globally, have been compelled to respond to these challenges within diverse but often comparable environments. In this context, resilience should be conceptualised not merely as a reaction to crisis, but as a critical perspective and intentional strategy through which institutions, educators, and students can engage with disruption as an opportunity to foster more just, responsive, and humane forms of higher education.

This book arises from both practical and scholarly engagement during and after the COVID-19 pandemic, a period in which emergency remote teaching exposed the vulnerabilities and resourcefulness within higher education institutions. Lecturers navigated inequitable access to electricity, devices, and connectivity, while students managed crowded living environments, mental health pressures, and shifting domestic responsibilities. In response to these constraints, academics and professional staff developed blended and online learning initiatives, as well as systemic approaches to course and curriculum design, to sustain meaningful learning interactions amid significant disruption. The chapters in this volume illustrate that intentional design for resilience, conceived as a relational,

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contextual, and design-oriented practice, is essential for advancing sustainable and transformative higher education.

Resilience in South African higher education warrants a dedicated edited collection precisely because the country's institutions sit at an unusual intersection of pressures rarely combined elsewhere: the enduring structural legacy of apartheid-era exclusion, a still-transforming funding and access landscape shaped by movements such as #FeesMustFall, and infrastructural instability, from load-shedding to NSFAS disbursement delays, that recurs independently of any single crisis such as the pandemic. Generic, internationally-derived resilience literature does not adequately account for this combination of historical, material, and political conditions, nor for the fact that South African academics and professional staff are themselves navigating many of the same precarities as their students. The unique scholarly contribution of this volume is to ground resilience theory in that specific context, drawing together twelve empirically-based chapters, spanning curriculum design, assessment, mentoring, tutoring, Indigenous Knowledge Systems, disability inclusion, and engineering education, that collectively examine resilience as it is actually practised, rather than only as it is theorised, within South African institutions.

While each chapter can be read independently, they are organised to build cumulatively: the opening chapters establish the conceptual and empirical groundwork (Chapters 1 and 2), the middle chapters examine specific pedagogical and curricular interventions (Chapters 3 through 8), and the later chapters turn to relational and institutional structures, mentoring, inclusive pedagogy, and disability access, that sustain resilience beyond any single course or programme (Chapters 9 through 12). Across this arc, the editors conceptualise resilience not as a fixed trait held by individual students or exceptional lecturers, but as a capacity that is co-produced across students, staff, and institutional systems, and that can be intentionally designed for rather than left to emerge by chance. The central argument that emerges from the volume, and that the concluding chapters return to directly, is this: resilient students are, in the main, the product of resilient staff working within resilient systems, and building that

resilience is properly an institutional responsibility rather than an individual burden placed on students or staff alone.

A central concern in this volume is the value of systemic modelling, which attends to the interactions among components within educational systems, in conjunction with critical realist perspectives that distinguish between observable events and the underlying structures that generate them. These approaches provide explanatory depth regarding how foundational mechanisms shape teaching and learning, extending beyond the adoption of particular technologies or methods. For example, during the pandemic, in the redesign of a quantitative skills module, systemic modelling was used to map the interactions among learning objectives, teaching activities, technology access, and student support services. By visualising these elements as part of an interconnected system, educators could identify where breakdowns were likely to occur if conditions changed, such as during shifts to remote or blended delivery. This process enabled the design team to build multiple modes of communication, flexible deadlines, and alternative assessment formats, ensuring that essential learning functions were maintained across different scenarios. By engaging with systemic models of communicative functions and course design, educators can move beyond ad hoc lists of 'best practices' and develop coherent structures that support learning across varied contexts and modalities. By distinguishing between systemic elements inherent to teaching and course structure and extra-systemic contextual variables, contributors demonstrate how course designers can anticipate, interpret, and respond to abrupt changes, such as pandemic lockdowns, while maintaining a focus on core learning functions.

Within this volume, resilient pedagogy is articulated in relation to relevance, equity, and the inclusion of student perspectives. Chapters demonstrate that adapting materials to local contexts, drawing on students' lived experiences, and involving students in design processes can enhance engagement, motivation, and a sense of belonging. Research on quantitative skills modules suggests that the use of localised examples, collaborative activities, and a focus on productive persistence can mitigate mathematical anxiety and support students who

are often considered at risk. Similarly, work on assessment and curriculum renewal indicates that assessment practices and backwards-designed curricula can either perpetuate vulnerability or enable students to find meaning and respond constructively to adversity. These insights are closely connected to the discussion of academic staff resilience in subsequent chapters.

A further focus is on the concept of 'designer resilience' among academic staff, understood as the capacity of educators and curriculum designers to anticipate disruption, embed flexibility within their courses, and respond constructively to emerging challenges. Designer resilience is realised through the intentional design of courses to ensure adaptability and robustness in the face of change. The Curriculum Renewal Programme described in this volume employs backward design, beginning with desired outcomes and structuring the curriculum accordingly, principles of constructive alignment to ensure coherence among assessments, outcomes, and activities, and universal design for learning to maximise accessibility and participation. These approaches enable academics to redesign modules for extensibility, flexibility, and redundancy. Survey findings indicate that participants become better equipped to align outcomes, assessments, and learning activities, to develop contingency plans, and to shift between delivery modes while maintaining coherence and clarity for students. Crucially, these forms of designer resilience are not simply technical competencies; they are grounded in an ethic of care, a commitment to inclusion, and a readiness to reconsider assumptions about teaching and learning.

This book also foregrounds the emotional and relational dimensions of resilience within higher education. Contributors show that student-lecturer relationships, peer networks, and staff communities of practice are essential for fostering engagement and well-being, particularly in times of crisis. Research indicates that students' perceptions of lecturer care, their comfort in seeking assistance, and opportunities for collaboration significantly influence their persistence. Narratives from drama education and the arts further illustrate that certain forms of learning are deeply embodied and communal, and, while vulnerable, can adapt when transitioned to online environments.

These diverse forms of resilience are synthesised in the concluding chapters and recommendations.

As editors, we offer this volume as both a record and a resource. It documents the sector's response to significant disruption and is intended to support academics, professional staff, and leaders who seek to develop more resilient, equitable, and contextually responsive curricula and pedagogy. Readers are encouraged to engage with these chapters as adaptable examples and conceptual tools, rather than as prescriptive solutions. To make the resource more actionable, we invite readers to consider how each example and approach presented in the book can be modified to suit the unique features of their own institutional, disciplinary, or cultural contexts. For instance, local needs, available resources, and student demographics may influence which strategies are most feasible or impactful. We suggest that readers reflect on parallels in their own settings, adapt case studies to align with their teaching realities, and use the provided frameworks as starting points for collaborative discussion and innovation within their teams.

Chapter 1

Resilience in Higher Education: Quid est?

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Introduction

Resilience in higher education has emerged as a critical area of focus, particularly in a context such as South Africa, which is known for its systemic inequalities and socioeconomic challenges. The higher education sector in South Africa faces pressures rooted in historical inequities, financial constraints, and structural inefficiencies. This chapter examines resilience in this context by drawing on a systematic review of 596 articles published over the last four years on resilience.

Student resilience, broadly understood as the capacity of a student to adapt and thrive during adversity, is increasingly conceptualised as a dynamic interplay between individual, social and systemic factors. This concept is particularly salient in South Africa, given the persistent disparities between historically advantaged and disadvantaged institutions (Mutongoza, 2025). The transformation agenda in South African higher education has been shaped by movements such as #FeesMustFall and #RhodesMust Fall, which highlighted issues of access, affordability, and decolonisation (Reynolds & Moyo, 2024; PSA, 2016). However, despite policy efforts to promote inclusivity, underfunding,

bureaucratic inefficiency, and exclusionary institutional cultures impede progress (Mutongoza, 2025; USAf, 2024).

Between 2010 and 2020, enrolment in South African public and private higher education institutions increased steadily (DHET, 2020; Wills et al., 2024). During this period, there was a significant rise in distance learning enrolments, indicating a shift towards more flexible and accessible learning models (Marutha & Dube, 2023; van Staden & Naidoo, 2022). Despite these positive trends, university students in South Africa continue to face considerable challenges such as financial hardship, food insecurity, and limited access to adequate accommodation (Project House, 2023; Tanga & Maphosa, 2018). In 2024, an undergraduate student experience survey at the University of Johannesburg indicated that 88.8% of students were satisfied with their experience at the University. Although this statistic is a positive one, it does not detract from the reality of these above-mentioned challenges. Many students rely on the National Student Financial Aid Scheme (NSFAS) for funding, while others receive support from family or self-fund their studies.

First-generation students in South African higher education are those who are the first in their families to attend university, meaning that neither parent has obtained a tertiary qualification. These students often come from historically disadvantaged backgrounds and face unique challenges related to finances, academic preparedness, social adjustment, and access to support structures (Bangeni & Kapp, 2007; Mdepa & Tshiwula, 2012). Socioeconomic disparities intensify these challenges. For instance, the unemployment rate amongst young South Africans aged 15 to 34 years stands at a staggering 45.5%, with many students grappling with financial insecurity and limited educational opportunities (Adapt IT Education, 2024). Moreover, universities' underfunding has strained their capacity to provide adequate student support systems (USAf, 2024). These systemic issues contribute to high dropout and low graduation rates in critical disciplines, such as Engineering (Reynolds & Moyo, 2024), amongst others.

A common realisation on the part of scholars in teaching and learning is the importance of understanding a student's

demographic and institutional context. This requires intentional, structured, and proactive actions to improve student success, supported by theoretical grounding and practical application. A student with wrap-around support, such as academic and psycho-social safety nets, has a better chance of success. The field of resilience in higher education enables scholars to develop strategies to promote student success. It also provides students with tools to bounce back from diverse challenges and have the confidence to thrive.

The focus of this chapter is to explore student resilience in higher education from a broad theoretical perspective, offering a systematic review of the key themes of student resilience in higher education, focused on South Africa. This sets the scene for the remainder of the book on student resilience as a subject of study, from both a theoretical and a practical perspective, in the scholarship of teaching and learning in higher education.

Conceptualising Resilience in Higher Education

Resilience in higher education is increasingly recognised as a dynamic and multifaceted construct that enables students to adapt and thrive despite adversity. Academic resilience is defined as the capacity to achieve educational success despite significant stressors or challenges (Durso et al., 2021). This concept has evolved to include individual traits and interactions between personal, academic, and external systems. The Academic Resilience Model (ARM), developed by Durso et al. (2021), explains how sources of stress, such as low motivation, health issues, and faculty deficiencies, interact with protective factors like adaptability, self-control, peer integration, and family support to shape student outcomes. ARM emphasises that resilience is not merely about persistence but also about maintaining satisfaction and commitment to one's academic journey.

Recent models have refined the understanding of resilience in higher education by incorporating socio-ecological perspectives. For instance, the Socio-Ecological Resilience Theory (SERT) integrates individual, relational, and systemic factors to explain how students navigate crises such as coronavirus disease 2019 (COVID-19) and institutional disruptions (Webb, 2024). This

theory highlights the importance of institutional support systems such as effective communication, technological infrastructure, and social networks in fostering resilience during crises.

Additionally, multidimensional frameworks like the Dynamic Interactive Model of Resilience (DIMoR) highlight resilience's relational and contextual complexity in higher education. DIMoR critiques traditional resilience-training interventions for their narrow focus on individual coping mechanisms while advocating for strategies that co-create supportive environments through connection, communication, compassion, and care (McCool et al., 2023). These models collectively emphasise that resilience in higher education is not a static attribute, but a dynamic process shaped by interactions across multiple levels.

Taken together, ARM, SERT, and DIMoR converge on a single point that this chapter takes as its conceptual starting point: resilience in higher education is not a fixed personal attribute but a capacity that is co-produced across individual, relational, and institutional levels simultaneously. For the purposes of this book, resilience is therefore defined as the dynamic capacity of students, staff, and institutions to anticipate, absorb, adapt to, and recover from adversity, without normalising that adversity or allowing responsibility for addressing it to be shifted from institutions onto individuals. This definition matters because much of the existing literature, including a large share of the 596 articles reviewed for this chapter, still measures resilience primarily as an individual student trait, leaving the institutional and staff dimensions comparatively under-theorised. The distinct contribution of this volume is to correct that imbalance for the South African context specifically: across the chapters that follow, resilience is examined not only as something students bring with them, but as something that curriculum design, assessment practice, mentoring structures, and academic staff development actively produce, or fail to produce, within a higher education system still shaped by historical inequality. In this sense, the book extends existing resilience theory by grounding it in local institutional practice, offering a South African, staff-and-

systems-inclusive account of resilience rather than an imported, individually-focused one.

In their chapter, Strydom, Bernard, Mohoanyane and Marumo present a case study on how a tutorial programme can impact the resilience of the students and tutors on the Qwaqwa campus of the University of the Free State. From a theoretical perspective, the socio-ecological approach to resilience is integrated with student engagement to share a possible definition of resilience in higher education. This definition can be used to inform the design of ecosystems that enable resilience.

Factors Influencing Student Resilience

A complex interplay of factors determines student resilience. These may be specific to the individual, exist between people, or depend on the environment. Constantinescu (2024: 497) argues that resilience is "a summation of individuals' personal characteristics, such as intellectual abilities, temperament, self-regulation and self-efficacy, and a positive outlook on future planning." However, Sameroff (2000) contends that although some individuals may be naturally more resilient than others, it is largely the contextual factors that need to be interrogated to understand someone's ability to manage a situation. But perhaps Walsh (1996) offers the best perspective on this: how an individual adapts to their environment and deals with increasingly complex events reveals their level of resilience. A student needs to manage their emotions to maintain their academic focus, remain positive, and have healthy self-esteem and self-belief. This may be especially difficult for students with disabilities. In her chapter, Ramaahlo examines how the interplay of resilience building and dismantling systematic barriers is a crucial factor in improving the well-being of students with disabilities. The chapter proposes evidence-based strategies for adopting universal access as a framework for developing a resilient university that includes students with disabilities in the South African higher education context.

Interpersonal networks are meaningful, and strong relationships with peers, mentors, lecturers, and family members provide emotional support. In their chapter contribution, Nhari,

Freedman, and Hatch explore the role of mentoring and how students' participation in mentoring programmes within the University of KwaZulu-Natal's School of Accounting, Economics, and Finance (SAEF) influences their levels of resilience. Seeking help when you need it is another important outlet. In turn, the university environment needs to be supportive and disciplined, and resources should be available to students. Well-prepared, empathetic lecturers can foster more resilient students, too. In South African students' experience, a connectedness to culture can reinforce resilience. Although, as examined by Bakow and Low (2018), ancestral callings (or *ukuthwasa* - a culture-specific syndrome linked to a calling to become a traditional healer) experienced by some students can be accompanied by spiritual or emotional challenges; they can also be opportunities for resilience and identity affirmation, but it requires cultural understanding and support from institutions and families.

Pedagogical Approaches to Enhancing Resilience

Teaching methods can reinforce resilience when lecturers focus on a student's strengths, not weaknesses. In their chapter. Pritchard, Levy and Meintjes outline a framework for resilience-enabling assessment pedagogies for vulnerable students. Student-centred learning is necessary to enable students to become decision-makers and to build their skills. This includes offering constructive criticism of students' work and allowing students to learn from repetition, exercises and failures. Just as important, though, is the need to create a safe learning environment by acknowledging and addressing potential trauma and by amplifying students' core competencies. Many universities are promoting the use of innovative teaching and learning strategies, such as the use of learning pyramids and other reflective practices (Chakravarty, 2020); coping strategies and real-life applications (Moore, 2019); using advancing technologies to enhance learning, and redesigning the curriculum for fostering resilience (Shay & Pohan, 2021). Through their chapter, Karsten and van Zyl offer a detailed set of substantive and procedural design principles developed through the Design-Based Research process that can be used as a guide by others who wish to effectively pursue a similar

goal to assist students from under-served parts of society to not just enter university but successfully integrate into it and succeed.

Although some institutions may have more resources than others, an equaliser can exist by offering more flexible learning environments that can accommodate different learning styles and needs and utilising digital tools and platforms to provide accessible resilience-building exercises and resources. In 2020, the COVID-19 pandemic enforced remote learning. The learnings emerging from that experience demonstrated that maintaining engagement and support was essential and that the human influence in teaching and learning remained important. In their chapter, Pratt and Reddy conceptualise the teaching and learning process to ensure resilience in higher education by suggesting a model identifying the systemic functions that need to be carried out generally in the teaching and learning process, as well as the way/s in which contextual factors might specifically impact these functions. The design principle used is descriptive rather than value-laden, can be adapted to suit the specific local values or urgent needs present in any given university context, and it is well-suited for use in multicultural educational contexts, including the building of resilience.

Moreover, to build educational transformation, universities need to build resilient and inclusive educational spaces (Santos-Villalba et al., 2024). In their chapter, Mokotjo and Setilo offer reflections on the use of two pedagogical approaches: the integration of Active Learning strategies and the Lesson Study professional development model in higher education.

Curricula are the bedrock of higher education qualifications, and many academics tend to focus on discipline-specific content and fail to recognise the importance of embedding resilience-building activities into the curriculum, focusing on skills like assertiveness and problem-solving. In programmes that include work-integrated learning, for example, social work, we are more likely to find the development of incorporated systemic approaches that involve the lecturers, students, and the community to create a culture of resilience. In their chapter, Meintjes and Meintjes explore the concept of resilient curriculum design, examining how curricula capable of withstanding

disruption and uncertainty can be developed. Moreover, in his chapter, Tiema asks us to reflect on Indigenous Knowledge Systems (IKS) as resilience-builders as he demonstrates significant potential in the cultivation of resilience and inclusivity, whilst noting that IKS does not serve to isolate or exclude but to foster cultural identity and socio-economic development.

In their chapter, Muller, Janse van Vuuren, and Strydom, present a case of preparing, implementing, continuously evaluating, and adapting the South African version of the Pathways programme (Carnegie Math Pathways™) when reviewing the role of Mathematics in business programmes in higher education in South Africa. These findings highlight the potential of a well-structured approach to enhance students' sense of belonging in Mathematics-based courses.

Institutional Approaches to Promoting Resilience

Students' welfare at university is dependent on the health of the institution. In higher education, promoting resilience is essential for ensuring that institutions can effectively respond to challenges such as financial pressures, technological disruptions, and evolving student needs. This is why institutions strategise in terms of crisis management plans that outline how the institution will respond to various emergencies, for example, pandemics or cyberattacks. Universities might also focus on expanding online education programmes or forming corporate partnerships to reduce dependence on traditional tuition revenue.

Investment in technology infrastructure ensures that the institution can adapt to changing educational delivery modes (e.g., hybrid, online learning). Institutions should also ensure that their faculty and staff have the digital skills to adapt to new tools and platforms. For example, universities investing in learning management systems (LMSs), video conferencing tools, and virtual laboratories supporting in-person and remote education are more likely to cater to diverse student needs. Added to this is the recent interest in offering flexible and adaptable programmes that can respond to shifts in the world of work, technological advancements, and societal needs. This includes modular courses, micro-credentials, and opportunities for lifelong learning.

Promoting resilience by offering strong mental health support and well-being services for students, staff, and faculty is key. Addressing mental health needs can help to mitigate the impact of stress, trauma, and uncertainty on the student community. Universities have support divisions that offer counselling services, peer support groups, and workshops on stress management and substance abuse. As stated earlier in this chapter, resilience means learning to ask for help. However, a terrifying revelation in universities in South Africa is that many students are passive and do not ask for help in time. In a 2018 report by the South African Depression and Anxiety Group (SADAG), after accidents, suicide is noted as the second leading cause of death amongst university students. Moreover, as many as 20% of university students have thoughts of suicide during their time at university (September, 2018).

Studies have shown that fostering a sense of belonging is necessary for resilience. However, *sense of belonging* is a subjective phrase. A recent study challenges how we think about students (see Dost and Mozzoli Smith, 2023). Instead of seeing students as individuals who need certain services, we should view them as part of a community where their connections with others are central. This shift in perspective means that any sense of belonging at university should start with the idea that students are naturally relational. This helps us better understand what a "sense of belonging" means to students and how this can help to improve students' connection to their university. It also aims to find ways to increase students' sense of belonging, which could, in turn, help to improve their mental health.

Another way to promote resilience is to invest in staff development (see King, 2004). It is necessary to equip staff with the skills, knowledge, and support which they need to adapt to new challenges and deliver high-quality education in changing circumstances. Offering professional development opportunities in areas like digital pedagogy, online teaching, and resilience training will help staff to offer appropriate support services to students. A longer-term view is also important. For example, strengthening relationships with local communities, industry partners, and alumni to create a support network. These

partnerships can provide valuable resources, internships, job placements, and research opportunities, contributing to long-term institutional resilience.

Methodology

A systematic review of the key themes about student resilience in higher education focused on South Africa. The review included the abstracts of 596 articles on the Clarivate Web of Science database. The rationale for the review is to provide a broad overview of the typical themes and topics studied in resilience in higher education, with a focus on students and South Africa. This is a particularly broad area, with some work conducted in this context, but with a limited understanding of the broader issues at play. The research question that guided the review is:

> What themes or topics are being studied to understand student resilience in higher education in South Africa?

The criteria used for the review were all studies' keywords and abstracts published in English between 2020 and 2025 (March), focused on SDG 03: Good Health and Well-being and Open Access, with the topic focus being resilience, higher education, students, and South Africa. Only journal articles on Clarivate Web of Science were included. Only studies on Clarivate Web of Science were included because its citation indexes for the human sciences, social sciences and science offer the unique feature of searching cited references. An Excel file from Clarivate Web of Science was extracted for further analysis. The Clarivate Web of Science database was accessed via the University of Johannesburg Library. An initial search was conducted to explore the topic of resilience; because of the large number of articles that it provided, the search was narrowed to include higher education, students, and South Africa. Various keywords were considered, including academic resilience, psychological resilience, resilience, student resilience and tertiary education students. An artificial intelligence (AI) tool called Julius.ai was used to analyse the data (See Annexure A: Excel file) extracted from Clarivate Web of Science. Julius.ai uses Python and R to analyse the data in an Excel file based on the prompts

used by the researcher. Julius.ai is considered to have 'exceptional analytical capabilities' (Chang, 2025: 132) and was thus selected for this research.

The PRISMA-P (Preferred Reporting Items for Systematic Review and Meta-Analysis 2015) checklist was used in developing the systematic review protocol (Shamseer et al., 2015). (See Annexure B)

Findings

Latent Dirichlet Allocation (LDA) was used to identify topics and visualise the distribution of these topics over publication years and by authors. The analysis reveals a strong South African presence in the research, with 105 papers from South African institutions. The distribution of topics varies by country, with South Africa showing particular strength in Topic 4 (37 papers) and Topic 0 (24 papers). While there is international representation from the UK, Australia, USA, and Canada, their contributions are relatively smaller.

The analysis revealed five broad topics based on keywords extracted from abstracts:

1. **Resilience, Social Support & Educational Outcomes (Topic 0)**

   This topic encompasses studies on resilience within educational and social contexts, emphasising keywords such as *resilience*, *study*, *support*, *care*, and *students*. It emerged as the most prevalent theme across the dataset.

2. **Paediatric HIV & Care Challenges (Topic 1)**

   Research clustered around paediatric healthcare issues, particularly HIV (human immunodeficiency virus) treatment and stigma, with keywords like *HIV*, *children*, *treatment*, and *stigma*. This topic reflects a niche focus within the broader field of resilience.

3. **Mental Health & Adolescent Stress (Topic 2)**

   Studies under this theme address mental health challenges faced by adolescents, highlighted by keywords such as *mental*, *depression*, *stress*, and *adolescents*. Mental health emerged as a critical factor influencing student resilience.

4. **Food Security & COVID-19 Impact (Topic 3)**

This topic links food security concerns with the effects of the COVID-19 pandemic, featuring terms like *food*, *COVID*, *security*, and *workers*. It highlights the intersection of socioeconomic challenges with public health crises.

5. **Health Systems, Climate & Pandemic Response (Topic 4)**
   Research in this area focuses on public health systems, environmental challenges, and responses to pandemics. Keywords such as *health*, *climate*, *services*, and *pandemic* highlight the systemic dimensions of resilience.

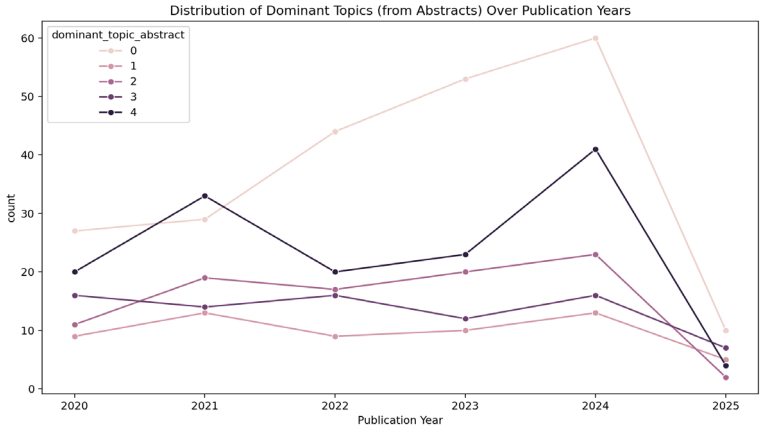


Figure 1.1: Distribution of Dominant Topics (from Abstracts) Over Publication Years

Topic correlation map

The topic correlation map generated through LDA provides a visual representation of the relationships and co-occurrences between key themes in resilience research within South African higher education. This map is a critical analytical tool, enabling researchers to understand how different topics intersect and inform one another, ultimately enriching the broader understanding of resilience in this context.

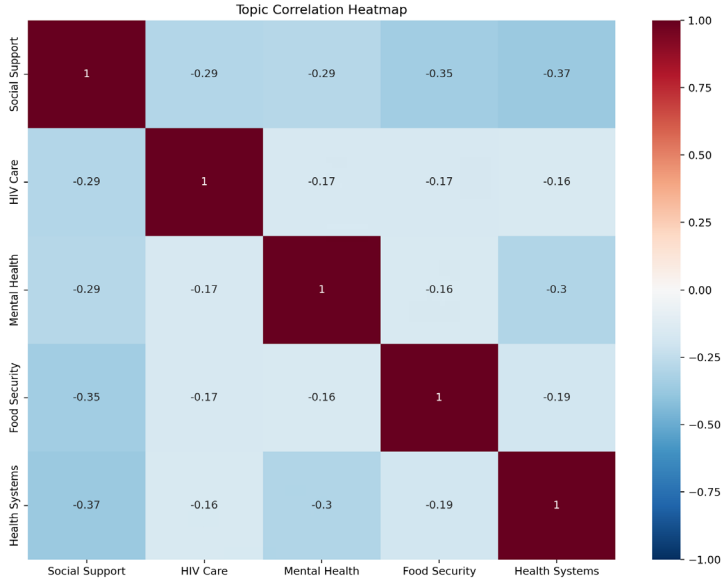


Figure 1.2: Topic Correlation Heatmap

Although no significant correlations are present, there is some correlation between:

- Social Support and Educational Outcomes show strong links to Mental Health and Adolescent Stress (Topic 2), suggesting that mental health challenges are often addressed within the framework of social and educational support systems.
- Similarly, Food Security and COVID-19 Impact (Topic 3) correlates with Health Systems, Climate, and Pandemic Response (Topic 4), highlighting the interconnectedness of socioeconomic factors and systemic responses during crises.

Average topic distribution across documents

The chart and values provide the average probabilities for each topic across all documents. This helps us to understand which topics are most prevalent on average

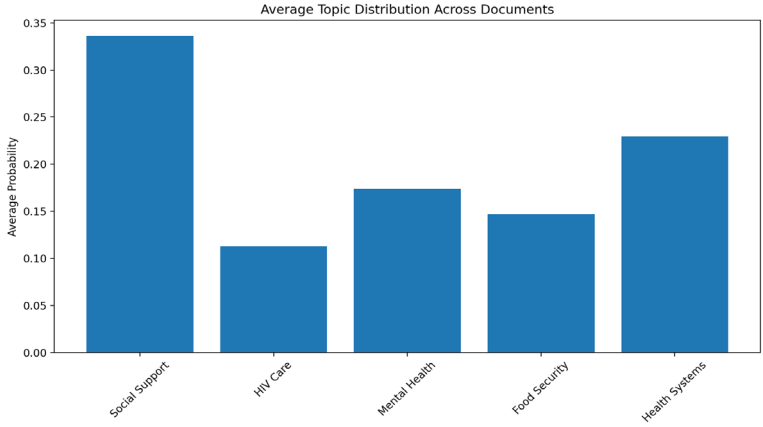


Figure 1.3: Average topic distribution across documents

The highest average probability is for "Social Support," indicating that this theme tends to receive more emphasis, while "HIV Care" shows a lower average contribution. These insights help to understand how the topics relate to their overall presence in your dataset.

Topic distribution across South African Institutions

Notably, North-West University and the University of Cape Town contribute significantly across several topics, with North-West University showing a particularly high number in Topics 0 and 4. The bar chart visualises this distribution, providing insight into how different institutions focus on research themes.

South African institutions contributed significantly to the research on resilience. Amongst these, North-West University and the University of Cape Town emerged as leading contributors across several topics:

- North-West University showed strong representation in Topics 0 (Resilience, Social Support & Educational Outcomes) and 4 (Health Systems, Climate & Pandemic Response).
- The University of Cape Town also contributed notably across multiple themes.

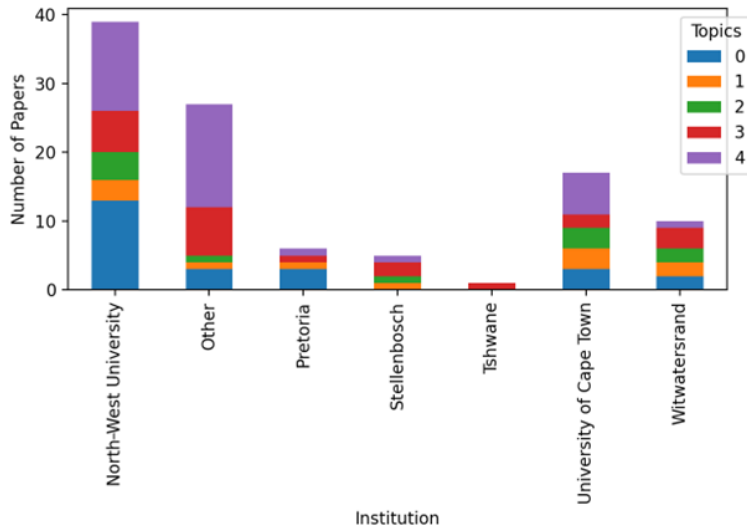


Figure 1.4: Topic distribution across South African Institutions

While South African research dominated the dataset (105 papers), international contributions from nations such as the UK, Australia, USA, and Canada were relatively smaller but added diverse perspectives.

Publication trends by nation over time

The figure shows publication counts by nation per year. Overall, the "Other" category (likely non-specific or less represented countries) dominates, but you can also see notable contributions from South Africa and minor contributions from the UK, Australia, USA and Canada. The chart visualises these trends over the years, highlighting shifts in the geographical distribution of publications over time.

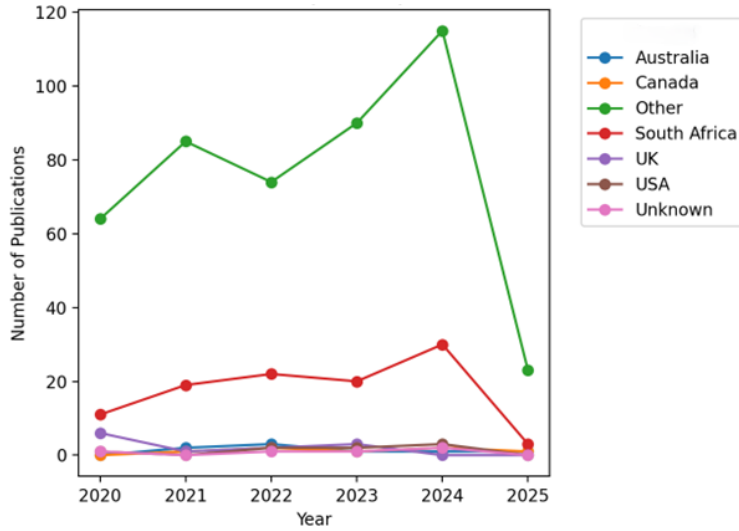


Figure 1.5: Publication trends per nation over time

Discussion

The literature conceptualises resilience as a dynamic interplay between individual, social, and systemic factors. Frameworks such as the Academic Resilience Model (ARM) emphasise protective mechanisms like adaptability, peer integration, and institutional support systems, which are critical for student success despite adversity (Durso et al., 2021). Similarly, the findings highlight *Resilience, Social Support, & Educational Outcomes* as the most prevalent theme, emphasising the importance of social support networks in fostering resilience. This alignment reflects how resilience research prioritises students' personal traits and broader systemic influences.

Mental health challenges are a recurring theme, both in the literature and the findings. The Socio-Ecological Resilience Theory (SERT) integrates mental health into its framework, emphasising institutional support during crises such as the COVID-19 pandemic (Webb, 2024). This concurs with findings under *Mental Health & Adolescent Stress*, which focus on depression, stress, and adolescent well-being. The correlation between mental health and social support found in both domains

reinforces the need for integrated approaches to address these challenges effectively.

The literature explores systemic factors influencing resilience, such as institutional underfunding, bureaucratic inefficiencies, and exclusionary cultures (Mutongoza, 2025; USAf, 2024). Institutional strategies like crisis management plans and technological infrastructure investments are highlighted as essential for promoting resilience (Adapt IT Education, 2024). These insights align with findings under *Health Systems, Climate & Pandemic Response*, which examine systemic responses to crises. Both sources emphasise the role of institutions in creating resilient educational environments capable of adapting to challenges.

The findings identify *Food Security & COVID-19 Impact* as a significant topic, linking socioeconomic challenges to public health crises. This aligns with discussions in the literature about financial insecurity, food insecurity, and accommodation issues faced by South African students (Adapt IT Education, 2024; USAf, 2024). The emphasis on flexible learning environments further supports this connection by addressing disparities exacerbated by socioeconomic conditions.

Cultural determinants of resilience are acknowledged in the literature, including ancestral callings (*ukuthwasa*) that influence identity affirmation amongst South African students (Bakow & Low, 2018). While ancestral calling represents a deeply personal and cultural transformation, students living in residence may find helpful peer support and acceptance, which can make the process of identity affirmation more sustainable and positive (Bakow & Low, 2018). Residence management, amenities, and inclusivity play a decisive role in supporting students experiencing ancestral transformations, as well as in creating a space for multicultural understanding (van Breda, 2018). While this theme is less explicitly reflected in the findings, it complements broader systemic topics like *Paediatric HIV & Care Challenges*. This suggests opportunities for future research to explore cultural dimensions more deeply within resilience frameworks.

The Dynamic Interactive Model of Resilience (DIMoR) critiques traditional interventions for focusing narrowly on

individual coping mechanisms while advocating for co-created supportive environments through connection and care (McCool et al., 2023). This perspective aligns with findings emphasising social support as a dominant theme across documents. Pedagogical strategies that amplify students' core competencies and foster safe learning environments are integral to building resilience both at individual and systemic levels.

Conclusion

This chapter has explored resilience in higher education with a specific focus on South African students, providing both a theoretical foundation and empirical insights derived from a systematic review of 596 articles published between 2020 and March 2025. The findings reveal that resilience is a multifaceted construct shaped by individual, social, and systemic factors. Key themes identified include resilience in educational outcomes, mental health challenges, food security concerns, systemic responses to crises, and niche issues such as paediatric HIV care. These findings align with the literature on resilience frameworks like the Academic Resilience Model (ARM), Socio-Ecological Resilience Theory (SERT), and Dynamic Interactive Model of Resilience (DIMoR), which emphasise the importance of integrated approaches to fostering resilience.

Resilience research in South Africa reflects the unique challenges faced by students in this context, including socioeconomic disparities, institutional underfunding, and cultural determinants. The emphasis on social support systems and institutional strategies highlights the need for holistic interventions that address individual needs and systemic barriers. Moreover, the findings emphasise the evolving priorities in resilience research, particularly in response to global crises like the COVID-19 pandemic.

While this chapter provides valuable insights into resilience in South African higher education, several limitations must be acknowledged:

1. The review focused exclusively on abstracts and keywords from articles indexed in the Clarivate Web of Science database. This approach may have excluded relevant studies published

in other databases or formats, potentially limiting the breadth of the analysis.
2. By analysing abstracts and keywords rather than full-text articles, the study may have missed nuanced discussions or methodological details that could provide deeper insights into resilience research.
3. Although South African research dominated the dataset, contributions from other countries were relatively limited. This may restrict the generalisability of findings to broader international contexts.
4. The review covered articles published between 2020 and 2025 (March). While this timeframe captures recent trends, it may overlook foundational studies conducted before 2020 that could provide historical context to resilience research.
5. Using AI tools like Julius.ai for data analysis introduces potential biases related to keyword selection and topic modelling algorithms. Human oversight was applied but may not have fully mitigated these biases.
6. While cultural determinants like *ukuthwasa* were acknowledged in the literature review, the findings did not prominently reflect these themes. This suggests a gap in research exploring cultural dimensions of resilience amongst South African students.

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Chapter 2

Conceptualising the Teaching and Learning Process to Ensure Resilience in Higher Education

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Introduction

The term 'resilience' refers to the ability to recover from or adjust easily to misfortune or change. We suggest that true resilience in education requires the foresight to anticipate what changes in the context of teaching and learning might mean for course delivery and the ingenuity to adapt rapidly to changed circumstances without sacrificing quality. Effective course delivery in higher education (HE) is materially impacted by contextual factors, including student preparedness, as forcibly demonstrated by the coronavirus disease 2019 (COVID-19) pandemic. Almost overnight, what was considered 'best curriculum practice' was transformed into emergency online remote learning (ERTL) with dire consequences for the majority of our students, who lacked not only Internet connectivity but (often) electricity. The University's 'bums-on-seats' policy was jettisoned in favour of remote learning, although infrastructure and training were not even remotely up to speed. Not only students but also staff were

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left traumatised by the enforced separation. No sooner had the University populace adjusted to the new normal than it was back to the old normal, with many staff and students still traumatised.

In this chapter, we suggest that the planning and effective operation of university teaching and learning in changing contexts, no matter how dire, might be assisted by a systemic model of course design, which identifies the functions needed for courses to be run. The model does not prescribe what effective teaching and learning might constitute, which is perceived differently by all participants; it rather identifies the systemic functions which need to be carried out generally in the teaching and learning process, as well as the way/s in which contextual factors might specifically impact on these functions. In effect, the systemic model provides a course design principle identifying felicitous conditions for effective course delivery. However, while it suggests the prerequisites for effective course design, the ultimate assessment of effectiveness is left up to the participants to decide. Moreover, the design principle used is descriptive rather than value-laden, can be adapted to suit the specific local values or urgent needs present in any given university context, and is thus well-suited for use in multicultural educational contexts, including the building of resilience. This chapter first reviews the literature informing this approach to course design and then looks at the systemic modelling methodology used to arrive at the design principle supporting the model, which is proposed as a means of conceptualising the teaching and learning process. Next, an account will be given of the proposed systemic model of curriculum design and, after that, the course of its development in various applications. The model is then used to identify which features of course design were adapted in different universities across the globe during the pandemic lockdown period. The chapter concludes with suggestions as to the role that the course design model might play in ensuring resilience in higher education.

Literature Review

This section will first give an account of the critical realist approach, then look at how critical realism defines social

structures such as Education, and next, how modelling is a typical preoccupation of critical realism.

The Critical Realist Approach

Education is governed by what Mingers and Hassan (2018: 48, 52) term 'sociological' paradigms, containing the beliefs, values and practices of particular groups. This means that the interactions in teaching and learning are governed by different beliefs and values, dependent on nationality and culture, as well as the myriad interpretations of individual educators and students. Even the concept of a university is different in different regions (De la Rey., 2015: 5), and different learning and assessment "cultures" are found in different institutions (Vicherková et al., 2022); these are interpreted differently in faculties, disciplines and even by individual staff members in the same discipline, particularly in the humanities and creative disciplines. The authors can attest to these inconvenient truths, having worked in multicultural and multidisciplinary tertiary contexts. However, we are working within the critical realist philosophy, which can accommodate different belief systems as part of the nature of the 'real' and shows them as powerful mechanisms that both enable and constrain learning.

Critical realism is a philosophy attributed primarily to Roy Bhaskar (1978, 1979, 1986, 1989, 1994), who viewed the key issue in theories of being as ontology, whether it was made explicit or remained tacit (Norris, 1999: 9). Margaret Archer (1995, 1996, 2002) and Rom Harré (1979, 1986) were co-contributors to the realist orientation, with Archer's (1995) morphogenetic approach providing a substantive theory explaining social stasis or change. Bhaskar's ontology comprises three domains: the real, the actual and the empirical:

> The empirical domain includes that which we can observe – things that happen and exist according to our immediate experience. The actual domain is a broader one, and refers to that which transpires independently of the researcher or any other observer who might record it. Finally, the domain of the real includes those mechanisms that are productive

> of different events and other 'surface phenomena' (Alvesson & Sköldberg, 2009: 4).

The domain of real contains categories other than natural material entities; there is also the "ideally real" (conceptual entities with causal force), the "artefactually real" (syntheses of various types of real, such as computers) and the "socially real" (relating to social structures such as education) (Fleetwood, 2005). The empirical domain includes knowledge or theories about various natural and social phenomena: the systemic model discussed in this chapter is a theory based on the authors' experiences of events and perceptions as to why things work the way that they do, that is, our conjectures on causality. In Bhaskar's terms, knowledge is a human construct shaped by social forces and immediate local needs, and always tentative. The theory of critical realism is itself such a construct, with, of course, its own version of how knowledge should be constructed, that is, from an in-depth investigation of natural and social phenomena which attempts to identify the mechanisms operating in a given case. The systemic model is typically realist in hypothesising the system of functions necessary to be performed for knowledge to be constructed; it does not prescribe the means to be used or what the desired outcomes should be in specific contexts.

Critical Realism and Social Structure

In Bhaskar's terms (1979: 187), social structures are defined as being mechanisms with emergent qualities. The term "social structure" is defined as "configurations of causal mechanisms, rules, resources, powers, relations and practices" (Alvesson & Sköldberg, 2009: 42). It represents "a set of relationships between people and other entities which sets the context for human interactions and can be seen to motivate social activity" (Pratt, 2013: 858). However, social structures can be observed only in instances of their influence on social interactions and not directly as entities. Education, like other social practices, is already established when we first come to it (Archer, 2004: 262), and is maintained and/or transformed by means of human agency, as shown in Bhaskar's (1994: 92) transformational model of social

activity. Social structures are "activity-dependent" (Bhaskar, 1979: 63). However, they do not function in a random or ad hoc way. Otherwise, there would be no social constraints on our actions, nor would there be self-actualisation by means of human agency. This is because we would have no "knowledge of" the social genres available or "knowledge of how to" engage in them. There are also systemic elements in social structures that exist over and above local social genres or immediate context, such as the existence of social genres or forms.

Critical Realism and Modelling

The notion of mechanisms operating at a deep level distinguishes critical realism from other traditions (Alvesson & Sköldberg, 2009: 40). A shortcoming is that while the critical realist philosophy offers a useful meta-theory for inquiry, it does not provide practical guidance on methodology in education or research (Dobson, 2012: 63). Yet, critical realism promotes the idea of social transformation through praxis, as social science, according to Bhaskar (1986: 169), "always consists of a *practical intervention* in social life". Modelling open-ended systems as they operate in real-world settings is a typical critical realist activity, with the intention of transcending human experience to comprehend the nature of the "real" operating in social structures. The system of functions and the systemic model that it forms, as discussed in this chapter, are intended to inform interventions which will transform educators and students from being victims, to not just survivors, but active role-players in the face of looming adversity, facing problems with human ingenuity and creativity. The systemic modelling process (Franck, 2002), as used for the models developed so far at DUT (Durban University of Technology), is particularly compatible with critical realism and the influence of social structure on human behaviour, as it involves a deep structure theoretical support of observable surface behaviour. This, in a sense, mirrors Bhaskar's (1979: 16) concept that a mechanism has a formal theoretical structure somewhat like the DNA or "essence" of an entity or process (material or social). The existence of the theoretical model (as with that of a mechanism) can be hypothesised only and is observable only in

its surface manifestations. The theoretical model is then validated by its correspondence with observable aspects of the process that it governs.

Methodology

This section covers the formulation of the systemic model on which the conceptual framework described here is based, as well as its permutations and combinations in its practical application in transactional writing, research writing, course design (including blended learning), and supervision. The last-named aspect includes research design as well as supervisor feedback to students engaged in thesis writing.

Systemic Modelling

Franck (2002) summarises the systemic modelling process as follows:

> Beginning with the systematic observation of certain properties of a given social system, (2) we infer the formal (conceptual) structure which is implied by those properties. (3) This formal structure, in turn, guides our study of the social mechanism which generates the observed properties. (4) The mechanism, once identified, either confirms the advanced formal structure or indicates that we need to revise it. (2002: 295)

Two different types of models are involved in the process described by Franck (2002: 295): theoretical and empirical. The theoretical model, while representing an abstract set of systems, is grounded by means of its being actualised in the specific case of the empirical (or applied) model, which can be shown to relate to actual instances of the social phenomenon or system in question. The working together of theory and actual instances (as reflected in a real-life situation which yields verifiable data) is very similar to the type of theoretical development achieved through grounded theory methodology. However, Franck's explication of the modelling process provides a rigorous theoretical framework illustrating more precisely the ways in

which theory and data interact to develop a theoretical model. The theoretical model is still only a hypothesis (Franck, 2002: 252), but the type of theoretical model described by Franck is not just an ad hoc abstraction loosely connected with real events, but the systematic representation of linked groups of social functions which can be shown to "fit" the social system that they support by being essential to bring about its properties. This architecture of functions (Franck, 2002: 88) can then act as a lens clarifying the nature and type of the actual mechanism carrying out the functions. This leads to the formulation of an empirical or applied model which can be tested out in specific cases, either validating the conceptual model or suggesting further modifications.

According to Franck, this grounding of the theoretical model in an empirical model - which can then be verified by actual data - gives models in social science not only great explanatory power, but also a status comparable with those derived from research in the natural sciences: "The explanatory power of a theoretical model constructed in this way can equal the explanatory power of natural laws" (Franck, 2002: 298). Franck's specific and directed methodology is in agreement with the general overview provided by Bhaskar's orientation, which is also concerned with "the explanatory power" of hypotheses (Judd, 2003: 55), but leaves the specific methodology open to the field in question. It must also be noted that Bhaskar's philosophy, while applicable to social science, is predicated on the effective functioning of *natural* science (Bhaskar, 1979); that both Bhaskar and Franck come to enquiry into the social sciences from a philosophical background; and that both explore the common ground between enquiry in the natural and social sciences in ways which give rigour, depth and complexity to the latter.

Breaking down the systemic modelling methodology into stages shows how the process can cumulate in the formulation of a general principle (Pratt, 2011a: 72):

1. The **properties** of a social system are carefully observed and defined.
2. A **theoretical model** is formulated based on the functions needed to achieve the above properties: the model consists of an "architecture of functions".

3. The **mechanism** which achieves the system's properties is inferred from applying the theoretical model to real-life situations or data.
4. An **empirical model** is formulated, depicting the operating of the mechanism in a real-life situation.
5. The empirical model is then **tested** in a real-life situation or against data to see whether it actually generates the properties of the system.
6. The theoretical model is **validated** by being tested against the empirical model to see whether the theoretical model needs adjustment to fit the real-life functioning of the social system.
7. If the theoretical model, that is, the system of functions, is seen to be generalisable so as to explain the properties of a process in another discipline or field, it can be said to have the force of a **principle**.

The eventual formulation of generalisable principles in social science research is seen as desirable, as generalisability offers researchers the opportunity to consolidate their knowledge base by testing the same principle in a different discipline, area or field (Franck, 2002: 297). As a principle involves the system of functions supporting a process and not the process itself, principles derived in the context of social science may be applicable even to phenomena in physical science and vice versa (Franck, 2002: 297-298). As will be suggested here, the interactive principle found in the systemic model of communicative functions (described next) could be seen to have relevance not only for communication modes (speech, writing, NVC (nonviolent communication) and graphics, amongst others), but also research, design (in general) and education (teaching and learning). Further work in these areas will be discussed after an account of the systemic model of communicative functions.

The Theoretical Model of Communicative Functions

Franck's (2002) modelling process resulted in formulating a theoretical model, which was a primary system comprising a "functional architecture" (Franck, 2002: 98) representing felicitous conditions for communication, consisting of the *contextual, ideational, interactive, social* and *reflexive* functions

(Pratt, 2011a: 60-61). For a communicative interaction to take place successfully, the following essential prerequisites were identified:

- The communicative interaction has to be *contextualised*, that is set in a context;
- Some kind of *ideational* content must be generated;
- There must be an *interactive* element;
- The message must have a *social* [1]loading;
- The *reflexive* function needs to be carried out (Pratt, 2011a: 125, adapted).

While this looks fairly straightforward, it was the result of three decades of intense research into written communication, and started off with an empirical, not theoretical, model which described the composing mechanism (Pratt, 1987; 2011a). This prompted the search, somewhat in reverse engineering mode, for a theoretical model which might explain why the empirical model appeared to work so well when applied in very different contexts. Further research and application in different fields suggested that the system of communicative functions could be viewed as a principle supporting and explaining the operation of other interactive processes, in particular, those taking place in research and education (teaching and learning). A principle governing teaching and learning would then also have relevance for course design and might assist educators to conceptualise the teaching and learning process more clearly as to the essential functions, as well as how contextual variables might have an impact on the process. Instead of myriad surface factors confusing the issue of "what" and "how" to teach, and the very different perceptions of educators as to what "exemplary practice" might mean, the basic principle could be used to guide course design at a deep level. Focusing on the basic principle rather than the surface variables would, it is thought, make it clearer what had to be changed and how contextual factors threatened what had until now been seen as "normal everyday practice".

1 The term "social" here refers to the conventions, rules and mores applying to different social interactions, and not to "socialising".

Systemic modelling is not for the faint-hearted, as complex layers of systems are involved (see Figure 2.1). The system of communicative functions is the theoretical model of "necessary functions" that must be performed for communication to happen (Pratt, 2011a). They were also found to be prerequisites for teaching and learning to occur, contributing to empirical (or practical) models of course design, as shown in Table 2.1. These included courses dealing with course design in face-to-face (f2f) group learning (Pratt, 2011b), blended learning (Gutteridge, 2006, 2009; Pratt, 2005; Pratt & Gutteridge, 2006) and completely online learning (Reddy & Pratt, 2024).

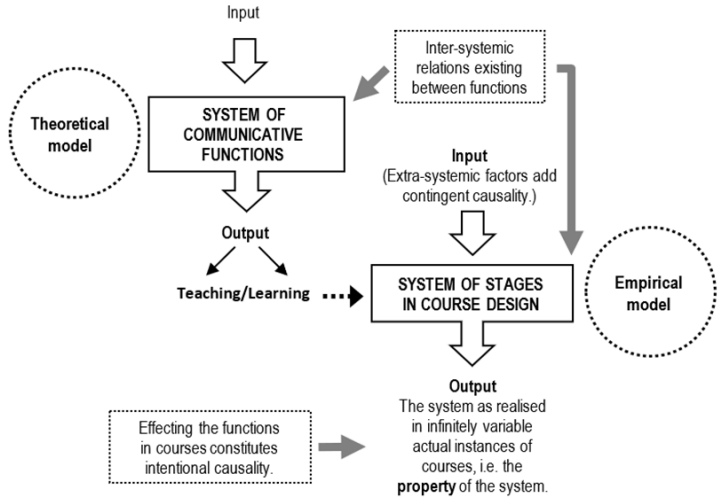


Figure 2.1: The complex layers of systems involved in systemic modelling (adapted from Pratt & Ngcongo-James, 2024: 74)

The value of systemic modelling is that it can enable educators to identify the commonalities (systemic) and variables (extra-systemic) in the teaching and learning interaction to design or adjust courses which will suit the teacher or student population in specific social contexts. This is particularly important in times of crisis, where sudden changes in variables need a quick and effective response to ensure resilience. Moreover, systemic models are not governed by the beliefs, values and practices of

particular groups or "sociological" paradigms". According to Mingers and Hassan (2018: 48; 52), these are extra-systemic input into the system and differ according to context.

The Systemic Model of Course Design

Why bother, you may ask – do we not all know how to teach and how learning occurs (or not)? And if things become difficult, we know that things will not go very well, but we soldier on. The authors know that all too well! However, we suggest that a systemic model might assist educators in gauging the possible effect of changes in context on the processes and mechanisms involved. While there is a multiplicity of available options, these are governed by the necessity for the essential functions to occur. Educators (including the authors, we admit) tend to think intuitively or in sequential logic ('If this, then that'), which results in us viewing learning as a chronological process requiring ad hoc adjustment along the way rather than it being multilayered and recursive. We also tend to focus on the mechanisms that are used rather than the functions that they perform, which leads to "models" that are a rag-bag of mixed "best practice" surface elements, without focusing on the actual outcome/s that we wish to achieve or the functions necessary to achieve them.

The model of course design (Table 2.1) shows the essential communicative functions which are thought to be necessary for teaching and learning to occur (with the proviso that it may even *then* not occur: the model is not predictive as to outcome, nor prescriptive as to what the desired outcome/s might be). It suggests that contextual factors impact significantly on the teaching and learning process. Distanced learning via the Internet, in particular, offers challenges (Reddy & Pratt, 2022, 2024). The model also indicates that the functions impact on each other, which can set off concatenations of unforeseen events (Pratt, 2011a: 170). It is not feasible to show this in a diagram, but it must also be remembered that the teaching and learning interaction is complex and recursive, necessitating going back to any stage any number of times until the desired outcome is deemed to have occurred. It is not our place to say how this should be established, except that it falls within the ambit of the reflexive function as to

how this is decided, and by whom. It must be noted that the model of course design refers to formal courses offered at educational institutions, although its provisions could be applied to informal learning as well.

Table 2.1: Model of course design

	FUNCTIONS	DESCRIPTION OF FUNCTIONS	QUESTIONS to be answered in course design
INPUT	Factors that impact on the contextual setting (including, but not limited to, duration, space, locality, resources and access)		
Factors that impact on the other functions	Contextual	This function relates to the social context in which knowledge is constructed.	How is learning to be contextualised?
	Ideational	This function relates to the source of the knowledge to be constructed, or the process whereby knowledge actually comes into being.	What is curriculum content, and where/how is it provided?
	Interactive	Knowledge is constructed in learning interactions (including interactions with resources).	How will participants interact in constructing knowledge? And with whom/what?
	Social	The social parameters, conventions or constraints operating in a given learning situation.	What social parameters, conventions or constraints operate in this context? How will these be made explicit to learners?
	Reflexive	This function relates to how participants will reflect on and assess their performance in constructing knowledge, and includes the issue of formal assessment (if any) and how it will be carried out, as well as curriculum assessment.	What forms of reflection and feedback are to be used by learners? In what ways will learning be assessed? In what ways will the curriculum be assessed?

The model of course design is actually an empirical (or applied) model, with the essential functions included so that they can be seen as informing aspects of the specific courses to be designed to suit teaching and learning in different contexts. The model thus incorporates the theoretical and applied aspects involved in the designing of specific courses so that course designers can see what essential functions are involved, enabling them to decide (within contextual constraints or enhancements) on the shape and nature of the proposed courses or necessary modifications to existing ones. They may already be able to conduct this intuitively, based on past experience; we have no argument with

that, but what the model provides is a deep structure to suggest *why* their designs might work (or not). The model (as with the authors) does not prescribe what learning is or what the desired learning outcomes in any given context are, but what functions are thought to be necessary for learning (of *any* kind) to occur. Learning might well range from rote learning at one end of a continuum to constructivist group pedagogy at the other end. Rote learning is included and may well be necessary in certain contexts, for example, memorising aircraft controls or emergency protocols. Learning interactions covered by the model may include those with the self (reflection), with others (teachers, peers or texts) or even with the world (experiential learning). For true resilience to prevail, particularly in the case of emergencies like the COVID-19 pandemic, adaptations need to be improvised speedily: this requires creative thinking and insight rather than foresight, as provisions for the future are often not feasible. For example, having WBL (web-based learning) options available at a university does not guarantee the option of mass migration to emergency remote teaching and learning during dire events such as the COVID-19 pandemic, where both the university and its denizens were in no way prepared materially or emotionally for such a dramatic leap into hyperspace (Czerniewicz et al., 2020; Reddy & Pratt, 2022).

Analysis and Findings

This section first looks at the development and application of the model at DUT, showing how the proposed model of course design has relevance for the web-based learning courses designed and run since the inception of the 2001 Pioneers Programme. Next, it will show how applied to courses (not all WBL) internationally, the model reveals the ingenuity and creativity of course designers showing resilience in the face of changes in context. Both sections will show that the model is not a case of "one size fits all" but offers guidelines to necessary adaptations even at short notice.

Development and Application of the Model at DUT

The development and application of systemic models at DUT was not a linear (or chronological) process planned in advance (or at

all) and following set phases but was based on various individual (but loosely related) course design research initiatives by staff and students as well as actual learner needs. It is actually only in retrospect that the relationship between these various initiatives and the resulting models has become clearer. Academics (the authors included) tend not to plan theorising except in those snatched moments of working on Master's, Doctorates and the resultant (often rushed) publications. In between these, we 'madly teach' and gladly use anything that seems to work. Some features of the model itself became clear only in retrospect. Firstly, it must be noted that the course design model is only one spin-off from the system of communicative functions, which appears to map an interactive principle found not only in different communication modes but in teaching/learning and research processes (see Pratt, 2009: 5).

The principle was used to inform courses in traditional face-to-face courses, in project- and scenario-based learning (large and small group), and blended learning; also in very different contexts and projects. Paradoxically, designing distance courses (traditional book-learning or on the Internet) actually revealed the interactive principle more clearly than a study of face-to-face course designs, which tended to be based on the "death-by-a-thousand-outcomes". The principle was discovered during research into written communication, where the interaction-by-proxy is by necessity distanced. The fact that writing requires one to pass through various stages to complete the task and to adopt a reader role (for feedback purposes) revealed the nature of the functions, which are nearly simultaneous in face-to-face communication. Ironically, rather than complicating the analysis, the distance aspect made the prerequisite communicative functions more obvious.

This section is not a historical overview, but a blended, layered picture, pretty much like the complex nature of the real (Bhaskar, 2010: 7-8). Divergent entities "converged" in a watershed moment in DUT history, when the introduction of web-based learning (WBL) began with the Pioneers initiative in 2001, on the cusp of a major institutional merger (Peté & Fregona, 2004; Peté et al., 2002). But perhaps it is not such a 'bad thing'

when hitherto 'normal' procedures are thrown into the melting pot, as this can stimulate people into making new discoveries and perceiving interdisciplinary congruencies not seen before. This *mêlée* included formal Doctoral and Master's research into written communication and blended learning, as well as practical staff induction into WBL (then on WebCT), all linked to journal and conference papers (and later, book chapters and books). It also included the fortuitous convergence of the authors of this chapter, as WBL inductee (Prof Pratt) and inductor (Dr Reddy). The institutional requirement for inductees to design and run WBL courses (and not just attend and share lunches) meant that Dr Reddy reversed roles and became a student on a blended learning course designed and run by his erstwhile inductee, Prof Pratt (in present-day, we now collaborate as academic colleagues and co-authors).

To focus more specifically on the model of course design, this had by now become clear:

> While all learning could be said to fit into the category of 'blended learning', introducing computers and the Internet into the mix of instructional media has the effect of making the course designer re-examine basic assumptions about learning and how it is best facilitated (Pratt, 2005: 136)

The convergence of concepts led to the realisation that the 'functional architecture' of a model of written communication, the system of necessary communicative functions, had the force of a principle which could be applied to the design of *any* kind of course. However, the course designer needs to think both 'top-down' and 'bottom-up'. The 'top-down' aspect starts with the question 'Why bother'? 'What *use* is this course going to be to the student and the world in general?' At the 'bottom-up' point, the question is, 'How do we assemble the pieces so that learners *get* where we want them to *go* (and hope that we are on the same page)?' It's a destination or route paradox. This chapter was conceptualised in pretty much the same way: sort of knowing where we wanted to go but not quite sure how to get there. Courses were designed to address institutional educational needs, not to showcase technical and design skills. DUT Pioneers, of course,

saw the advantages of WBL and designed and ran some exemplary courses (Fregona et al., 1999; Peté & Fregona, 2004; Peté et al., 2002). Courses also did not spring up out of nowhere but often translated successful initiatives, such as project-based learning, into blended delivery (see Table C2 for a tentative progression of such developments).

The use of the Internet was not just about multimedia course delivery, but it also marked an exponential development into a more interdisciplinary approach, where the lines between tuition and research - and different academic disciplines - were not so rigidly drawn. Many earlier WebCT courses involved undergraduate students in research projects. The *CALT Research Module* was reprised in the *BTech Research Module* (when Management rather short-sightedly vetoed the *CALT Coursework Masters*) and later morphed into the interdisciplinary *Higher Degrees Research Module*, which was extended to include thesis writing. *Arts & Design FRC Online* was a resource base and discussion forum for the Faculty Research Committee so that uncomplicated research administration could be 'round robined' online years before Microsoft Teams became available. The *Research MOOC* (a gargantuan project still in progress) is a compilation of courses and resources using materials developed by the authors (as well as links to freeware) on *Research Net Online* (the blog papers, besides developing student research capacity, could be extended and developed for publication). A key aspect of course design is that the context in which a course is designed (and run) is neither static nor uncomplicated. In the case of *Comm Skills Online*, Table 2.2 indicates that the course had a venerable history, as well as distinguished progeny, so to speak. It is not run today, as it served its purpose, and the context has changed materially. To relate this example to the course design model, the following aspects are highlighted in the case of the *PRINTS Project.*

Table 2.2: Development of WBL courses at DUT

SCENARIO-BASED PROJECTS (OFFLINE)	**USERS/PURPOSE**
Job Interview *Million Dollar Grant*	Communication 1st year and Semester Comm
PIONEERS WBL INDUCTION	
WebCT for Dummies	Staff/students using WBL
POSTGRADUATE WBL/BLENDED COURSES	USERS/PURPOSE
CALT Online	Masters course
CALT Research Module	Preparing for CALT
BTech Research Module for Journalism	BTech workshops
UNDERGRAD WBL/BLENDED COURSES	**USERS/PURPOSE**
ditcom	Student resource base
Comm Skills Online	Semester Comm courses
PRINTS Project	Communication 1st year
RESEARCH ADMIN COURSES	**USERS/PURPOSE**
Arts & Design FRC Online	Info; fast-track forum
HIGHER DEGREE WBL/BLENDED COURSES	**USERS/PURPOSE**
Research Net Online, housing:	
Higher Degrees Research Module	Individual support
Research MOOC (and subsets)	Research resources
Research Matters	Workshop archive
English for Research Purposes: Course	Research writing
English for Research Purposes: Selected Papers	Publication blog for capacity building

- **Contextual**: The English syllabus had recently been redesigned to include scenario-based group work for semester and annual courses to cater for increased student vs. diminishing staff numbers. This meant that the Communication Course did not need to be re-designed so much as re-configured for blended delivery via the institutional LMS (learning management system) (then WebCT). The institutional resources for running WBL courses were no better overall than those for traditional delivery in terms of computer rooms and Internet access, but the course designer was motivated and received support from HoD (head of department) and colleagues. Students, especially in technical disciplines, were fascinated by the option of using the Internet. Balanced against this the huge amount of work needed to adapt and upload materials and the cost of performing this from home. We have not even scratched the surface of contextual issues, but one other key aspect in the designer's favour was that, after the merger, University Management were too busy competing for tenure because of overstaffing in the upper echelons to notice what the 'little folk' were up to: the time was ripe for innovation and change!
- **Ideational**: Knowledge (as offline) would be generated by student interactions in the scenarios. One aspect of WBL was that a large amount of course resources could immediately be made available by posting hyperlinks; it also meant that the instructor could make changes according to student response or progress not only overnight but *while lecturing.*
- **Interactive**: As learning was in blended delivery, it needed to be decided when participants needed to be together in laboratories (labs) or could interact online or work alone (offline or online). Having students working in labs, apart from giving all equity of access, had the advantage of the instructor seeing what worked and noticing which modalities students preferred, and also allowed coaching and peer assistance. Not all student groups had access to computer labs, but this was an institutional inequity which we all had to accept. This affected course delivery and resulted in the *PRINTS Project* being run optionally online, partially online and predominantly online (Pratt, 2003: 2-3). As with offline

scenarios, students were required to choose different projects so that content copying would not be an issue. Small groups (five to six members) were kept in order to facilitate peer learning and group support.

- **Social**: This meant fair allocation and sharing of working computers and rules for working in labs; it also meant asking computer-proficient students to assist peers. Students perfected the social aspects of their reports (language format) more in WBL, as their reports were on display to others on the Internet. They also tended to correct their English in forum discussions, being self-conscious about appearing illiterate or careless; an advantage for ESL (English second language) students was that responding in writing on forum discussions gave them a chance to perfect and correct their English texts, whereas they were often tongue-tied and said nothing in large offline face-to-face groups.
- **Reflexive**: Discussion forums were included in the course for student feedback, and a survey was run after the first iteration of the course to gauge student response to blended delivery and to make adjustments if or as necessary. Posting course materials and instructions on the Internet had the advantage of allowing overnight changes to be made, as well as viewing two or three alternative options (also overnight) to assess the probable effects of the changes on users. Online posting of assignments also meant that students could give peer feedback on the work of fellow students, which was not a viable option with printed paper reports. Student work could also be shared with other student groups (with permission) as exemplary examples.

However, the most significant change overall was moving from students enacting live offline professionally related scenarios to conducting a web search. The *PRINTS Project* had the full support of English Department staff, in particular, Linda Herbert, who suggested the web search to replace the offline scenarios, and Robert Gutteridge (2009), who based his Master's research on the project. A contextual factor which impacts course design and implementation positively is a talented and committed team of colleagues who contribute to the design, running, procedural

and feedback aspects of a course. Colleagues also *understood* what was involved in the *PRINTS Project* and the nature of the desired outcomes:

> The PRINTS Project, although web-based, is an example of blended learning delivery. There is a mix of traditional face-to-face delivery, including overhead transparencies, "chalk & talk" and hand-out exercises, with computer mediated learning. Media and modes are blended to achieve optimal course delivery. Tuition, individual assistance and feedback are available in the traditional classroom setting, while content, guidelines, tests and feedback through discussion and email are available on the learning management system (LMS); additional resources are available on the internet. (Gutteridge, 2009: 4)

The learning process involved in the project was also understood:

> It is a translation of the traditional (i.e. face-to-face) scenario project that integrated the different modalities of speech, writing and nonverbal communication, requiring learners to investigate and report on a specific problem which was relevant to their field of study. The course elements weave together small group project work, experiential learning and simulations in an outcome-based development of higher-order competencies (Gutteridge, 2009: 21).

Course Adaptations during the Pandemic Lockdown

The COVID-19 pandemic provided vivid examples of the problems caused by just one major shift in the contextual elements impacting teaching and learning, not only in higher education but at all levels. The forced change, almost overnight, to emergency remote teaching (ERT) merely accentuated the problems; it did not solve them. Our previous section on how the model was developed in WBL course design involved blended learning delivery, as it was obvious from the outset that actual (and not just virtual) teacher presence was needed in initiating the move to WBL, even if it was

only an on-campus presence for advice and support: the fact that we were *physically* present showed that we had an ethic of care and were available to students and colleagues. Much has been written about the importance of "instructor presence" (material and/or virtual) but total absence was a game changer.

The results of the lockdown in the South African context showed that university students and staff experienced inequalities in switching to "emergency remote teaching" (ERT) (Czerniewicz et al., 2020). These inequalities existed before the pandemic and lockdown but were emphasised by it, and involved life expectancy, access to resources and the right to dignity and autonomy. In the South African context, expecting students and staff to engage in ERTL led only to the exclusion of the disadvantaged and, at best, mediocre programme delivery for the supposedly more fortunate. Moreover, the "multipronged, multimodal strategies" announced by the government (RSA, 2020) meant that nobody actually knew what they were supposed to be doing. Students did not want to stay at home as this was not conducive to learning and they lacked the very means whereby they might engage in online learning, namely "electricity, equipment, connectivity" (Czerniewicz et al., 2020: 955). Lecturers wanted to interact with students but could not do so during lockdown. To this must be added the state of deprivation, distress and despair which many South Africans experienced and which could not be alleviated by cosmetic changes in curriculum design.

The worst-hit in the HE sector were the disciplines involving the creative and performing arts. Not only delivery but also teacher training was affected on two fronts, as schools and colleges were closed. In a study of how the effects of the COVID-19 pandemic impacted the Community Education and Training College (CETC) system in KwaZulu-Natal, the following signs of distress were noted:

- Fear;
- Lost access to learning venues;
- Challenges of screening and cleaning;
- Frustration and anxiety;
- Uncompleted syllabi and rescheduled assessment programmes;

- Loss of adult educators;
- Loss of adult learners; and
- Pressure to adapt. (Mthethwa & Land, 2022: 30)

University students have been found to experience substantially higher rates of depression and anxiety than those found in the general population (Price, 2023). In an extensive review, common elements in attempts to define student resilience were identified as:

- 'Bouncing back' to perform in spite of adversity;
- Undergoing adaption without significant loss of function;
- Growing overtime as a tolerance or 'a thicker skin' to adversities is developed, and;
- Deliberately building peer networks for collective support (Price, 2023: 87).

Price (2023: 96) suggests that, in trying to develop student resilience, designer resilience is needed, which she equates in general with problem-solving. She advises course designers to attempt to develop problem-solving skills in students, solving not abstract but real-world problems. Research also suggests that being included in actual course design is found satisfying by students, as well as the teacher's empathy shown by the instructor's involvement in resolving technical issues (Imane, 2021: 414) or participating in online scenarios, thereby modelling what students were involved in doing (Cziboly & Bethnal, 2020). However, while course designers have an ethic of care in tailoring their courses to suit their intended audience and purpose, as well as the course being viable in terms of contextual features, they cannot be expected to deal with the extreme depths of distress and despair suffered by the university populations worldwide during the pandemic lockdown, and the appalling toll on human life (see Spitz et al., 2020: 564). What they could - and did - do to ameliorate the distress was to show designer resilience in finding workarounds, some of which proved more creative and inspiring than the on-campus options. The pandemic-era courses discussed next did, in fact, require students to develop problem-solving skills, either in adapting to the changed context or dealing with course tasks. Drama Education, besides Education, was

hardest-hit in view of the need for physical instructor presence in developing theatre craft skills, yet produced some exemplary courses in the pandemic era. Theatre craft, as with education in Graphic Design, needs practical skills as well as theoretical knowledge for creation and production, which poses many problems with the forced move to virtual delivery (Cziboly & Bethnal, 2020; Davis & Phillips, 2021; Spitz et al., 2020: 565).

One college risked on-campus delivery by staging a musical, which obliged students, staff, and community members to note, understand and deal with the necessary live-contact precautions against the pandemic (Cyr, 2021: 7640). Students thus experienced in actual practice the precautionary measures needed to avoid infection and learn theatre craft. However, the final performance had to be filmed for online viewing, to avoid the risk of performing live to an actual audience. On a smaller scale, live instructional performances enacted by a small student group in communities in Kenya modelled the pandemic precautions needed in creative yet considerate ways (Mbonye, 2020). A televised instructional play was produced pre-lockdown by UKZN (University of KwaZulu-Natal) students, similarly with soothing movements, song and dance, so as not to alarm viewers, but this was able to be accessed online during lockdown by fellow students and staff as well as parents and the greater community (Mungroo, 2020).

A completely online theatre craft initiative involved a hybrid model which combined acting and technology (Toczauer, n.d.). This showed how virtual theatre production could work, in having students produce a play for a tele-audience in a virtual reality 'space', but it is accepted that this option would not be viable without the advanced technology of the "Brendan Bradley Integrative Technology Lab" (Toczauer, n.d.). Hybrid delivery does not need to be expensive, however, and can use existing university technology such as Zoom or video conferencing, as well as options such as Google Meet and WebEx (synchronous communication); e-mail, social media, streaming videos, and lecture notes posted online (synchronous communication) complete the mix (Simamora, 2020: 86). There is already some resistance from students to using these methods, however

(Bhorat, 2015), and there is also the risk of turning live theatre into mediocre televised consumer content (Timplalexi, 2020: 45). The hybrid pedagogy used by the Hong Kong Academy for Performing Arts was likewise impressive (Li et al., 2021) but not within the capacity of our South African universities to provide.

Most relevant - and feasible - for the South African context, there were 'low-tech' Internet courses offering scenarios and activities related to the pandemic. The interactive element for collaborative learning for one group was solved by the use of online process drama using online scenarios, which needed minimal technical preparation but involved students in imaginary community events, including a Drama lesson involving acting out responses to a COVID-19 distress call (Cziboly & Bethnal, 2020). This scenario meant that students needed to decide whether to respond to a confused distress message and required taking the role of both the distressed person and the Helpline respondents. In this sense, students were 'acting out' dealing with pandemic issues existing in their real-world context and, at the same time, developing (online) theatre craft skills. This is an example of how layered conceptual insight is a far more relevant and viable attribute for resilient course design than relying on expensive high-tech equipment.

Some online presenters also showed empathy for colleagues operating under lockdown conditions by posting online Internet resources for Drama educators to access and use, including online lesson plans and safety tips for colleges which had reopened (Barack, 2020: 1); examples of drama games (Cziboly & Bethnal, 2020), and online videos on safe use of studios and how to teach voice or movement and acting virtually (Bucs et al., 2020). There was also an extensive guide to online theatre to which visitors were encouraged to contribute (Sicre, 2020). These educators not only found solutions to teach theatre craft virtually during the pandemic but shared these freely with others.

Conclusions and Recommendations

As related to the model, the above practical examples suggest the following general points. Campus lockdown (***contextual***) limited actual staff and student presence and interaction. However, a look

at the solutions found by course designers shows that interactivity (***interactive***) could actually be heightened and extended by course designers focusing on the constraints in the real-world context and finding viable workarounds to generate course content (***ideational***). Designers could then model the specifications for other educators by uploading research resources on websites and publishing results in journals. 'Acting out' the pandemic issues provided students with the option of understanding and dealing with the problems and stress that the pandemic created (***reflexive***), not just for themselves but also for the benefit of fellow students, staff and the greater community (***social***, as it serves a community need, the 'right thing to do' for the greater good).

The 'acting out' of professional activities is not limited to Drama and Performance studies, however. The principle informing the course design model was developed while running an interdisciplinary communication syllabus involving professionally based scenarios, all involving complex and potentially stressful workplace interactions. The *Job Interview* involved dealing with interview panels and performing the interview process. Participants found it stressful being interviewed even by peers; and interview panellists needed to show tact and understanding, as their performance was being peer-assessed by observers. On the plus side, it must also be noted that participants often laughed so much at the inevitable bloopers that it was a problem getting them back 'on task'. The *Million Dollar Grant* required participants to formulate and enact strategies to obtain funding (all too real for students). The scenarios involved the kind of "knowledge practice" which is typical of the arts (Melrose, 2003) and particularly relevant at a University of Technology, where application of knowledge in real life contexts is a prerequisite (Du Pré, 2009). It is a form of knowledge 'how to' rather than knowledge 'about', where complex, layered competences are "sensed and lived rather than observed and/or measured" (Ngcongo-James & Pratt, 2021: 181).

Collaboration with students in course design and using a project- or scenario-based framework might facilitate participants exploring and resolving issues using group problem-solving. This, it is suggested, might work towards *developing*

more inclusive curricula and teaching approaches. Collaboration might also make it possible to *incorporate indigenous knowledge and practices to foster a sense of belonging* without it seeming like a politically correct imposition from above. Small group project work might *promote peer support networks and integration to build social resilience.* We have found that inter-group rivalry in project work is much healthier than interpersonal student competition and that the more accomplished scholars tend to adopt a social, as well as academic, role in improving peer performance. The more confident and articulate members also support the less confident in challenging situations, such as giving formal speeches, as group bonding tends to create a social responsibility to rally to the help of struggling group members (performing a 'social' function in upholding group mores and repute). Rather than suggesting the actual designing of courses, we suggest that collaboration in course design by students, as well as lecturing staff, might *provide resilience training for both students and staff members in course design*.

Obtaining open and anonymous feedback (the reflexive function) from course participants might demonstrate that resilience requires sticking to the task and resolving problematic aspects of a course. Participants could also be encouraged to complete speedy automated feedback surveys assessing their courses on the university LMC. Feedback might show students, as well as lecturers and co-designers, that course design is not so easy, even in settled times, and may need to be 'tweaked' along the way. Resilience, after all, involves identifying problems and dealing with them (Price, 2023). The "proposed rubric for online course assessment", based on the course design principle, could be set up on an LMC for online or offline course assessment (Reddy & Pratt, 2024: 6986). The various examples of technological support in the above practical examples could be used to enhance *online and blended learning capabilities and to increase access and flexibility.* However, it must be emphasised that the university's goal should be ingenuity and creativity in using existing resources available to staff and students, and not buying expensive equipment for prestigious window-dressing projects. The following caveat should also be borne in mind:

> What computers and the Internet can do is enhance communication and instruction in various ways by expediting access to messages and resources and presenting them in ways which are more vivid, interesting, animated and organised than textbooks. But a computer or the Internet cannot teach any more than a filing cabinet can, so seeing online learning as a solution to the lockdowns or constraints on on-campus attendance caused by the pandemic depends entirely on what we, as educators, set these mechanisms up to do. (Pratt & Ngcongo-James, 2024: 8-9)

As the stresses experienced by disadvantaged students (and staff) are highly context-specific as to discipline, geographical area and sociocultural factors, we suggest that the involvement of students in course and curricular planning and running is a much more viable and effective solution than running massive counselling programmes based on quasi-medical lines. The main problem with running general counselling courses is that, on an individual basis, staff may notice distress and be able to offer advice on disciplinary and minor personal issues but are not trained counsellors, and distressed students may need to be referred to an available and workable counselling service, not relegated to 'lessons of mass instruction' claiming to 'train' students to be healthy.

To conclude this section, we regret to say that course design cannot remedy all resilience issues, which are the guiding themes of this book. Course designers cannot, *provide comprehensive support systems for disadvantaged students, including academic, financial and psychosocial support*, but they can see that course materials sensitively include information as to where students may obtain help. Course materials should suggest that feedback is given (preferably anonymously) if student needs are not met by the measures provided so that indifferent or inadequate service can be noted and rectified. Course designers also cannot directly work at *improving infrastructure and resources* except in the process of developing and making exemplary courses (and materials) available to students and staff.

Concluding Thoughts

We do not claim that course design can set right the inequalities and iniquities which were highlighted during the COVID-19 pandemic lockdown, and we grieved the loss of dear friends and colleagues as well as suffering the uncertainties involved in the continuance of supervision and administering WBL courses, as well as just surviving from day to day. The model of course design is offered as a guide to resilience in showing that features of the context can - and do - cascade over into other course factors, materially affecting equitable or even (at times) *any* course delivery, including supervision, which involves a higher-order learning interaction also supported by the communicative principle. However, it is the designer's role to show empathy in providing course options which reflect an ethic of care for all participants, as an educational ethos needs to be shown in action, not just on university letterheads. It must be remembered that the WBL courses which showed the development of the course design model were all designed for, and run in, blended learning delivery, apart from online resources, to which, it must be added, students were directed by their supervisors, and which were properly contextualised and updated to suit our students. At no stage did we suggest that Internet courses could be run without lecturers being physically present on campus, but physical presence is clearly not an option during dire, fraught times such as the COVID-19 pandemic era, which meant that virtual options needed to be explored in course design, as given in the examples of courses run during the pandemic. 'Teacher presence' (virtual or actual) is one of the most important aspects of the context in which teaching and learning occur, as it stimulates engagement, assists in generating ideational content interactively, and assists students in developing trust in the instructor. This can occur not just in terms of the teacher's presence demonstrating care but in the self-revelations of instructors.

While the content, structure and 'ambience' of the course can demonstrate instructor attention and care in asynchronous mode, synchronous communication, whether live or virtual, is also important in building trust through instructor self-revelations. Individual near-synchronous chats via applications

such as WhatsApp can provide a safe medium for self-revelation of both instructor and student, as well as allowing students to raise and discuss problems that they might not wish to share with peers, such as not coping academically, financial hardships or abuse. However, empathy cannot be factored into course design: it is a feature of the context that can only be supplied by human interactants.

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Chapter 3

From Struggle to Success: Enhancing Quantitative Skills in South African Business Students

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Setting the Scene

The importance of mathematics in gaining access to and succeeding in higher education is well-known. Across the world, including in South Africa, different strategies have been implemented to support mathematics-based access and the success of learners (Sholihah, 2024; Hunter et al., 2022; WestEd, 2022a). In 2010, the US higher education system faced several challenges within the community college space, with mathematics being identified as one of the most significant barriers to college completion. This was further complicated by the community college system expected to serve 41% of undergraduate students in the US, where more than half of these students faced food insecurity and about a quarter faced homelessness, with many of the students being dependent on government funding through PELL grants to access higher education. Inevitably, community colleges had high drop-out rates and an average six-year

graduation rate of around 39%. In an environment where a college degree was increasingly vital to earn a living wage, the call for change was evident (Bailey et al., 2010), also as community colleges mostly served students from previously disadvantaged racial groups and students with lower socio-economic status. Through collaboration with educators and following a research-based approach, the Pathways programme was then developed to create a more equitable mathematics education system, transforming mathematics education to being more relevant to students' lives and becoming a gateway, rather than a gatekeeper, to student success (WestEd, 2025). The persistent challenges and negative stereotypes around mathematics in South African schools undermine mathematical resilience amongst university students, leading to increased anxiety, feelings of alienation, and high drop-out rates in mathematics-related programmes (Msomi & Rzyankina, 2024; Khumalo et al., 2022). A lack of sense of belonging and inadequate school preparation often leave students ill-equipped for the rigours of university-level mathematics, making resilience defined by adaptive coping strategies, support networks, and reflective learning crucial for success (Mabulana, 2025; Khumalo et al., 2022). Without targeted interventions that foster both academic support and belonging, many students continue to struggle to develop the resilience needed to persist in their mathematics studies at university (Khumalo et al., 2022).

The founding principles of the Pathways programme were that 1) not all students need to be on the path to calculus; 2) students could learn the concepts of quantitative reasoning and statistics whilst building their algebraic understanding and skills; 3) mathematics could be contextualised, relevant and engaging to students; 4) a mathematics classroom could be a place where students develop a sense of belonging and grow their confidence in themselves; and 5) instructors should be equipped to support the students as whole (and not only their algebraic capabilities) (Huang, 2018).

In light of the similarity in challenges faced by universities in South Africa, in 2013 the authors started working on exploring ways in which the Pathways programme could be adapted for the Faculty of Economic and Management Sciences (EMS) at the

University of the Free State. Graduation rates were continuously below the university average at around 17% to 18%, with most students in the faculty being dependent on government funding for tuition fees, indicating a household income of below R350,000 per annum. As in the US context, South African data also highlighted the direct link between degree attainment and employment rates. In quarter 3 of 2024, individuals with less than matric had an employment rate of 37.8%. This contrasts with the unemployment rate of graduates of 9.8% (Stats SA, 2024). The role of higher education and, specifically, degree attainment and completion, therefore, could act as a vehicle to improve students' social mobility (Whitelaw & Branson, 2023). The focus for the EMS faculty thus shifted from course success rates to completion or graduation rates as a measure of student success.

The authors posed the question:

> How can teaching and learning innovation assist students to complete their studies in minimum time in order to afford students the opportunity to maximise their employment and social mobility prospects?

Although determinants of student success and social mobility are very complex, we turned to the curriculum, which educational specialists directly influence, to analyse possible opportunities for such an undertaking. Upon further investigation, quantitative data analyses on student data within the faculty revealed that high school mathematics performance significantly influenced academic performance in the first-year economics module, which in turn influenced overall academic performance (i.e., graduation) in our students. This highlighted the possible significance of mathematics on student progression, also in our context, and redirected our attention to our mathematics-based (or quantitative skills) teaching in our faculty. Often, the influence of mathematics on access to and success in business programmes is underplayed, as the focus of mathematics teaching (also in South Africa) is mainly on accessing Science, Technology, Engineering and Mathematics (STEM) programmes at the higher education level. Since EMS students are very different to students in natural science, the first founding principle of the Pathways programme,

which stated that not all students are on a pathway to calculus, was very applicable and true for our business students.

At that stage, our business students enrolled in two semester modules provided to EMS as service modules by the Department of Mathematics. These modules were presented through traditional algebraic-based mathematics teaching, with limited application to the business environment in which our students studied. Although students did not experience challenges in passing these modules, the knowledge transfer of quantitative skills into discipline-specific modules, such as economics and accounting, was not ideal. Other prominent challenges at that time included negative perceptions of students towards mathematics and students questioning the relevance of traditional mathematics or statistics-based modules for business studies curricula and programmes. Therefore, before the introduction of the Pathways programme, the learning and teaching environment for students was characterised by low motivation to engage with the content, low self-confidence in their abilities to pass mathematics or statistics-based modules, high anxiety levels regarding mastering (and passing) the modules, and, consequently, a poor sense of belonging within the class.

This critical reflection on the learning and teaching environment for quantitative business skills development in EMS, complemented by a quantitative analysis of our student data as well as the principles and well-documented success of the Pathways programme, created an ideal opportunity for the development and implementation of a contextualised version of the Pathways programme at our university.

The Pathways Programme Structure

The Pathways programme is built on four critical elements, namely a research-based pedagogy, innovative and relevant curricula, socio-emotional support for students and professional learning and support for academic staff (WestEd, 2022b). The Pathways offerings include Quantway® and Statway® courses (modules from here onwards, as used in our institutional context). Firstly, the Quantway® module is '*designed to promote success in mathematics and to develop critical thinking and quantitative*

literacy' (WestEd, 2022a). Secondly, Statway® is a statistical reasoning module '*to teach mathematical skills essential for a growing number of occupations and needed for decision-making under conditions of uncertainty*' (WestEd, 2022a). These Pathways offerings were directly aligned with our overall aim for including these modules in our business curriculum, namely that students had to be able to perform mathematical calculations confidently and apply mathematical and statistical concepts and calculations in the context of business to promote quantitative reasoning and ultimately support student progression and success. The modules depend on context-driven learning to enhance student engagement through active learning principles. However, the real-life contexts included in many of the Pathways learning units were US-centric, which had to be contextualised to be relevant to the South African context. The contextualisation process followed an action learning and research approach paradigm, which was phased in across semesters, including the incorporation of student and lecturer feedback, to develop the contextualised South African version of the Pathways offering. Units focusing on more global contexts, such as social media use, global warming, and others, were kept unchanged, contributing to the development of our students' ability to become global citizens.

Besides providing students with relevant content through contextualised learning units, another critical pedagogical approach of the Pathways programme is that it embeds non-cognitive learning, focusing on aspects such as critical thinking and decision-making (or problem-solving) within the module design to enhance resilience and academic progression in senior or subsequent study years. Such an approach has not been previously included in the design and pedagogy of our 'traditional' quantitative skills development modules. We hypothesised that this could address some of the challenges which we experienced in promoting student academic resilience as identified through our student data analyses. Devlin (2011) confirms that to move forward in mathematics teaching, teachers should move away from computational and procedural ways of problem-solving; rather to develop students' conceptual understanding of mathematics. Within the Pathways programme, this non-cognitive learning is coined as productive persistence.

Literature and Conceptual Framework

As part of the development of a contextualised Pathways implementation focused on developing quantitative skills (i.e., mathematical and statistical reasoning) in business students, the authors started grappling with the concepts of academic resilience and mathematical resilience. Academic resilience in this context applies as defined in Chapter 1 as the capacity to achieve educational success despite significant stressors or challenges (Durso et al., 2021). Mathematical resilience refers to a student's capacity to persist with mathematical tasks despite difficulties, maintaining confidence in their ability to improve through effort and adopting a collaborative, reflective approach to problem-solving (Johnston-Wilder & Lee, 2010). From the literature, within the domain of resilience and mathematics, the concept mostly utilised from around 2008 refers to mathematical resilience. Ishak and Madihie (2020) put forward four aspects related to mathematical resilience, which are a "growth mindset, the personal value of mathematics, knowing that mathematics requires struggle, and knowing how to find support when pursuing mathematics learning".

These concepts (as identified by Ishak and Madihie, 2020) are similar to the drivers of productive persistence within the Pathways programme. Productive persistence within the Pathways programme is based on the notion of "supporting students' development of tenacity and use of good strategies" to succeed in mathematics (McKay, 2016). In the Pathways programme, students develop productive persistence through productive struggle and student-led learning activities.

Non-cognitive metrics for productive persistence, as measured through the standardised productive persistence survey, are:

- a growth mindset;
- math anxiety;
- stereotype threat;
- belonging uncertainty;
- my professor cares; and
- comfort asking questions.

Ashcraft (2019) delves deeper into mathematical anxiety as a key aspect of success in mathematics, proposing six constructs directly linked thereto. These constructs include mathematics anxiety as a personality construct, a cognitive construct, a sociocultural construct, a future interpretive construct, a gender-based construct, and a neuro-biological construct. With mathematics anxiety as a **personality construct**, factors to be considered by teachers (lecturers) include anxiety (e.g., general anxiety, trait anxiety, state anxiety, test anxiety), mathematics attitudes (e.g., usefulness of mathematics, enjoyment of mathematics, mathematics self-confidence, motivation), avoidance (e.g., extent of high school mathematics, intent to enrol for mathematics), and performance measures (e.g., mathematics achievement, IQ [intelligence quotient]). Mathematical anxiety as a **cognitive construct** includes aspects such as working memory and reduced competency linked to a person's anxiety. The **sociocultural construct** of mathematical anxiety is linked to the teacher and includes pedagogical practice, teacher affect, and the teacher's mathematical anxiety. Another construct proposed by Ashcraft is mathematical anxiety in the **future interpretive construct**. Students might link their mathematics performance with their expected future success for this construct. Additionally, students might also link their poorer performance with their perception of their ability to perform mathematics rather than an acknowledgement of their lower effort or challenges in "learning" mathematics. As a **gender-based construct** for mathematical anxiety, it postulates that females have a higher tendency for mathematical anxiety than their male counterparts. For this evaluation, the **neuro-biological construct** of mathematical anxiety, as described by Ashcraft (2019) was excluded, as it was not directly related to the scope of the study, focusing on the personal and/or interpersonal factors related to creating a sense of belonging within a quantitative skills development class and ultimately improving the academic success of business students through curriculum design and pedagogical principles.

As the basis for the initial evaluation of the adapted Pathways programme implemented at our university, the integration of the theoretical structure described above was used as the conceptual framework for our study (see Figure 3.1).

Clear relationships between constructs can be seen, forming the departure point for discussing our findings presented later in this chapter.

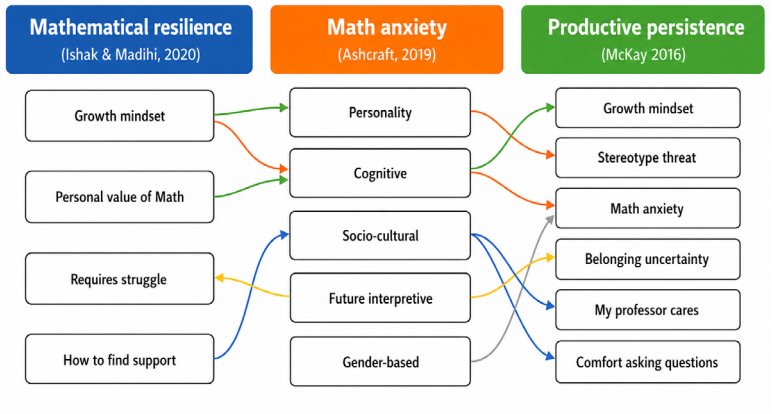


Figure 3.1: Conceptual framework for the initial evaluation of the Pathways programme at a South African university

Study Methodology

The study employed an action learning and action research methodology with quantitative and qualitative data sets (Zuber-Skerritt & Wood, 2019). This report can be viewed as a reflection of the implementation stretching from 2021 to 2023. Through this focus on relationships, reflection and recognition (see Figure 3.1), the researchers could gain an in-depth understanding of the benefits and challenges associated with implementing the programme. It also provided valuable insights into changes needed to the programme and/or other recommendations for further implementation cycles.

The Pathways offering was rolled out at our university as two separate semester modules for all first-year business students registered within EMS from 2021. These modules replaced the "traditional" mathematics or statistics-based modules for quantitative skills development that were part of the curriculum of most business students. The Quantway® Core module was implemented in the first semester (referred to as EQMB1514 in our context) and Statway® College in the second semester (referred to

as EQMB1524 in our context). Thus, the study population included all business students enrolled for the specific quantitative skills modules from 2021 and 2022.

Before data collection, ethical approval for the study was obtained from our institution's General/Human Research Ethics Committee (GHREC) (Ethical Clearance Number UFS-HSD2020/1111/144/21/22). All study participants were provided with an information document on the proposed study and gave written informed consent for institutional and/or other data collected as part of this study to be utilised for research purposes. Quantitative and qualitative data were collected through different data collection tools, including the institutional student database, various questionnaires, informal or formal written and/or verbal student feedback, transcriptions of recordings of class sessions, and/or semi-structured interviews.

Quantitative data analyses included descriptive statistics, correlations, and regression analyses of student academic performance data. Quantitative data were compared with data from the "traditional" modules presented to business students in 2020 before replacing it with the Pathways modules in 2021. Students' learning outcomes and admission requirements into the faculty remained unchanged, and therefore, the data across cohorts are comparable. Key themes were identified through a thematic analysis of the qualitative data sets for the qualitative data analyses. The analysis of transcribed recordings of student collaboration sessions contributed to the qualitative data set.

Results and Discussion

Our study's results and subsequent discussion are presented through the lens of coinciding components, as depicted in Figure 3.1, with Ashcraft's model on mathematical anxiety as the central component.

Understanding Mathematical Anxiety as a Personality Construct: How Productive Persistence Can Enhance Mathematical Resilience by Addressing Stereotype Threat, Mathematical Anxiety, and Personal Value of Mathematics

Ashcraft's **personality construct** of mathematical anxiety can be linked to **productive persistence metrics** (i.e., stereotype threat and mathematical anxiety) and the **personal value of mathematics** (i.e., students see material as interesting and relevant) in the mathematical resilience domain).

Within our study, the Pathways productive persistence metrics were measured throughout the year at five intervals (see Table 3.1). Results in Table 3.1 are portrayed as a factor out of 5, with higher values being more positive, e.g., stereotype threat closer to 5 indicates that students are less influenced by the typical stereotypes influencing mathematics performance, and mathematical anxiety closer to 5 indicates that they are less anxious about mathematics. The growth mindset indicator measures mindset portrayed as a factor out of 6 and in this case, a value closer to 6 indicates a mindset that is less fixed and is considered a positive outcome (i.e., growth mindset).

Table 3.1: Results relating to productive persistence measures linked to mathematical anxiety as a personality construct (n=130)

Pathways offering	**Quantway**	**Quantway**	**Quantway**	**Statway**	**Statway**
UFS offering	EQMB1514	EQMB1514	EQMB1514	EQMB1524	EQMB1524
Time of survey	(Semester 1, week 1)	(Semester 1, week 5)	(Mid-year/ End-of-Semester 1)	(Semester 2, week 5)	(End-of-year/ End of Semester 2)
Stereotype threat	3.72	3.81	3.89	3.85	3.91
Math anxiety	2.65	2.96	3.07	2.83	2.72
Growth Mindset	3.19	3.83	3.73	4.21	4.29

Results indicated an overall improvement in all aspects (see Table 3.1) over the first year of implementation of the adapted modules at our institution (compare columns 1 and 5). *Stereotype threat* reached its highest score at the end of the year (3.91), indicating a possible positive disposition of the students towards mathematics and their perceived ability to succeed. McLaughlin Lyons et al. (2018) reported on stereotype threats in higher-order thinking and learning, such as mathematics. Even though the study was conducted in a primary school setting, interesting findings from their study propose that subtle threats could be the reason for the persistent achievement gaps by race, ethnicity, and gender. They postulated that in learning areas, such as mathematics, where the learning builds sequentially, learners (or students) might fall further behind if stereotype threats are not addressed early. This could hold significance in our study, where the influence of first-year quantitative skills development shows a relationship with overall academic performance (see contextual challenges discussed earlier). If the subtle stereotype threats (as described by McLaughlin Lyons et al., 2018) could thus be addressed in the first year of study, as in our case, it might better support students' academic performance in the latter years. Some positive preliminary results from our study were seen, with one of the quotes from a student included below.

> *There are different perspectives and being in a group made me realise even though most of my groupmates were really good at the maths most of the time they also struggle and being in a group gave us an opportunity to help each other when someone falls short.* (Participant 260)

Scores for *math anxiety* were the highest at the end of the first semester (3.07), which indicates that when the students were confronted with more unfamiliar statistical content (i.e., in the second semester), they tended to become a bit more anxious again. However, the end-of-year scores were still better than their initial scores on these aspects, showing an overall decrease in their anxiety towards mathematics and statistics, which is positive for the authors.

Furthermore, with the adapted design and pedagogy employed in the Pathways modules, moving away from the more traditional way of teaching mathematics or statistics through computational means, it was important to measure the student's experiences of the learning content (i.e., relevancy of the material), which related to the personal value of mathematics. A contextualisation survey was administered, including two specific questions on the students' perceptions of the relevance and interest of the material provided in the module. As not all the units have been adapted for the South African context yet during the first year of implementation, the applicability of the non-adapted modules also had to be evaluated. Two full learning units were adapted for the South African context for each iteration of the Quantway® and Statway® implementation at our institution. Examples of content changes included:

- The US census-based unit changed to the SA census-based unit, focusing on the availability of water and electricity in South African households.
- US tax-based unit changed to a South African tax unit, utilising South African data and/or templates from the South African Revenue Service (SARS) and the Unemployment Insurance Fund (UIF).
- US cost-of-living unit changed to a South African cost-of-living unit, including various South African cities and data.

Additionally, all basic conversions of metric units (e.g., pounds to kilograms, miles to kilometres) and/or language synonyms (e.g., faculty replaced with lecturer, campus principal replaced with rector) were included.

Table 3.2 indicates the mostly positive view of students towards the learning content, with 68.77% of students indicating that they were engaged in most of the units (agree and strongly agree), and 65.7% of students indicating that they were more engaged in the South African-based units (agree and strongly agree). This positive view of students is supported by previous studies linking the positive impact of using relevant learning material on students' motivation. Kember et al. (2008) reported on how abstract theory (or possibly a focus on computational

mathematics in the context of this study) could demotivate students. They suggest that the relevance of material could be enhanced by "*showing how theory can be applied in practice, establishing relevance to local cases, relating material to everyday applications, or finding applications in current newsworthy issues*" (Kember et al., 2008: 249). This notion of relevance is continuously reaffirmed in literature, with Petersen (2021) recently referring to learning material relevance concerning personal relevance, life relevance, and local relevance. In our case, learning materials had both life relevance and local relevance, where life relevance refers to material that is explicitly linked to real-world experiences or contexts, and local relevant materials refer to materials linked to a specific geographic region or community of the students (i.e., the adapted materials in our case). Petersen (2021) continues by highlighting how relevant content or materials could improve students' overall experience in a module as they come to understand the content through their own frames of reference and become more motivated to engage with the materials.

Table 3.2: Students' views on the influence of the relevancy of the learning materials on their engagement and interest in the module (n=130)

Strongly agree	Agree	Somewhat agree	Somewhat disagree	Disagree	Strongly disagree
I was more engaged and interested in units that used contexts specific to South Africa (n=271)					
91 (33.6%)	87 (32.1%)	57 (21%)	10 (3.69%)	17 (6.27%)	9 (3.32%)
I was engaged and interested in most of the units (n=269)					
92 (34.2%)	93 (34.57%)	67 (24.91%)	13 (4.83%)	3 (1.12%)	1 (0.37%)

Even though the feedback was mostly positive (see Table 3.2), some qualitative feedback by students indicated the continued need for further adaptation of learning material, and the student feedback was used to identify contextual priorities for the next year. Some of these quotes are included below and will inform further iterations of the implementation at our institution.

> "*The unit of doubling time, because I did it not find the content relevant to me in any way.*" (Participant 44)
>
> "*Quantitative Reasoning, because the terminology used in that unit is irrelevant to mathematics.*" (Participant 118)
>
> "*Scale factors; I had no idea of how relevant they were in the context of this course as most of its work was more related to engineering fields/physics.*" (Participant 131)

Lastly, academic performance is also included within mathematical anxiety as a personality construct by Ashcraft (2019) because of the influence of aspects such as enjoyment, relevance, and motivation on academic performance. In our study, students performed somewhat better in both the adapted first and second semester modules when compared with the previous, more 'traditional' modules presented in EMS until 2020. An increase in the number of students who passed these modules with distinction should be highlighted here (see Table 3.3), which could indicate a deeper understanding of the content and should be further researched in the future.

Table 3.3: Academic performance of students in the Pathways-based modules (2021) versus the more 'traditional' quantitative skills modules (2020)

	Final mark (average) (%)		**Pass with distinction (%)**	
	2020	***2021***	***2020***	***2021***
Quantway/ EQMB1514	69	72	42	57
Statway/ EQMB1524	58	63	14	22

Notwithstanding academic performance only showing a slight increase, qualitative feedback supported the notion of a deeper understanding of content and additional skills gained by students through the module. In our study, students specifically self-reported on developing critical thinking skills as part of the adapted Pathways module. Syafril, et al. (2020) highlight the importance of developing mathematical critical thinking skills and postulate that learning has not occurred if evidence of the development of critical thinking skills cannot be shown.

They further state the importance of critical thinking skills development to assist students in following rational thinking to make decisions and express ideas, make conclusions through alternative (logical) thinking, and examine and disregard previous problems in learning mathematics. Linked to the personal construct of mathematical anxiety, the increase in self-confidence is also important to note as a positive result in improving a student's sense of belonging. Evidence of these aspects is included in the qualitative feedback of students below.

> *"The biggest benefit was knowing different and great methods of finding answers from different individuals."* (Participant 36)
>
> *"Knowing the importance of Maths"* (Participant 33)
>
> *"I feel more confident and smarter. I am now able to communicate and express my opinions freely."* (Participant 195)
>
> *"A person gains more knowledge and become a critical thinker"* (Participant 205)
>
> *"My confidence has been boosted and I will not have the fear of making a mistake in front of people as I know how to tackle such situations."* (Participant 215)

Our study's results are supported by the recent findings from Pedler et al. (2022), who reported on the link between academic self-confidence, high motivation, and high engagement in higher academic achievement.

Understanding mathematical anxiety as a cognitive construct: How productive persistence can enhance mathematical resilience by fostering a growth mindset

Mathematical anxiety as a cognitive construct includes aspects such as working memory and reduced competency linked to a person's anxiety (Ashcraft, 2019). When linking a person's anxiety to their working memory, it is important to recognise the impact that a growth mindset could have on this construct. Cote (2022) defines a person with a growth mindset as someone who "*views intelligence, abilities, and talents as learnable and capable of*

improvement through effort." Therefore, if a student has a growth mindset, it might be postulated that their anxiety will have a lesser effect on their working memory (and performance). However, Cote (2022) defines a person with a fixed mindset as someone who "*views those same traits* [intelligence, abilities, and talents] *as inherently stable and unchangeable over time."* Interestingly, a growth mindset forms a specific component of both the Productive Persistence metrics in the Pathways programme and also as part of Mathematical Resilience, as described by Ishak and Madihie (2020).

In our context, a growth mindset was measured throughout the year at the same intervals as the other components of productive persistence (see Table 3.1) for students who were enrolled on both modules and thus participated throughout the year (n=130). However, results for a growth mindset are measured as a factor out of 6 (instead of 5, as with the previous components). Higher values are more positive; e.g., a growth mindset metric closer to 6 indicates that students are more open to new ways of learning and doing.

A growth mindset increased the most of all components of the productive persistence for our students (from 3.04 to 4.38 at its highest point) (compared to Table 3.1), which was very encouraging for the authors. Within our context, where students are often reluctant to enrol on these mathematics or statistics-based modules but have to, as it is compulsory in their academic programmes, the change away from a fixed mindset could have influenced their academic performance in our quantitative skills development modules positively (see Table 3.3). Besides improved academic performance, having a growth mindset could also support their further academic studies and overall academic success, which is directly linked to the overall aim of implementing the adapted version of the Pathways programme in our institution (see earlier discussion on challenges). Bernardo (2021) confirmed the positive association between a growth mindset and learning in mathematics and science in Philippine data. However, in his study, socioeconomic status (SES) explained a more significant portion of variations in learning, with higher SES students showing a positive relationship, with no significant

relationship between a growth mindset and learning in lower SES students. Within the South African context, it would be important to investigate these tendencies and is recommended in future.

Understanding mathematical anxiety as a sociocultural construct: How productive *persistence can enhance finding support*

The Pathways programme follows a very specific instructional system including three broad segments, namely preparation exercises (completed individually by each student), a collaboration session (where preparation exercises and additional activities are discussed and completed in a small group setting), and exercises (which is completed individually to allow each student to gauge their own understanding of the unit) (WestEd, 2022a). Through this instructional system, the focus is, firstly, placed on establishing connections between teachers, peers, academic content, and students' academic pathways. Secondly, emphasis is placed on the development and support of teachers to advance their teaching as well as enhance their relational practices and beliefs.

Our study's results showed the collaboration sessions' positive impact on student's performance and experiences within the modules. For Statway® / EQMB1524 in the second semester of 2021, a statistically significant correlation ($p < .001$) was found between the completion of collaboration sessions and the final mark (0.69), between the attendance of collaborations and the final mark (0.72), and between the marks obtained for the collaborations and the final mark (0.35). The positive quantitative results were also supported by qualitative feedback from students.

> *Working in a group really helps a lot because you get to see how other people think. It also challenges your mind to think hard so that it can contribute ideas to the group.* (Participant 192)
>
> *The benefits are many, you can share your ideas with others and if they are wrong they can correct you, group work makes learning easier and more enjoyable because there is nothing more enjoyable than learning with your peers and as*

> *the lockdown prevented that it was better with group work.* (Participant 225)

The results from our study are in line with the findings by Santos et al. (2019), who found positive effects on student engagement, critical thinking, and peer learning through innovative learning and teaching practices, such as collaborative learning in large classes.

Besides the positive impact of the collaborations on the academic performance of students in the modules, it is also important to note the effect that the collaborations had on the self-confidence of the students and the way that they challenged their own perceptions regarding their competency to complete the module successfully.

From the facilitators' perspectives, the collaborations were also positive, with one facilitator even suggesting that the option for students to complete collaborations individually be stopped. This flexibility was built into the module during the coronavirus disease 2019 (COVID-19) pandemic to accommodate students who struggled with accessibility and data availability but could be revisited.

> *Giving students the option of completing the collaborations individually discourages class attendance and most of the students that complete the collaborations individually do not perform well.* (Facilitator 1)
>
> *The group collaborations are one of the most helpful elements of this module, as it allows different perspectives to be evaluated in getting solutions and it allows them to engage confidently and feel like it's a "safe space" to make a mistake, opposed to only finding faults in tests from silly mistakes.* (Facilitator 8)

Additionally, the focus of the Pathways programme is on enhancing teachers' relational beliefs and practices, and advancing teaching; therefore, two constructs, namely 'my professor cares' and 'comfort asking questions' are included in the productive persistence measurements (see Table 3.4).

Table 3.4: Results relating to productive persistence measures linked to finding support as a sociocultural construct (n=130)

Pathways offering	Quantway®	Quantway®	Quantway®	Statway®	Statway®
UFS offering	EQMB1514	EQMB1514	EQMB1514	EQMB1524	EQMB1524
Time of survey	(Semester 1, week 1)	(Semester 1, week 5)	(Mid-year/ End-of-Semester 1)	(Semester 2, week 5)	(End-of-year/ End of Semester 2)
My professor cares	4.00	4.19	4.08	3.79	3.77
Comfort asking questions	3.63	3.61	3.70	3.41	3.34

In our study, results on both these constructs decreased over the year of first implementation. 'My professor cares' decreased from 4.00 at the beginning of the year to 3.77 at the end of the year, whilst 'Comfort asking questions' decreased from 3.63 at the beginning of the year to 3.34 at the end of the year. Even though both constructs increased slightly during the first semester, it is still an area of concern for the authors, as the impact of the relationships between teachers and students on the sense of belonging is evident in the literature. Uleanya (2020) explored student-lecturer relationships in Nigeria and South Africa and reported on existing poor relationships, thus warranting further investigation in the context of our study. Uleanya (2020) indicated that better student-lecturer relationships could build the self-confidence of students, support students in expressing themselves better, participate in class activities, and ultimately overcome their learning challenges with the support of the lecturers. Even though qualitative data from our study (and included in this article) showed some evidence of increased self-confidence and the willingness of students to partake in collaboration activities and express their ideas (as alluded to by Uleanya, 2020), the quantitative data still warrants further investigation into student-lecturer relationships within our quantitative skills modules.

Understanding mathematical anxiety as a future-interpretive construct: How productive persistence can enhance mathematical resilience through struggle and belonging

Within our context, the influence of high school mathematics on first-year Economics performance, and in turn, the influence of first-year Economics on overall academic performance (see earlier discussion on challenges), were the biggest motivators for exploring the use of an adapted approach to quantitative skills development. We hypothesised that if we could enhance a deeper understanding of quantitative skills in the first year of study, it could support students' academic pathway towards graduation. The results from our initial implementation of the adapted quantitative skills development modules showed promise, with an adjusted R-square value of 0.581 for the first-semester Economics module in 2021 and 0.657 for the second-semester Economics module in 2021. Further tracking of this cohort of students to graduation will be conducted as part of further iterations of this study.

Table 3.5 provides the results for our study related to belonging uncertainty. A value closer to 5 indicates that they feel a higher or better sense of belonging in their mathematics module.

Table 3.5: Results relating to productive persistence measures linked to belonging uncertainty as a future-interpretive construct (n=130)

Pathways offering	Quantway®	Quantway®	Quantway®	Statway®	Statway®
UFS offering	EQMB1514	EQMB1514	EQMB1514	EQMB1524	EQMB1524
Time of survey	(Semester 1, week 1)	(Semester 1, week 5)	(Mid-year/ End-of-Semester 1)	(Semester 2, week 5)	(End-of-year/ End of Semester 2)
Belonging uncertainty	3.44	3.73	3.78	3.57	3.52

Scores for *belonging uncertainty* were the highest at the end of the first semester (3.78), which indicates that when the students

were confronted with more unfamiliar content (i.e., in the second semester), they tended to have a bit more doubt regarding their belonging in a mathematics or statistics-based module. However, the end-of-year scores were still better than their initial scores on these aspects, showing an increased sense of belonging in a mathematics-based environment, which is positive for the authors.

Within the STEM higher education context, Master and Meltzoff (2020) allude to one's "ability beliefs" as a big factor in creating a positive sense of belonging. As the link between academic performance and students' perceived sense of belonging is well-known, it became important for us to support our business students' development of a sense of belonging. The "ability beliefs" mentioned are often centred around the student's judgement of their ability to succeed (i.e., current and future success), their perceived self-confidence, and their "academic self-concept" (Master & Meltzoff, 2020). However, many other factors also influence a student's sense of belonging, such as the institutional culture and relationships (Brooms, 2019), which must be addressed in our context moving forward. In his study amongst urban black males, Brooms (2019) reported on the positive influence of structured engagements (activities) in developing students' sense of belonging, positively influencing their self-belief and self-efficacy and supporting them to establish better connections with their teachers and peers. In support, Abdollahi et al. (2020) indicate that students with a high sense of belonging engage better with their teachers and peers, resulting in increased social support; with its related benefits. However, even when opportunities are created to develop a better sense of belonging amongst students, existing stereotypes (or beliefs) can often negatively impact it.

Understanding mathematical anxiety as a gender-based construct: How productive persistence can address gender-specific mathematical anxiety

According to Ashcraft (2002), little difference exists between mathematical anxiety in males and females but it could be more prominent in highly selected groups, such as university students.

In this population, mathematical anxiety was slightly higher amongst women, but he attributed it to women maybe being more willing to disclose their personal attributes (such as anxiety). In a more recent scoping review conducted in 2021, the authors concluded that females are indeed more prone towards higher levels of mathematical anxiety across different disciplines and countries (Khasawneh et al., 2021).

In our study, this phenomenon was confirmed, with mathematical anxiety being higher for females across both semesters and throughout each of the semesters (see Table 3.6). This indicates the need for directives towards supporting females during mathematics-based instruction, to address their higher anxiety levels and better support them to be successful.

Table 3.6: Results relating to productive persistence measures linked to mathematical anxiety as a gender-based construct for the 2022 cohort (n=612)

Pathways offering	Quantway®	Quantway®	Quantway®	Statway®	Statway®
UFS offering	EQMB1514	EQMB1514	EQMB1514	EQMB1524	EQMB1524
Time of survey	(Semester 1, week 1)	(Semester 1, week 5)	(Mid-year/ End-of-Semester 1)	(Semester 2, week 5)	(End-of-year/ End of Semester 2)
Math Anxiety (Female n=323)	2.42	2.66	3.04	2.87	2.97
Math anxiety (Male n=284)	3.23	3.42	3.84	3.73	3.50
Math anxiety (Other n = 5)	3.0	3.0	3.33	2.75	2.67

Reflection on the Results

The results present how adapting teaching methods and localising materials to students' real-life contexts can reduce

mathematical anxiety and improve student performance by fostering a growth mindset and reducing stereotype threat. The Pathways programme demonstrated that a growth mindset can improve resilience and academic success in mathematics, but teacher-student relationships need strengthening to provide better emotional and academic support. Collaborative learning sessions with peers were key in reducing mathematical anxiety and fostering peer support, which the researchers find promising in an under-resourced South African context. Tailored interventions that promote a growth mindset and foster supportive communities are particularly important for female students, who experience higher levels of mathematical anxiety. Overall, the Pathways programme shows promise in helping South African business students overcome mathematical anxiety, build resilience, and succeed academically, and further refinement based on student feedback is needed.

More broadly, these findings extend the socio-ecological and dynamic models of resilience introduced elsewhere in this volume into a domain-specific context, mathematics anxiety, showing that resilience is not only built through general psychosocial support but can also be deliberately cultivated within a single, high-stakes academic skill area through growth-mindset framing, localised content, and peer collaboration.

Forward-Looking Perspectives

Implementing the adapted Pathways programme at our institution shows promising results for moving to a different approach to teaching quantitative skills in the South African higher education environment. Pathways addresses the key constructs of mathematical anxiety in an integrated structure, which is also applicable to the South African context, as presented in this article. The authors, however, acknowledge that this is only an initial evaluation. Further research is necessary to determine the impact of the mathematics or statistics content and other skills, such as critical thinking and problem-solving, on the overall academic success of this cohort towards graduation. A more critical approach is also needed for teacher development and support in the South African context to ensure

the optimal relational environment between students and staff in the modules. The Pathways initiative at the University of the Free State, in collaboration with WestEd, has helped to develop an open educational resource (OER) which can be used and adapted to explore the possibility of creating similar initiatives outside Business faculties where students might need an alternative approach to developing the quantitative skills of students. The OER can be accessed at: https://oer.carnegiemathpathways.org/products/statway_college and https://oer.carnegiemathpathways.org/products/quantway_core

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Chapter 4

Enhancing the Resilience and Student Engagement of Tutors and Students through a Tutorial Programme

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Background and Introduction

The Qwaqwa (QQ) campus is situated in Phuthaditjaba, which is merged between KwaZulu-Natal and the eastern Free State. Although normally known as a rural economic hub (instead of an urban centre), its scattering of small residential buildings across mountainous areas and its growing inclusion of both rural and urban organisation, culture, and economy instead characterises it as a "ruralopolis" (Membretti et al., 2020:2) (or rural-urban, rural-urban fringe or peri-urban space). This town faces various social, political, and environmental challenges, leading to unemployment, poverty, water shortages, and electricity shortages, which impact how the QQ campus needs to be structured to support and serve its students and staff members. Alignment in terms of its academic offering and programme with its urban counterpart becomes a significant challenge,

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and contextualisation becomes key in ensuring continued academic success.

The University of the Free State (UFS), as a multi-campus institution, consists of three delivery sites, including the QQ campus (Membretti et al., 2020). First established as a satellite of the University of the North in 1982 (with 228 students), it became part of the UFS in 2003. With more than 7,000 students, this campus of the UFS regularly experiences context-specific challenges, including student protests, community disruptions, and challenges related to infrastructure, such as extended electricity outages, water cuts, and others associated with the natural environment. Between 2022 and 2024, it experienced eleven student protests, network challenges, water-shedding, electricity cuts, and several natural environmental disruptions (such as heavy snow, floods and extreme fires). These disruptions led to campus closures and difficulties accessing campus. As a branch campus of the UFS, the four faculties on this campus aim to align their academic programme offerings with that of the Bloemfontein campuses, thus compelling the QQ campus community (including staff members and students) to be flexible and innovative to ensure that the academic programme continues. In short, staff and students need to be able to continue with their daily operations (including the academic programme) during these challenges and disruptions. How the institution supports this kind of resilience becomes key to student success. Research has shown that equity in education focuses on creating learning environments that achieve alignment in the educational outcomes experienced by groups of students who are different (Lovett et al., 2023) (and not just equal opportunities). The same counts for different contexts and environments.

We thus want to explore how a tutorial programme can impact the resilience of the students and the tutors on the Qwaqwa campus of the University of the Free State through student engagement practices as key components of student success.

Conceptual Understanding of Resilience

Resilience is a term associated with different fields of study, most predominantly psychology and sociology in the human sciences.

Other fields include computer science, business, political science, environmental resource management, and engineering (Yarveisy et al., 2020). Resilience has also become a topic of interest in urban development and security (Teperik & Iliuk, 2021: 1).

Within the human sciences, different angles of understanding what resilience means have evolved from different theorists, who consider individual differences and responses to stressors (Rutter, 1979), resilience at different stages of human development (Werner & Smith, 1982), resilience as the ability to stay unchanged after a stressful event (Garmezy, 1991), and the dualistic nature of resilience in terms of adaptation and adversity (how the one cannot exist without the other) (Luthar & Chicchetti, 2000). Psychology and health sciences specifically consider resilience in how individuals, families and communities (often as groups) face adversities (Bergström, 2018: 34).

The term "resilience" originated from the works of Norman Garmezy (1991), who studied the risk components of children with parents with serious mental disorders. He realised that some of these children still had the ability to develop well despite these risk factors (Masten & Powell, 2003). From this idea, a resilience framework for "Project Competence" evolved, referring to children's development competence. The most prominent researchers in terms of resilience are Michael Rutter, Ann Masten, Suniya Luthar, Dante Cicchett, George Bonanno and Emmy Werner (Mapaling, 2023; Martin-Breen & Anderies, 2011).

A universal definition of resilience does not seem to exist, but key concepts are presented and researched in most studies. These include overcoming adversity, adaptation and adjustment, the ability to bounce back, and good mental health as a proxy for resilience. Most research is conducted from a positivist paradigm or lens and is quantitatively performed or measured. Most frameworks related to resilience are created as frameworks for researching resilience and the measurements involved. In essence, a framework or model specifically for resilience in higher education does not seem to exist.

A more novel way of understanding resilience not only focuses on resilience as a way of withstanding adversity, stressors or challenging situations or environments but rather on how

individuals change or adapt to accommodate these challenges (Masten & Reed, 2002). This approach considers variables linking individual characteristics, environmental characteristics and experiences (Mapaling, 2023: 23). This understanding of resilience echoes through Ungar's approach (Ungar, 2008), which also includes structures *around* the individual and services provided to the individual as elements of resilience. Thus, both individual and environmental factors contribute to resilience. The connection between context, culture, and individuals is therefore deemed important. New research related to resilience thus ultimately focuses on how different socio-ecological systems can absorb various kinds of stress (Bergström, 2018: 33).

Ultimately, through a social constructivist view, resilience is understood as a construct dependent on the situation or context, which includes the culture of the individuals and society. This socio-ecological approach is then also how our research is focused.

Our approach to resilience: A socio-ecological theoretical approach

Thus, for the sake of this study, a socio-ecological approach to resilience, as posed by Ungar (Ungar, 2008, 2011, 2012; Ungar & Theron, 2019), was adopted: resilience is located in the interactions between the personal, social and structural (Ungar, 2012: 14; Mapaling, 2023: 28): "Resilience is defined as a set of behaviors [sic] over time that reflect the interactions between individuals and their environments, in particular the opportunities for personal growth that are available and accessible." In turn: "The strength of the social and physical environments in which people live determines how resilient they are when faced with challenging circumstances or severe personal adversity." Ungar coins this a contextual approach to resilience: individual gains are met when bridging the gap between individual needs and environments that facilitate growth.

Resilience thus includes structures around the individual and the services which the individual receives. Regarding the stressors, challenges or adverse experiences, social risk factors are now associated with resilience and include exploring how social

and ecological factors (for example, culture, school, community) together with individual psychological traits (such as motivation) have an impact. The complexity of the reciprocity in relationships between people and their environments is a key component of resilience (Ungar, 2012: 14). How well people adjust because of the interactions depends on how meaningful the opportunities are and the quality of the resources.

Ultimately, resilience is acknowledged as not mainly rooted in individuals but functions across different dimensions. In higher education, students' resilience relates to more than individual characteristics: resilience processes are interconnected between the personal, social and structural. This understanding of resilience as a social construct perhaps aligns with the more nuanced definition of social resilience: the capacities and abilities of individuals, organisations or communities to tolerate, absorb, cope with and adjust to environmental and social threats of various kinds (Keck & Sakdapolrak, 2013: 8).

Peer learning, supplemental instruction (SI) and tutorials

An understanding of the terminology

Peer learning in higher education refers to interdependent learning through the sharing of knowledge, ideas and experiences and is thus mutually beneficial to participants (Bozzi et al., 2021: 4). All peers play the same role; nobody is seen as the expert, and no hierarchy exists in terms of power. Peer learning is based on constructivism and is understood to occur amongst groups of individuals with the same status as one another (Keerthirathne, 2020). In peer learning, the peer tutor and the peer tutee benefit from the opportunity, and both teaching and learning occur. Peer learning is thus a two-way process that can occur inside and outside the classroom.

On the other hand, tutorials relate more to one-on-one individualised support: Peer tutors assist their tutees with content knowledge, study skills and time management (Cofer, 2023: 23). Supplemental instruction (SI) is more structured and directly linked to a course or module, usually at-risk modules. "SI leaders function in a different manner, as they facilitate collaborative

learning sessions outside of class time in typically challenging courses" (Cofer, 2023). It is scheduled regularly, takes place outside the normal lecture or classroom session, based on the student's needs, and uses collaborative activities (Malm et al., 2022: 4). The A_STEP tutorial programme that we explore in this research uses an integrated approach, embedding different principles from all three components understood as peer learning, tutorials and supplemental instruction to create a programme best suited for the specific context.

The importance of peer education programmes and opportunities

Although the roles of students in terms of peer education are practically differentiated, the reason for implementing teaching strategies and programmes that utilise some form of peer education is universal. Peer tutoring is known to help students to adjust to university (Arco-Tirado et al., 2020). The tutor acts as a bridge that can make learning accessible in a social and small group environment, thus affirming learning as a social and active process (Byl & Topping, 2023). By being a peer, the tutors are also more relatable than a lecturer, whose role is more authoritative (Rosier, 2023). Thus, tutors are well-positioned in their tutorials to help to create a sense of belonging.

Particularly amongst first-year students, participating in peer tutoring groups has been associated with feeling less isolated. Tutorials are reported to naturally promote a safe and supportive environment that fosters high-quality interactions and enables students to develop supportive peer networks through regular collaborative learning opportunities (Pavlovic & Jeno, 2024). Student engagement research confirms that students who feel supported by their campus environments have a higher likelihood to succeed (Bengesai et al., 2022) and that collaborative peer learning interventions are effective in improving academic performance, especially for students who may be at risk of failing or even struggling in specific modules (Pather, 2018).

Furthermore, peer educators (such as tutors) seem to acquire transferable skills during the process of instruction (Malm et al., 2022). Both students and tutors are provided with an opportunity to develop various essential skills such as computer

skills, critical thinking, interpersonal skills and self-management skills. These skills can be transferred to other academic contexts. Other transferable skills that tutors could develop are social or affective, task organisation, interaction management, thinking in interaction, and reflection and evaluation, all essential for ensuring a collaborative learning experience. By engaging in collaborative assignments, students can enhance their capacity to work effectively with others, communicate ideas, and jointly problem-solve, all skills highly valued by the industry (Qureshi et al., 2021). The engagement component of peer education is thus evident in creating impact.

Exploring the relationship between student success, student engagement and resilience

We based our study on a student success framework, embedding institutional responsiveness (in this case, the A_STEP office) and student agency (in this case, students and tutors) to facilitate student engagement, as illustrated below:

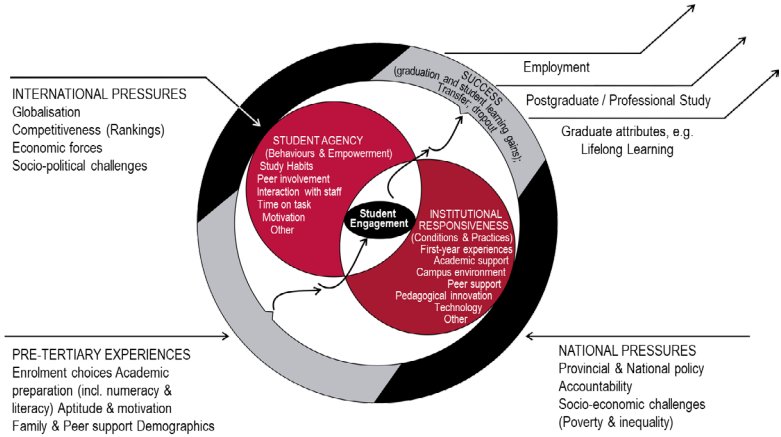


Figure 4.1: Contextualised student success framework (Strydom, 2017)

Within this framework, student engagement is defined as "first, what students do (the time and energy that they devote to educationally purposeful activities), and second, what institutions do (the extent to which they employ effective educational

practices to induce students to do the right things academically)" (Strydom, 2017:4). Various studies and research have proven student engagement as a key component to student success (Barkley, 2010). Student engagement has, however, also shown a positive link with resilience (and collaborations with fellow students) in higher education institutions (Versteeg et al., 2022).

When considering this framework, this study approached resilience through a socio-ecological lens: understanding that resilience is achieved through the interactions between the personal (student and student agency), social (peer involvement and peer support) and structural (institutional responsiveness in terms of creating a peer learning and tutorial programme). This multimodal approach to resilience integrates the different role-players of the A_STEP programme to illustrate the social dynamics and influences which they hold, where we understand resilience as the capacity to foster, engage in, and sustain positive relationships and to endure and recover from life stressors and social isolation. The peer support and peer involvement components of student engagement are also embedded in the design of the A_STEP: "Because social and emotional factors are so significant, the classroom climates instructors create are of critical importance, shaping learning, engagement, achievement, and persistence in significant ways" (Lovett et al., 2023: 278).

What is evident is how this framework, embedding student engagement and student success, aligns with the definition of academic resilience: "a student's ability to attain academic achievement and flourish by recovering from academic failures despite adversity" (Mapaling, 2023).

Through the integration of the various concepts into this framework, we also pose a definition of resilience in higher education: *Resilience in higher education is a function of the intentional design and development of a sustainable ecosystem that enables student agency (engagement in educationally purposeful activities) and institutional responsiveness through holistic student support.*

Table 4.1: Theoretical conceptualisation: towards an integrated framework of student engagement, student success, resilience and tutorials in higher education

Theme / Element	Socio-ecological approach to resilience: Ungar	Student engagement and student success (framework)	Towards an approach to enabling resilience in higher education	A_STEP tutorials as an example of enabling resilience on the QQ campus
Component 1: Threats / Adversities / Challenges / pressures / risk	Challenging circumstances, social risk factors or severe personal adversity are stressors that enable resilience.	Pre-tertiary experiences (Academic preparation, Attitude, family background, etc.) National pressures (policies, socio-economic challenges, etc.) International pressures (Socio-political challenges, economic forces, etc.)	Transition into higher education and progress through higher education remains challenging and requires supporting students through intentional institutional initiatives and programmes.	*To add integrated findings from three datasets: student focus-group interviews, tutor focus-group interviews, and tutor e-portfolios*
Component 2: The individual	How the individual interacts with the surroundings needs to be considered.	Student agency: study habits, peer involvement, interaction with staff, motivation	Students must be supported, encouraged and/or nudged to exercise their agency.	*To add integrated findings from three datasets: student focus-group interviews, tutor focus-group interviews, and tutor e-portfolios*

Theme / Element	Socio-ecological approach to resilience: Ungar	Student engagement and student success (framework)	Towards an approach to enabling resilience in higher education	A_STEP tutorials as an example of enabling resilience on the QQ campus
Component 3: Structures around and services towards the individual	The strength of the social and physical environments determines how resilient individuals are.	Institutional responsiveness: academic support, campus environment, peer support, pedagogical innovation.	Deeply contextualised interventions and programmes need to be intentionally designed and implemented to enable resilience.	*To add integrated findings from three datasets: student focus-group interviews, tutor focus-group interviews, and tutor e-portfolios*
Component 4: Resilience is located in (and created through) the interactions between personal, social and structural	The intentional design of the social and physical ecology, then on the individual's interaction with the environment, then on the individual.	The focus should be on both the time and effort of the student, as well as the way that institutions allocate resources and organise learning opportunities.	The interaction between student agency and institutional responsiveness creates an enabling environment for resilience.	*To add integrated findings from three datasets: student focus-group interviews, tutor focus-group interviews, and tutor e-portfolios*
Definition(s)	General socio-ecological definition: the capacities and abilities of individuals, organisations or communities to tolerate, absorb, cope with and adjust to environmental and social threats of various kinds	Student engagement: First, what students do (the time and energy they devote to educationally purposeful activities), and second, what institutions do (the extent to which they employ effective educational practices to induce students to do the right things academically) (Kuh in (Strydom et al., 2017)	***Resilience in higher education is a function of the intentional design and development of a sustainable ecosystem that enables student agency (engagement in educationally purposeful activities) and institutional responsiveness through holistic student support.***	A_STEP: "A_STEP is a learning support programme that facilitates student development and academic success through the use of peer-led small group tutorials." (UFS, 2024)

The key questions which researchers normally ask in terms of social resilience relate to "what enhances the capacities of individuals, groups and organisations to deal with threats more competently?" (Keck & Sakdapolrak, 2013: 9). It is this sort of questioning that led to the aims and questions of this study.

The aims of this project were thus:

1. To explore the trends in peer learning and tutorials concerning resilience and student engagement in South Africa.
2. To explore students' and tutors' perceptions of their resilience and student engagement when being part of a tutorial programme.
3. To create guidelines on how a tutorial programme could be designed to develop resilience.

Based on these aims, we thus ask the following research questions:

1. What are the current trends in resilience and student engagement?
2. What are students' and tutors' perceptions about the impact of the A_STEP programme on their resilience and student engagement?
3. How can a higher education institution's tutorial programme be designed for students and tutors to create resilience and student engagement as key factors to student success?

Methodology

This case study uses a qualitative research design that uses purposeful sampling within the target population of the A_STEP programme. Various data sources are triangulated: focus groups with tutors and students and tutors' e-potfolios in which tutors must reflect on the impact and their growth in the A_STEP.

Design of the A_STEP tutorial programme

The A_STEP programme is strategically designed and operationally implemented according to peer learning and sound pedagogical approaches. Operationally, different role-players must commit to different responsibilities at the beginning of each semester cycle, including the tutor, the lecturer and the teaching

and learning coordinator (TLC). Other supporting role-players include interns and research assistants.

Faculties are invited to become part of the A_STEP programme. They are ultimately chosen based on a module risk assessment (usually considering the two main components of class size and module pass rate). Each TLC is responsible for two faculties and its modules. Based on the modules selected, the A_STEP office advertises for tutors and selects them based on academic performance (having passed the relevant module with an average of 65% or more and an overall 60% average). Lecturers are consulted regarding the tutors who qualify, and prospective tutors are invited for interviews. Successful candidates are conditionally appointed (with final contracts only completed once they are registered in the new year and have completed the relevant tutor training). Extensive tutor training takes place one week before classes commence and includes themes such as active participation in the classroom, different teaching strategies (overview), multilingualism (beginner and advanced), and supporting students with different needs. Once completed, contracts are finalised.

Induction meetings are held with lecturers, and lecturer training takes place, including instructions on how to design interactive tutorials and the role of the lecturer. Thereafter, timetables are created (allocating students and tutors to tutorial groups), and once tutorials commence, some continued actions include peer class observations, discussions between lecturers and tutors, TLC monthly check-ins with tutors, TLC weekly email communications with the tutor (copying the lecturer in communications), and TLC meetings with the lecturers. Attendance of each tutorial is captured in class via QR (quick response) codes and submitted weekly by the tutors, to be recorded and interpreted centrally on a data management system.

At the end of each term, tutor observations occur, and attendance data and a report are sent to lecturers. Students complete evaluations at the end of the semester, and the data are sent to lecturers. Lastly, tutors submit a portfolio of evidence and attend tutor awards. A key component throughout the programme

is the support and guidance provided to the lecturers, the tutors and the students.

Data collection and analysis

Tutors' feedback and evaluations were collected through their tutor portfolio submissions, as well as student and tutor focus-group interviews. They were explored based on the themes of student engagement and resilience. A total of ten students and ten tutors were interviewed, and ten portfolios were analysed. Data collection instruments included tutors' end-of-year portfolios of evidence to focus on understanding the tutors' experience of the A_STEP programme. The semi-structured focus-group interviews with students and tutors aimed to provide us with a more in-depth understanding of their experience of the tutorial programme. Understanding students' and tutors' experience in tutorials would help us to better understand resilience and engagement, all with a broader aim of better understanding student success.

Student and tutor participation was voluntary, and data were deidentified and kept confidential. The sample included first-, second-, and third-year students on the QQ campus who specifically attended A_STEP sessions in modules, and tutors on the QQ campus who presented A_STEP sessions in modules. Data were collected at the end of the 2024 second semester iteration of the A_STEP sessions. Ethics clearance was obtained through the institutional ethics committee.

To analyse the data, we explored the portfolios of evidence through thematic analysis. Focus-group interview data were transcribed and also thematically analysed based on the elements of resilience and student engagement. All analyses were based on the resilience in higher education components illustrated in our theoretical framework: threats or challenges, individuals' role or agency, support structures, and outcome of the interaction between the individual and support. Table 4.2 illustrates the research design of the study:

Table 4.2: An Exploratory Qualitative approach to resilience and student engagement

Theoretical framework OR literature review	Main research question	Secondary research questions	Main research aim	Research objectives	Data collection	Sampling	Data analysis	Research design
Student success: Resilience Student engagement	*How does a tutorial programme impact resilience through student engagement of tutors and students on the rural QQ campus of the UFS*	*1. What are the trends in resilience and student engagement?* *2. What are student and tutor perceptions about how being part of a tutorial programme impacts their resilience?* *3. How can a tutorial programme be designed for both students and tutors to create resilience?*	To understand how being part of the A_STEP programme impacts the resilience of students and tutors on the QQ campus of the UFS.	1. To explore student engagement and resilience trends in South Africa. 2. To explore student and tutor perceptions regarding their resilience and engagement when participating in a tutorial programme. 3. To create guidelines on how a tutorial programme could be designed to create resilience.	1. Literature review on peer learning, resilience and student engagement 2. Tutor portfolios 3. Semi-structured focus group interviews	First year, second year and third-year students on the QQ campus, who attend A_STEP tutorials in modules. Tutors on the QQ campus who present A_STEP tutorials in modules. [Purposive random sampling]	1. Literature review 2. Thematic analysis	Exploratory, qualitative

Results and Findings

All datasets were thematically analysed and will be presented based on the four components of our understanding of integrating student engagement, student success and resilience: 1) Threats or Challenges, 2) Individual agency, 3) Structures that enable resilience, and 4) Interactions between personal, social and structural that create resilience.

Dataset one: student focus-group interviews

1) Threats or challenges

The first threat or challenge that students indicated in the student responses is **transitioning into university while still being a first-year student**:

> "[B]ecause it was still my first year, so adapting, [to the] environment…can be very hard for you, just because you don't know how the systems work";
>
> "First semester, I was really lost. I couldn't even understand who am I? What am I doing here? There is no one I know"; "First semester, I was always alone, crying a lot, not coping, failing".

Secondly, **campus disruptions** or student protests are indicated as a threat:

> "Sometimes they can protest, and it can be very hard for you, just because you don't know how the systems work".

Thirdly, **finding module content difficult**:

> "I went there not knowing the concept of mathematics, and it was very hard for me"; "Sometimes it gets difficult to for you to understand some problems and some situations".

Other components are the **digital skills gap**

> "I did not know how to operate a laptop for the first time"

and **contextual challenges** while living off-campus, such as water, electricity and network shortages

> "I'm staying off campus... most of the time we don't have electricity".

2) Individual agency

Agency, or how a student intentionally participates in academically relevant activities, is important when considering student engagement. However, structures need to be implemented to enable students to act.

Some ways in which student respondents indicated that they illustrate agency at the university, or how they consider it, are to **ask for help from tutors and students**

> "[I]f I'm studying and stuff, I firstly go and ask for others to help me, like tutors and students"

and **to ask for help from other units** on the campus:

> "I just go to...SCD and then tell them it's an emergency"; "Every time, when I have a problem, or when I'm going full time, I'll go straight to SCD".

Past struggles are furthermore posed as reasons for intrinsic motivation:

> "I told myself I have to do this because I always reflect on my background, where I come from, when, where I want to be".

Additionally, they seem to understand that agency is important and view it almost as the act of **speaking up:**

> "... if you keep quiet and tell no one about it, no one's going to like come to you and ask you 'Are you okay? Do you need something?' ... you have to speak so that you can get help";

> "So you see, it's within you first, first thing to deal with yourself, first before you can be able to receive help".

This agency is sometimes hampered because of their fear of their **confidentiality being** broken:

> "I have a fear of confiding in someone who's going to tell everyone".

3) Structures that enable resilience

The third element that we consider is how structures are designed to support student resilience. In this instance, tutorials are our focus, but if other structures were mentioned, we also highlighted them. Tutorials can thus enable resilience when they are designed in a certain way based on the respondents.

Firstly, as a **safe space** to ask questions

> "[Y]ou can speak freely, because no one [is] judging you or telling you that you don't know this question and you are dumb and stuff, but they help you to understand the concepts"; "they really emphasise on their point there's there is no stupid question that every question you have is a problem that needs to be solved" and

as **spaces for engagement**

> "So by giving face-to-face [f2f] tutorials…make you and your tutor to engage more"; "to have questions and answers during the sessions"; "if the tutorial was structured [so] that you have activities and interaction".

Language and age seem important, and to include **other languages than English**

> "because you can ask with your native languages"; "They also speak my language, so I feel free, because we like talk"

while also having tutors who are **similarly aged** as the students (peers):

> "[T]utors have had the same assignments, the same test as we had the previous year. So they would give us that talk to say you can actually do it... in one... assignment... they actually showed us their work that they had done"; "We got to engage with our peers... you're just comfortable overall, like, explaining your problems and how they help you"; "tutors... went through some of the challenges that you're going through".

On a more practical level, creating **WhatsApp groups** for instant consultations seems helpful

> "...if you are not comfortable enough...in the tutorials, seeing something I don't understand...you can consult via WhatsApp",

and a campus environment and **campus infrastructure that supports learning**

> "We have libraries here"; "We have access to tutors, we have access to internet"; "there is access to wi-fi"; "there is access to water...even if I didn't bath, I can...use the showers at the sporting centre"; "I love to work at the computer lab".

4) Interactions between personal, social and structural that create resilience

Lastly, we consider how the interaction between student agency and institutional responsiveness creates an enabling environment for resilience.

Tutorials are perceived as impactful if they create a space to **connect students and peers who support each other's academic journeys**

> "You also meet your mate. And then you also meet friends who can help you if you have a quiz"; "You meet a person who's like a father or a mother to you...if you got a problem based on a concept, he's there to help you",

as well as **impact academic success**:

> "Me going to the tutorials and making [an] effort to be part of the tutorial, engaging the tutorials, did improve my results, because now I do qualify to write exam [with] high marks".

Dataset two: tutor focus-group interviews

1) Threats or challenges

Some of the threats or challenges that tutors experience include **students who easily worry or stress**

> "Student[s] can stress...You must constantly remind them",

Students who are unresponsive or disengaged during tutorial sessions

> "certain students not maybe cooperating or giving the necessary comments"

and **poor class attendance:**

> "The other challenge was for the online tutoring, because I love sharing information around people, so the attendance was very bad".

More practical and environmental challenges include **network connectivity and water shortages**

> "I was supposed to do an online session. And then I had a problem with connectivity"; "There was a crisis of no

> water... and I was having a tutorial, so I have students... going out to say...we don't have water, so we need to rush home",

technical challenges within a tutorial venue, both face-to-face and online

> "hav[ing] to change the venue because of some technical difficulties"; "I was using Blackboard to conduct my lessons [and] I had a problem with the link"; "main challenge that we used to face is with maybe the technical stuff when conducting tutorials",

lectures booked in the same venue as the tutorials (double bookings)

> "walking to the tutorial venues and then finding us having other lessons",

and **sudden campus protests**

> "sudden protest within the university".

Being overwhelmed because of competing responsibilities as a student and an employee is deemed challenging:

> "During the teaching practice, I experienced lot of challenges whereby I was overwhelmed. I had a lot of work to tackle. I have my own assignments, I have my tutorial classes"; "I started to have a challenge with balancing the tutorial as well as my academics".

2) Individual agency

The following are some ways that tutor respondents illustrate agency at the University or how they consider agency.

They firstly consider **speaking up** as a form of agency when faced with challenges, and they **speak to a friend or Student Counselling and Development**

> "I can I try to speak to my friends if I notice that my problems just keep getting worse and worse",

but easily **ask for help from the A_STEP office** in person or through WhatsApp. This has made them more responsive to act out agency in other spheres

> "So being part of the A_STEP programme really did help me in that regard, because now I'm a lot more open in terms of asking for help, even beyond the programme, even with my own friends and peers around me, I'm a lot more open to the idea of asking for help".

They feel they need to act during challenges because it is **expected of them as tutors** (**intrinsic motivation**)

> "I don't have a method of how I deal with my challenges, I just do what I have to do",

while others do indicate a strategy of assessing the situation first and then acting upon it:

> "make sure that I have all I can gather most information that I can about the situation...and then I see how I can navigate that situation".

3) Structures that enable resilience

In this instance, tutorials are focused specifically, but other structures, when mentioned, are also highlighted.

Here, almost all of the tutor responses firstly relate to **human-interaction and support provided**, such as **A_STEP officers who are supportive**, readily available, approachable, respond quickly, give guidance during threats and communicate well when needed:

> "They're supportive when you phone them"; "...the number one office when it comes to communication... having interns who check emails regularly"; "...if you call

> and then they don't pick up, they will come back to you very fast. If you send an email, they respond to you very fast"; "easily approachable, they constantly remind us…please don't be afraid to ask [for help]"; "they usually tell us, if they strike, they'll move our tutorials online…they give us guidance to prevent having issues".

They also **connect tutors with different relevant stakeholders** of support:

> "A_STEP…introduced me to many people…and I know a lot of people…a bigger circle to ask people from"; "that's where I started being more engaged, knowing different offices, relevant people that I can send my students to… knowing different organisations on campus".

Being part of a group that supports you (and perhaps a sense of belonging) is helpful:

> "Having a community within the campus, making sure that I understand the problem and just being within a collective, that is how I cope with the most of difficult situations within the campus";

Secondly, **structured development opportunities are mentioned**, specifically **tutorial training sessions** that teach relevant skills but also teach tutors who to turn to for help:

> "I tend to develop skills also during the trainings"; "The training made adapting a little bit easy…having to learn the tools and the knowledge"; "there are people in place that is expected that [when] you'll encounter challenges… to ask for help"; "we get the trainings that teaches us how to get students more engaged"; "I'm trained with multilingualism",

classroom (peer) observations, which also embeds self-reflection:

> "...she came by to observe...[and]it helped me that way"; "...[I]reflected from my experience in the first semester and second semester...and then I've checked the differences and improvements"; "we would attend each other's tutorials...I also found it comforting asking for help [from my tutor colleagues] when I'm preparing for a tutorial"; "what I liked about tutorials [was] peer evaluations...because you get to learn new strategies...so I think we learn from each other"

and being able to have **discussions with lecturers** as part of the preparation for tutorials

> "preparing for this lesson and have these questions. ... before we conduct lessons, we need to have solid content to teach...the lecturers are also helpful...because they helped me in planning to know for the next tutorial, what are we going to focus on".

Lastly**, being provided with resources during challenges**, like office space or a computer:

> "...we have all the relevant resources...to work...When I arrive[d], I had my own space with the computer".

4) Interactions between personal, social and structural

Lastly, we consider how the interaction between student agency and institutional responsiveness creates an enabling environment for resilience for the tutors.

Being a tutor increases **tutors' self-confidence (and sense of achievement)**

> "Boosted...my confidence"; "We were a bit shy...so now, when you are a tutor, you are used to talking to people and engaging, so...it becomes simple to participate in campus activities"; "I am able to sort of contribute in other people's lives. And the confidence that comes from that, it spills over even to your academics and even in other general areas of

> life, to say, okay, if I was able to tackle the challenges that come with being a tutor, and if I was able to impact students in that manner, it means there is something that I can do it sort of boosts one's confidence, and, you know, it affirms you as a person, and then you are able to sort of take that affirmation and it spills over to other areas of life",

being a tutor provided **experience and skills development** needed for the world of work (linked to graduate attributes and employability):

> "helped me in terms of experience"; "being professional"; "I learnt so much because it helped me to grow [in] public speaking"; "you have to think critical"; "I've noticed you have to be a problem solver"; "instilled a lot of discipline"; "learned…time management skills"; "And it also help[ed] me to be creative",

and being a tutor makes **tutors responsible** for the students' success, to keep them calm and motivate them, and that in turn, impacts their own resilience:

> "So you help the student to not give up, and when you see he doesn't give up, it gives you the courage to also not give up"; "when you're a tutor, it gives you that responsibility that now it's, it's not just about me, but there are tutees that sort of depend on you for guidance and whatever"; "Don't panic, because if you panic as a tutor, they'll see that you are also panicking and the lesson will be a disaster".

Dataset three: tutor portfolios of evidence

To understand how resilience was embedded in A_STEP, we analysed (textually and thematically) the tutor portfolios which they submitted at the end of the year. Ten portfolios were randomly selected and analysed. These portfolios are based on a template that the tutors received and serve as a reflection of their own development and what worked well in terms of the A_STEP development opportunities and support provided.

1) Threats or Challenges

Some of the threats or challenges that we could identify in the tutor portfolios firstly relate to students' behaviour, more specifically, **poor tutorial attendance:**

> "The only major problem we had was attendance"; "Attendance was bad in in my first session; however I adapted new marketing strategies and it increased"

and how **students learn in different ways and at different paces:**

> "Students had different levels of understanding, making it challenging to keep everyone on the same page."; "some students required further help and encouragement"; "because students learn in different ways, so we had to think of different ways that will accommodate every student".

Another challenge indicated is **lecturers who do not meet** to discuss the content of tutorial sessions:

> "We only had one meeting with the lecturer throughout the semester"; "The meeting was not held on regular bases because of unavailability of the lecturer which affected"; "Navigating the schedule of our lecturer was a bit tricky, as formal meetings did not as often as we would hope".

Student responsibilities, and specifically, tutors **having teaching practice away from campus** during the academic year, were mentioned:

> "During my teaching practice, I had to move my sessions to online".

Lastly, **technical difficulties** when presenting online and face-to-face classes:

> "Issues like malfunctioning projectors or unreliable internet affected session flow."; "and I was always

> encountering problems with the projector"; "The only issues I encountered in my first session was my slow pc and connectivity".

2) Individual agency

The following are some ways in which tutor respondents illustrate agency at the university, or how they consider it, from their portfolios.

Some tutors indicate their **willingness to learn from other** tutors or students:

> "My goal was to...exchange ideas with others".

They also illustrate **agency to meet with one another when** they did not obtain lesson plans:

> "We had our own group chat aside where we will discuss what to do in class since we didn't have content discussion with the lecturer"; "...we would communicate as tutors and which topic to focus on so that we be on the same page as tutors".

However, it seems that key to agency is that being appointed as a tutor creates a feeling of **responsibility** to raise issues:

> "I had to get out of my comfort zone and present or express my own views"

and also the **responsibility that they felt to create agency in their tutees**:

> "I wanted to instil a sense of independence and self-efficacy in students, empowering them to tackle future challenges without reliance on a tutor"; "I want to create an environment where all students feel comfortable to participate".

3) Structures that enable resilience

This third element that we consider is how structures are designed to support student resilience.

How **A_STEP tutor training** was designed and implemented, provided information, and skills to assist tutors moving forward, which include

1. ice-breakers ("during ice breakers because that is where we get to socialise more often and share our ideas", "I discovered...how crucial ice-breakers are for bringing the audience back to focus")
2. discussing Universal Design for Learning and students with different needs ("Learning about the physical challenges that people face")
3. creating interactive tutorials ("We then spoke about student engagement, how are we going to engage students in a lesson")
4. the roles of the tutor ("how we as tutors serve as a bridge between the tutees and the lecturer")
5. who to consult for assistance ("we spoke about different offices that we can consult whenever we need help")
6. presenting multilingual tutorials ("The most amazing session that we had, was that of multilingualism"), and
7. allowing interaction between tutors during the training ("It felt like a session where every tutor was allowed to share their point of view or make comments regarding what we were trained for", "I was trained in a variety of teaching strategies").

Intentional, frequent **tutorial content discussions between the tutor and the lecturer** seem very important, some with a preference for online, others for face-to-face:

> "each and every information that we will be presenting needs to come from the lecturer before we can present it, we usually met with the lecturer every Monday"; "I feel like there should have been at least online meetings even twice a month"; "I think the meetings should be a bit longer to allow for questions that may randomly pop up. Our

> meetings were very short and rushed and sometimes it was difficult to actually engage and ask questions thoroughly"; "there should be regular communication with the team on the content that should be covered".

This links to their comments on **tutorials designed for active engagement and interaction.** This includes opting for face-to-face when possible, encouraging preparation before tutorials, allowing using their mother-tongue language in class and translating into English.

Open lines of communication are very important between the TLC, the tutor(s), and the lecturer, and also with the students (tutees) through different platforms and for different purposes, such as reminders and marketing of tutorials, sharing of ideas for tutor content, and problem-solving during crises:

> "using in-class announcements"; "Posted announcements and information about tutorial sessions on BB ensuring that all students are informed"; "The lecturer had an open door policy and I was able to ask questions during the meeting"; "I am grateful that there was communication between I and the tutees whenever they encounter a network problem also, they would indicate, no one came with an excuse that they cannot attend because of connectivity issues".

But also, **the A_STEP office is central to providing resources when needed:**

> "TLC and intern frequently provided valuable resources, such as teaching materials, training sessions, and occasional one-on-one guidance, which were beneficial for enhancing the quality of tutorial sessions".

4) Interactions between personal, social and structural that create resilience

Lastly, we consider how the interaction between student agency and institutional responsiveness creates an enabling environment for resilience for the tutors:

Being a tutor assisted in increasing **tutors' self-confidence**

> "I am glad that I managed to work through my confidence"

and **enhancing other work-related skills of the tutors:**

> "it helps you develop critical thinking, problem-solving, develop a growth mindset, and helps you stay organised and manage your time. These are the skills that I intended to achieve since they are preparing me for the future job. They will not only be beneficial to me but also to the learners I will be teaching daily"; "The trainings were helpful to build my confidence and gain public speaking"

As a tutor (and during training), tutors **created connections, relationships and collaborations with others**:

> "we were able to create healthy relationships with other tutors, as were not used to each other"; "I am grateful for the colleagues that I had, because that is when we got to know each other even more, because we are now facing the same situation and have to engage and come up with a solution together"; "Creating a collaborative environment helped students learn from each other's perspectives.".

Lastly, the A_STEP office **created a supportive environment,** ensuring that tutorials continue effectively:

> "Every time I had such a problem, I would write on the WhatsApp group asking for assistance and it would take them five minutes to be there to assist me"; "When we encounter problems, the team is always readily available to assist us"; "The A_STEP team was responsive and helpful whenever I needed help. Their availability to address concerns and provide support in a timely manner was crucial".

These results were integrated into the same table, positioning resilience aligned with student engagement and student success (as presented earlier).

Table 4.3: Integration of data aligned with student engagement and resilience framework

Theme / Element of student engagement, student success and resilience	Student focus-group responses	Tutor focus-group responses	Tutor portfolios	A_STEP tutorials as an example of enabling resilience on the QQ campus
Component 1: Threats / Adversities / Challenges / pressures / risks	- Transitioning into university as a first-year student - Campus disruptions and student protests - Module content that is challenging - Digital skills gap - Contextual challenges, such as when living off-campus (water, electricity, network)	- Students who easily worry and stress, who do not attend class, and who are unresponsive and disengaged during tutorials - Network connectivity and water shortages - Technical challenges while presenting tutorials - Feeling overwhelmed because of competing responsibilities	- Poor tutorial attendance - Lecturers not meeting to discuss the content of tutorial sessions - Technical difficulties (both online and f2f tutorials) - Different learning styles and pace of students	**The main challenges and threats that students and tutors face on the QQ campus are:** **STUDENTS:** - Transitioning to university **TUTORS:** - Being overwhelmed with competing responsibilities - Disengaged, unresponsive and stressed students **TUTORS AND STUDENTS:** - Campus disruptions, student protests, difficult module content, digital skills, contextual challenges (water, electricity, network)

Theme / Element of student engagement, student success and resilience	Student focus-group responses	Tutor focus-group responses	Tutor portfolios	A_STEP tutorials as an example of enabling resilience on the QQ campus
Component 2: The individual	- Students will ask for help from tutors and students as a form of agency - Students will ask for help from other support units on campus, especially mental health support - Students know that not asking for help can be problematic - Reflecting on complex backgrounds drives them to be motivated - Bottleneck to agency: the fear of non-confidentiality	- Tutors do difficult things because it is expected of them - Tutors will ask for help from the tutorial office - Tutors will speak to a friend or other support unit (mental health) on campus when they need help	- Tutors are willing to learn from one another - Tutors have agency to meet with one another if they have not met with the lecturer -Tutors have the responsibility to create agency in their students (tutees)	**Agency in students and tutors:** **STUDENTS:** - Will ask for help from other students but won't ask if they are scared that their confidentiality will be broken - Know it's important to ask for help **TUTORS:** - Will ask help from other tutors, learn from them, and meet one another - Will ask for help from the tutorial office - As tutors, they feel responsible to have agency and to support their students' agency **TUTORS AND STUDENTS:** - Will ask for help from support units on campus (such as mental health)

Theme / Element of student engagement, student success and resilience	Student focus-group responses	Tutor focus-group responses	Tutor portfolios	A_STEP tutorials as an example of enabling resilience on the QQ campus
Component 3: Structures around and services towards the individual	- If tutorials are presented as safe spaces to ask questions - Tutorials as spaces for engagement - Tutorials that include languages other than English - WhatsApp groups - Tutors close to the age of the students - Campus infrastructure that supports learning (such as libraries and Internet)	- Design of tutorial training sessions: teaching relevant teaching and work-related skills, who to turn to for help - Being able to have tutorial preparation discussions with the lecturer - Classroom peer observations that also include self-reflection - Responsiveness of tutorial support staff: available, approachable, quick to respond, giving guidance during threats and when communication is needed - Tutorial office that provides resources when needed - Being part of a group creates a sense of belonging - Connecting with different relevant stakeholders on campus	- Design of tutorial training to provide information and skills to tutors (including ice-breakers, UDL and discussions about students with different needs, how to create interactive tutorials, the roles of tutors, who to consult for support, how to present multilingual tutorials, the interaction between tutors during training) - Intentional and frequent tutorial content discussions between the tutor and lecturer - Open lines of communication between TLC, tutor, lecturer and students	**Characteristics of tutorials that create resilience:** **TUTORIAL SESSIONS DESIGN** - A safe space where you can ask questions, where you can use your mother-tongue, where tutors are close to your age, interactive, engaging, f2f, includes a preparation component for students, WhatsApp groups **TUTOR TRAINING DESIGN** - Includes topics on UDL and inclusivity, learning styles, roles of tutors, presenting multilingual tutorials, how to create interactive tutorials, who can help you, and other work-related skills **OVERALL COLLABORATION, SUPPORT AND BELONGING** - Tutorial preparation discussions with the lecturer (intentional, frequent) - Classroom peer observation with self-reflection - Responsive tutorial support staff: available, approachable, quick to respond, giving guidance during threats and when communication is needed, provides resources

Theme / Element of student engagement, student success and resilience	Student focus-group responses	Tutor focus-group responses	Tutor portfolios	A_STEP tutorials as an example of enabling resilience on the QQ campus
		- Design of tutorials to be interactive and engaging: opting for f2f when possible (instead of online), encouraging students to prepare for tutorials, allowing mother-tongue use in tutorials - One central office to provide resources		- Connecting with support on campus, open lines of communication between the tutorial office, tutor and lecturer, being part of a group
Component 4: Resilience is located in (and created through) the interactions between personal, social and structural	- Tutorials as spaces where students and peers can connect - Tutorials that impact academic success	- Being a tutor increased self-confidence and a sense of achievement - Being a tutor provided experience and developed skills needed for the world of work - Being a tutor makes you responsible for the student's success, to keep them calm, and in turn this impacts your own resilience	- Being a tutor creates self-confidence and work-related skills - Creating connections, relationships and collaborations between tutors - Tutorial office creating a supportive environment	**TUTORIALS THAT HAVE AN IMPACT ENABLE:** - peer connections, relationships, collaborations - academic success, self-confidence, sense of achievement, experience and skills for the world of work *(*These are products of component 3, and especially the collaboration, support and belonging elements indicated overlap with this component)*

Implications for Practice

The following guidelines are thus proposed for the intentional design and implementation of a tutorial programme to impact resilience and student engagement where different stakeholders are involved:

Firstly, tutorials need to be recognised as an intentional, strategic intervention which enhances student success and fosters resilience and a sense of belonging. Therefore, the appropriate resources and leadership support at the top management and faculty levels is essential.

Secondly, the design of tutorial sessions is important. It needs to be a safe space where students can ask questions, where they can use their mother-tongue languages, and where tutors are close to the students' age. Tutorials must be interactive, engaging, predominantly f2f, and must include a student preparation component. Creating WhatsApp groups for different tutorial groups is also helpful.

Thirdly, how tutor training is designed is key to empowering tutors to be resilient but also empowers them to create resilience for their students. It should include topics on Universal Design for Learning and inclusivity, students' learning preferences, the roles of tutors, how to present multilingual tutorials and how to create interactive tutorials. Tutors also need to be informed about who they can turn to for support on campus. These training sessions need to connect the tutors with one another.

Finally, ongoing collaborations and support between different role-players are essential, and how these are managed to create a sense of belonging. Lecturers need to be involved in the tutorial sessions' design and should meet frequently and intentionally with the tutors to help them to prepare for the tutorial sessions. Classroom peer observations with feedback are key for self-improvement and should include a self-reflection component. Tutorial support staff or a responsive tutorial office cannot be stressed enough. They must be available, approachable, and quick to respond, give guidance during threats or challenges and when communication is needed, and provide tutors with resources. This also means that there need to be open lines of communication between the tutorial office, tutor, and lecturer

and that a sense of belonging to a group must be present. Tutors and students also need to connect with other campus support units, such as a mental health office.

Conclusion and Reflection

When we commenced this research, we were curious to know how a tutorial programme impacts the resilience of tutors and students on the rural QQ campus of the UFS through student engagement practices. While exploring the concepts of resilience and student engagement, it became evident that these two concepts are not mutually exclusive and almost mirrored the challenges, stakeholders and their roles, and tension between individual agency and social dynamics. By integrating a socio-ecological approach with student engagement and student success, the following definition of resilience in higher education was developed:

> Resilience in higher education is a function of the intentional design and development of a sustainable ecosystem that enables student agency (engagement in educationally purposeful activities) and institutional responsiveness through holistic student support.

This definition situates the chapter's findings within the broader conceptual discussion of resilience introduced elsewhere in this volume. Where Chapter 1 frames resilience through the Academic Resilience Model, the Socio-Ecological Resilience Theory, and the Dynamic Interactive Model of Resilience as an interplay between individual, relational, and systemic factors, the tutorial programme described here offers a concrete, campus-level instance of that same interplay in practice: tutor and student resilience are shown to be relationally produced, rather than independently held, and to depend on the same institutional scaffolding, training, peer connection, and structured support, that later chapters identify as central to designer and collegial resilience among staff more broadly.

Certain elements of good teaching and student engagement were confirmed by exploring the overwhelmingly insightful

inputs of our student voice. How we design the tutorial sessions can be performed so that it impacts resilience and engagement (such as making tutorials interactive or creating a space where students feel safe to ask questions). Similarly, how tutors are trained can be accomplished in an engaging and empowering manner (such as how to design inclusive tutorials or where to go for support on campus).

However, the social support environment significantly strengthens tutors and the tutorial programme both in what we provide and how it is delivered. If tutors are supported by the lecturer to create well-designed tutorials by the tutorial office to continue providing tutorials and support to students while being connected with fellow tutors or peers whom they can learn from and ask for help, it creates agency and their resilience spills over to the students, summarised excellently by the following tutor quote:

> "I am able to sort of contribute [to] other people's lives. And the confidence that comes from that, it spills over even to your academics and even in other general areas of life, to say, okay, if I was able to tackle the challenges that come with being a tutor, and if I was able to impact students in that manner, it means there is something that I can do. It sort of boosts one's confidence, and...it affirms you as a person, and then you are able to sort of take that affirmation and it spills over to other areas of life".

By intentionally designing interventions - such as tutorial programmes - well, institutions can create environments that enhance social justice while developing resilient students and sustainable and resilient institutions.

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Chapter 5

Cultivation of Resilience in South Africa's Higher Education through its Integration with Indigenous Knowledge Systems and Transformative Learning

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Introduction and Background to Indigenous Knowledge Systems (IKS)

Indigenous Knowledge Systems (IKS) denote community-centric traditional practices in terms of their beliefs, culture, skills and lived experiences accumulated and practised by subsequent generations of the community. Amongst the aspects that constitute a community are the values and practices, interests, experiences, or even geographical locations shared by a group of individuals. Through their interpersonal relationships and mutual support, there emerges a sense of belonging and a collective identity defined by those aspects (Delanty, 2003; Hillery, 1955). An example of a community ranges from a religious or ethnic group to a group defined by racial characteristics. The uniqueness of IKS lies in its existence and role within various domains, from agriculture, education, medicine, and governance to the environment in which such a community exists (Higgs & Van Niekerk, 2002; Mdzanga, 2021). Being socially constructed, IKS

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plays a key role in a community's power relations, its perception of the worldviews, determinant of its resilience and sustainability, and forms the core of a community's identity and cultural heritage. It is based on such attributes that IKS is perceived as providing a lens through which a community's challenges and aspirations can be understood and realised.

The call and push for the integration of IKS in South Africa's education practices is in response to the Western hegemony on post-colonial Africa's values and systems, which have contributed to the existing disconnect between education practices in African countries such as South Africa and the social, economic realities facing communities (Tarisayi, 2024). The impact is also stagnating transformative learning and the government's initiatives towards inclusive education, which da Silva et al. (2024) consider significant components in cultivating resilience in the teaching and learning environment.

The recognition and adoption of the IKS Policy by South Africa's government in November 2004 (DST, 2004) is part of the broader efforts in the development, promotion and protection of IKS in the country. There is also a growing body of academic studies advocating for the removal of colonialism's vestiges in knowledge production within various domains, such as politics, leadership and education (Battiste, 2016; Mvenene, 2019; wa Thiong'o, 1992). Such a discourse indicates that the integration of IKS into education practices, particularly in curricula and pedagogy, has more to do with the cultivation of a dynamic and inclusive learning environment while acknowledging diversity in knowing rather than the preservation of cultural heritage. This transformation, through the integration of IKS into education practices, has the potential to enrich the educational journeys of students by making significant contributions to the cultivation of their resilience as they acknowledge diverse forms of knowledge production. This is why Keane et al. (2023) advocate for an approach to knowledge production which is more holistic.

Objectives of the Chapter

The objectives of this chapter are multifaceted:

- Arguing for the case of integrating IKS into South Africa's education curricula and pedagogy by examining the historical and contemporary role of IKS in the enhancement and fostering of inclusivity in education practices.
- Exploring ways in which IKS could foster resilience and inclusiveness amongst students and their educators within an educational environment, thereby enhancing their positive education experiences. In an educational context, resilience is the ability of students and their educators to make positive adaptations amidst challenges or adversity, such as systemic inequality. This is while they maintain or regain their capacity to develop themselves, learn, and teach effectively. The cultivation of resilience also requires practices that are inclusive and supportive, besides being culturally relevant (Masten, 2014).
- Analysing the role of Transformative Learning Theory in integrating IKS into the curricula and pedagogy in terms of how Transformative Learning Theory could foster critical reflections, social change, and inclusivity in education practices.
- Providing a reflection of the study by identifying gaps and suggesting recommendations on the effective integration of IKS in higher education, aimed at cultivating resilience and inclusivity in the country's higher education practices.

Through these objectives, the chapter seeks to contribute to the ongoing debate about the transformative potential of IKS in education, specifically in addressing historical injustices and promoting a more just, equitable and resilient society.

Literature Review

Overview of Higher Education in South Africa

The landscape of South Africa's higher education is marked by an array of diverse institutions of higher learning, ranging from traditional and technical universities to Technical and

Vocational Education and Training (TVET) colleges (CHE, 2022). The country's education system and the sector have been under transformation since the fall of the apartheid system in 1994. As Warden (2012) posits, the apartheid system, besides being a policy of segregation based on race, also influenced other domains such as education, economy, agriculture, and politics, thereby creating a state of inequality in the country between 1948 and 1994 while the National Party government was in power. Notable progress in transformation has been made in the expansion and enhancement of access to education and inclusivity, which has also contributed to an increased number of student enrolment coming from communities that were previously disadvantaged during the reign of the apartheid system (CHE, 2018).

The government's introduction of the National Student Financial Aid Scheme (NSFAS) is part of broader initiatives aimed at addressing financial challenges that could otherwise have prevented potential students from poor families from acquiring education (NSFAS, 2020). Transformation of the curricula has also been significant, as reported by the Department of Higher Education and Training (DHET, 2017), in terms of incorporating IKS, which is context-centred. Transformation in the education sector also involved the restructuring of higher education to improve efficiency and the allocation of resources to better serve the growing needs of South Africans. A report by the National Working Group (2001) refers to the merger of ML Sultan Technikon and Technikon Natal, resulting in the creation of the Durban Institute of Technology, later renamed Durban University of Technology. The Qwa-Qwa campus, which was part of the University of the North, was incorporated into the University of the Free State. A report by Nelson Mandela University (2024) shows that the current Nelson Mandela University is a result of the merger of the Port Elizabeth campus of Vista University (Vista PE), PE Technikon, the Port Elizabeth campus of Vista University (Vista PE), and the University of Port Elizabeth (UPE). There are other initiatives for change and improvement in the education sector. As Ndofirepi and Chiramba (2023) point out, substantial investments in terms of upgrading libraries, lecture halls, and student accommodation are being made in support of access and inclusivity in higher education in the country.

Although significant strides have been made in the transformation of the education sector to reflect the new face of South Africa, de Clercq (2020) posits that the sector is still bedeviled with challenges, ranging from disparities in funding, high rate of dropouts, insufficient resources, to unequal access of opportunities for potential students in some of the higher education institutions. However, there is a growing acknowledgement of the need for accelerating the transformation of higher education institutions in alignment with the aspirations of democratic South Africa that promote inclusivity in all spheres of life. As Ngubane and Makua (2021) point out, a key aspect of this transformation lies in re-evaluating curricula and pedagogy by integrating diverse ways of knowledge production, such as using IKS, thereby reflecting South Africans' lived experiences. Mamdani (2021) views such an approach in promoting inclusivity and equity in education as part of fostering cohesion and the empowerment of students in readiness to navigate through the complexities of the interconnected societies that they live in.

Significance of Resilience in Education

Resilience in education is considered an enabler in equipping learners in the management of adversity and the achievement of success while having a curriculum and pedagogy that are resilience-oriented could further enhance the potential of education practices in impacting learners' personal growth and development. The reflection by Kaya and Seleti (2013) on resilience, IKS and education is that the failures of the education system and practices in incorporating IKS could result in the learners experiencing a disconnect and marginalisation, thereby inhibiting learners' ability to cope with challenges. Similarly, Roelf (2020) reflects on the aspect of resilience in education, pointing out that social-emotional focus is key as part of teaching and learning strategies, and lack of it could worsen inequalities, more so for the students coming from disadvantaged and marginalised communities. The findings of that study indicate that such a situation could lead to poor academic performance and behavioural challenges. Souers and Hall (2016) look at narrow pedagogical strategies emphasising the role of learning

rather than the fostering of critical engagement and emotional intelligence, inhibiting learners' ability to adapt to stressful conditions. Another critical factor highlighted by Henderson and Milstein (2016) is the key role played by the dynamics of the teacher-student partnership, arguing that the absence of this factor could isolate learners, as relationships anchored on care and trust are key in the fostering of resilience.

Transformative benefits are also being pointed out as the outcome of the integration of strategies that build resilience into curricula and pedagogy, as Ungar (2019) argues that the acknowledgement of the diverse identities of students by an inclusive curriculum enhances the students' sense of belonging and their level of engagement, thereby cultivating an environment for a positive academic performance and high level of social engagement. As for the pedagogical approaches placing emphasis on social-emotional learning (SEL), Durlak et al. (2021) describe them as particularly impactful in the enhancement of the learners' capacity in the management of their emotions, abilities to solve problems, and adaptability in dynamic situations, adding that all of these are foundational to resilience. The position of teachers employing a relational approach has also been described by Gu and Li (2019) as influencing resilience in students. The outcome of such an approach is cultivating a learning environment that fosters a sense of belonging and a support system.

The position of structural inequalities has been mentioned by Masten and Cicchetti (2016) as playing an inhibiting role in the cultivation of resilience, positing that having curricula and pedagogy that are resilience-centred could mitigate potential adverse impacts of social and economic problems such as poverty and marginalisation while empowering students in exploiting their potentials. In addition, an emphasis on inclusivity and adaptability in terms of skills can cultivate students' potential to excel not only in their academic pursuits but also beyond. Such approaches could help to alleviate challenges linked to adversity and also highlight the potential that a resilience-oriented educational practice has in the transformation of the students in terms of developing their capacity to navigate the complexity of life situations more effectively.

However, a study by Mubangizi and Kaya (2015) while emphasising the significance of IKS in South Africa's education practices, pointed out the convergence of inclusivity and diversity as posing a challenge in the integration of IKS in education curricula. The argument advanced is that although *Ubuntu*, as an African philosophy, is endowed with rich knowledge systems, values and traditions, it is disconnected from international standards in human rights because of its marginalisation by Western values, which have preference and are generally considered as superior to any other IKS. Adding that the integration of IKS should be considered as a human rights issue and that the development of universal human rights standards that include the practice of one's own language and culture and protection from discrimination, while taking into account the diversity of cultural practices and the different ways of knowing, could provide IKS with leverage in the context of its integration with curricula.

Contextual overview of Transformative Learning Theory

As posited by Masten and Cicchetti (2016), Transformative Learning Theory provides a lens through which communities or individuals facing diverse perspectives and experiences that challenge their preconceived worldviews, could critically reflect on such challenges and their experiences, thereby leading to a shift that can result in a transformation in their personal and social engagements. A key driver of transformative learning is critical reflection, which starts with a state of disorientation dilemma, where lived experiences and established worldviews of an individual or community are challenged. As Taylor and Cranton (2021) explain, this prompts self-examination of an individual's assumptions and beliefs, a process involving an experience of guilt, fear or anger. The potent nature of critical reflection lies in an individual's recognition that such a process is a shared experience by other individuals, fostering a collective understanding of their status quo.

The attributes of this framework are key to cultivating resilience both in learners and their educators. Through their engagement in transformative learning, individual learners

could explore their new roles, their relationships and the nature of the actions to be taken, and this could enable them to develop flexibility and adaptability. Such a process, as Illeris (2018) emphasises, enhances an individual's capability to face and overcome challenges because of gaining new knowledge and skills in implementing new strategies. For educators, the use of transformative learning would enable them to develop a teaching and learning environment that is inclusive and cultivates critical thinking, adaptability and the fostering of resilience both for students and their educators. The adoption of new roles by the students empowers them through building their competencies, while their growing confidence enhances their new perspectives on life. Brookfield (2017) refers to these different phases of the transformative learning process as cyclical, adding that besides equipping individuals in the handling of their current challenges and future adversities, they promote a learning culture and collective resilience in their educational environment.

The Role of IKS in Transformative Learning

IKS provides a rich context for learners to engage with diverse perspectives, fostering an understanding of the socio-cultural dynamics that shape their experiences (Chilisa, 2012). da Silva et al. (2024) attribute the integration of IKS in higher education institutions to an environment that encourages critical dialogue and engagement with indigenous perspectives, thus empowering students to challenge dominant narratives and develop a deeper sense of identity and belonging. Muyambo and Ndamba (2021) posit that the IKS integration should not be viewed as focusing only on validating indigenous knowledge but also facilitating the transformation of educational practices into more culturally relevant and inclusive models. The relevance and point of convergence of IKS with transformative learning is the dynamic nature of IKS; that is, how it evolves and incorporates emerging knowledge and practices through critical reflection and as it responds to changing situations (Mamdani, 2021). The argument advanced in this context is the fostering of transformative learning, as it facilitates students' critical engagement with their traditional practices and social realities, shaping their identities.

Current Landscape of IKS in South African Higher Education

South Africa's integration of IKS into higher education is gaining recognition as key to the fostering of inclusivity, transformation, and the decolonisation of education practices. This is supported by institutions of higher learning that are adopting IKS in addressing historical inequalities and the enhancement of cultural inclusivity in their curricula. As Chabaya and Chabaya (2023) emphasise, the incorporation of IKS has the potential to enrich the learning experience of students and the validation of diverse knowledge systems, thereby bridging the gap between Western and indigenous epistemologies. The integration of IKS into educational practices by institutions such as Durban University of Technology (2020) and the South African Qualifications Authority (SAQA)'s National Qualifications Framework (NQF) (SAQA, 2012) is a demonstration of such strides. The DHET, through its policy guidelines, advocates for the reflection of the country's cultural diversity, with IKS being central to these guidelines (DHET, 2014).

However, there is a significant variation across institutions of higher learning in the implementation of IKS, with ongoing debates around the effectiveness of the methods used in integration and the need for the preservation of IKS' authenticity. According to the policy framework of the University of KwaZulu-Natal (2016), the integration of IKS in higher education has been placed on the recognition of diverse cultural practices and the creation of a learning environment that is inclusive. The focus of IKS, as positioned in the curriculum development framework of the University of Cape Town (2014), centres on having educational practices that foster critical reflection and the individual growth of the student, which are key to building resilience. The IKS policy at the North-West University (2020) emphasises the importance of scholarly work supporting the integration of IKS in higher education, emphasising IKS' potential to contribute to resilience through cohesion amongst the student population. The approach of Stellenbosch University (2018) to IKS is a comprehensive one, spanning from curriculum design to broader academic activities. Contributing to this discourse, Waghid (2020) notes that for an inclusive curriculum, policy alignment is not sufficient and that

the emphasis must be on innovative pedagogies that are strategic and capable of harmonising IKS and Western paradigms. The position of the National Research Foundation (NRF, 2021) in this context is that ongoing initiatives are necessary, especially in training the academic staff and allocating resources for an effective integration of IKS.

Challenges and Barriers to IKS Integration in South African Higher Education

There are numerous challenges hindering the progress in the implementation of IKS into South Africa's higher education, as Makhaya (2018) points out, including institutional resistance because the country's educational institutions are deeply rooted in Western academic practices and perceived as more rigorous than IKS. Waghid (2020) views such resistance as being worsened by poor leadership, lack of commitment, and bureaucratic structures, which have left IKS projects and initiatives underexplored. While institutional support is key in integrating IKS into higher education, Green and Naidoo (2021) view the hesitance in what is perceived as disruptions in established curricula. Similarly, as noted by Theron and Van Rensburg (2018), the existing curricula are perceived as rigid, thereby limiting any flexibility in the incorporation of diverse epistemologies, and this is compounded by a lack of clarity of the implementation guidelines.

The preparedness of the educators and resource availability also impede the integration of IKS, with the observation of Maboya and Mlambo (2021) of knowledge and skills gap amongst academic staff in the integration of IKS and attributing that because of lack of training. Although Chilisa and Preece (2020) recognise the importance of investing in resources and training, budgetary limitations in many institutions of higher learning are hindering research activities and project development in those institutions. In addition, although SAQA (2012) highlights the critical role played by the NQF in the promotion of IKS, gaps still persist in the translation of such policies into strategies that are actionable, leading to inconsistencies in implementation across institutions.

In addressing such challenges and barriers, which also impact IKS' integration in South African higher education, the #FeesMustFall campaign (2015–2016), spearheaded by university students, was seen as a national push for the decolonisation of higher education in the country (Heleta, 2016). Part of the call was the curriculum transformation, change in institutional cultures and access to education for all. This ignited a national drive in which the country's universities embarked on a review of the curricula to reflect IKS and local contexts. Another approach employed was the transformation of language policies, with recognition of African languages in academic institutions, and this resulted in the adoption of multilingual approaches. Universities also embarked on a review and a change of their institutional cultures. This involved addressing the legacy of colonialism embedded in the institutions. This aimed at creating an inclusive environment within those educational institutions. The efforts and initiatives reflect a broader commitment in the dismantling of inequality while cultivating systemic justice in higher education practices (Du Plessis, 2021).

Overview of global approaches to indigenous knowledge systems (IKS) integration in education

The global integration of IKS into education curricula has varied levels of approaches and objectives. The challenges facing different countries determine the approaches and goals to be achieved, ensuring effectiveness in implementation. However, the general underlying focus seems to be the cultivation of inclusivity and the enhancement of indigenous knowledge practices in different domains. In Tanzania (Shivji, 2003), the approach of IKS' integration places emphasis on integrating indigenous practices of agriculture into the higher education curricula, while ensuring that academic programmes are aligned with the cultural practices and contextual realities. This approach has successfully addressed the challenges of food security and sustainability while maintaining the relevance of education to the needs of the communities. Success by higher education institutions is linked to the emphasis on contextual learning and applications, thereby fostering the empowerment of the local communities.

In New Zealand, IKS integration into higher education is evident using bilingual education as an approach to integrating *Mātauranga Māori* (the body of knowledge of the Māoris) into the curricula of higher education. This also includes courses that are context-specific for the Māoris and research projects that are guided by Treaty of Waitangi principles. Smith (2021) describes how this integration has improved inclusivity and enhanced the representation of Māori students in higher education institutions. The government of New Zealand has also instituted a proactive approach to addressing any potential gaps in the implementation by institutionalising the Māori indigenous practices. The findings of a study by de Sousa Santos (2018) note that the focus of Bolivia in integrating IKS is on the promotion of alignment of academic programmes with the traditional practices and philosophies of the Quechua and Aymara communities found in the Andean region. The two communities are spread across Bolivia, Ecuador and Peru, and their philosophies are embedded in their way of life and their worldviews. Bolivian universities have strengthened the cultural identities of the two communities while fostering inclusivity in the university's student population. This achievement is through integrating the Andean body of knowledge into university curricula, besides the policies prioritising partnership and cultural preservation of the indigenous communities.

In Canada, the drive towards IKS has been driven by the Truth and Reconciliation Commission (TRC), which has seen the incorporation of IKS approaches within higher education institutions. Battiste (2016) describes how this has extended to the universities employing staff members from marginalised indigenous communities as an approach to enriching knowledge prowess and inclusivity. Challenges such as systemic resistance to the drive towards IKS at universities are addressed through the TRC. This approach is a strategy embedded into the policies of various institutions and curricula. The case study of Australia and IKS' implementation shows that the country is guided by the Reconciliation Action Plans in integrating Aboriginal and Torres Strait Islander indigenous practices. A report by UNESCO (2019) indicates that integration focuses on storytelling, oral literature, and practices that foster sustainability. The core aspect of the success of such initiatives is attributed to

a commitment by institutions of the country, the existing reconciliation frameworks, and the proactiveness in addressing potential challenges such as change resistance, as well as by fostering inclusivity through academic policies and Indigenous communities' representation.

However, although the global integration of IKS highlights its potential to create inclusive learning environments and empower indigenous communities, there are no known approaches to IKS integration in education that could be considered as being universal, as each approach is context-specific. This brings a challenge to the African continent, as Mubangizi and Kaya (2015) posit that although the application of IKS in Africa is not a recent undertaking, as it can be traced back to the history of the continent, the drive to incorporate it as part of the formal system of education, specifically higher education as being a recent undertaking. As Horsthemke (2013) argues, the integration of IKS with the formal system of education has only emerged during the last two decades in Africa as a subject of discussion in terms of its conceptual significance., He further argues that before considering approaches to IKS integration in education, there are several questions that need critical interrogation, such as, what do we really mean by indigenous ways of knowing and the production of knowledge? Who determines what is indigenous and what is not in this global village that we are in?

Methodology

Data collection and the study approach

This study was guided by a qualitative approach. Supported by the interpretivism paradigm, and as Creswell (2013) posits, the study acknowledges the subjective nature of knowledge - being context-specific and shaped by the interactions and lived experiences of individuals within their social and cultural settings. The emphasis by Adu (2021) is that being inherently interpretive, a qualitative study focuses on understanding a research problem based on the meanings that individuals attach to them. This aligns with the philosophical framework of the interpretivism paradigm, thereby

strengthening the objective of the study on examining how the integration of IKS could foster transformative learning and resilience within the higher education landscape in South Africa.

The study's secondary data collection included academic journal articles and seminal works, as well as reports from various South African government departments and global institutions. The rationale for the use of secondary data were informed by the availability of rich and extensive data on the integration of IKS into various domains, such as education. Access to such extensive secondary data, as Saunders et al. (2019) explain, enables a comprehensive analysis of a research problem. The data collected from secondary sources included guidelines, frameworks and policies from the DHET, SAQA, and the Council on Higher Education (CHE). The study also drew valuable data from South Africa's institutions of higher learning, such as the University of Cape Town, Cape Peninsula University of Technology, Nelson Mandela University, North-West University, Stellenbosch University, University of the Free State, and the University of KwaZulu-Natal. The objective was to draw insights into the existing policies and practices of institutions of higher learning. The collected data also included global case studies from Australia, Canada, Bolivia, Tanzania and New Zealand. The rationale was to enrich the understanding of the research problem from the diversity of the strategies, social-cultural environments, and challenges influencing the integration of IKS into education.

The study employed a purposive sampling technique in data collection, while the data saturation principle guided the level of the data to be collected. As Denzin and Lincoln (2018) point out, data saturation is the point at which no new insights are generated from the subsequent data collection, and the data collected is sufficient to address the research problem, while the purposive sampling technique, as Saunders et al. (2019) explain, ensured the collection of the most relevant data. The application of explanatory design in the study aimed to enhance the examination of the underlying relationships and the processes of IKS integration. As Creswell (2013) posits, explanatory research design seeks to provide clarification of the cause-effect of a phenomenon. This aspect of explanatory design

enhances a nuanced understanding of how integrating IKS into education practices fosters transformative learning and resilience amongst students. The Transformative Learning Theory, posited by Mezirow (1997), was key as a lens providing insights into how integrating IKS could lead to students engaging in critical reflection and personal development, as both aspects are essential in cultivating resilience amongst these students. Transformative learning emphasises how education challenges existing values and assumptions while fostering alternative ways of thinking, which identifies with IKS' integration as an approach to the remodelling of higher education. Reflecting on a theoretical framework, Denzin and Lincoln (2018) note that an appropriate theory for a research problem is key in structuring and interpreting complex social phenomena.

Data Analysis

The process of analysing data were guided by the application of content analysis. As explained by Flick (2018), this involves the organisation of the data into relevant categories based on the emerging themes, thereby providing a clear perspective of the qualitative data. The process of analysing the data followed structured steps to ensure rigour and reliability. The first step of content analysis was the familiarisation of the data, which Denzin and Lincoln (2018) describe as a thorough reading of the data, providing an understanding of the content and context and identifying preliminary ideas relevant to the research problem. The process of coding employed an inductive approach, with the data broken down into smaller units, with assigned codes to the units applied in the identification of recurring themes. As Denzin and Lincoln (2018) note, coding captures the core of the data being analysed. Thematic patterns were then employed to organise the codes into broader categories, resulting in themes that emerged as central to the study. This step provided a cohesive framework for interpreting the data and linking it to the study's theoretical foundation, including Transformative Learning Theory. The themes were then merged and grouped according to how they addressed each of the four research questions. This last step

formed the foundation of the discussion of the research findings, as guided by the themes that were developed from the codes.

The methodology adopted in the study, guided by a qualitative approach, explanatory design, and Transformative Learning Theory supporting the study, provides a robust framework for examining IKS' integration in higher learning education. Through the utilisation of purposive sampling, secondary data and content analysis, the research methodology assisted in providing critical insights by drawing from South Africa's context and the global practices on the potentials of IKS' integration, the role of transformative learning, and the cultivation of resilience amongst students.

Discussion of Findings

This section presents a discussion and analysis of the findings guided by the four research objectives. While the first three objectives are part of this section, the fourth objective falls under implications for practice.

Integrating IKS into South African Education: A Case for Inclusion

The first objective of the study is to argue the case for the integration of IKS into South Africa's education curricula and pedagogy, with three key emerging themes that include the historical and contemporary significance of IKS, IKS as a source of resilience and as a tool for social justice. In addressing the first objective of the study, the findings point to the IKS' potential to transform South Africa's education system and practices through cultural preservation, fostering resilience and the enhancement of social justice. IKS' framework, which is both historical and contemporary, offers a foundation for addressing identity crises and the experience of cultural marginalisation by most of South Africa's students. Keane et al. (2023) call for the reconnection of individuals and communities with their indigenous practices, with education being instrumental in revitalising their culture and national unity.

The analysis further points to the key role of resilience-building by IKS through cultural preservation, fostering resilience

and the enhancement of social justice while emphasising the integration of indigenous practices as having the potential of enhancing the capacity of students in handling social, ecological and economic challenges facing them. This is in line with the framework of transforming learning, placing emphasis on learning experiences that are both experiential and contextual in the preparation for an individual's ever-changing world. IKS is also seen as having the potential to advance social justice through the delinking of education practices with colonial legacy (Ndlovu, 2018), which is key in addressing historical injustices while promoting inclusivity. This suggests that the transformation of education practices through IKS could foster an equitable society through the empowerment of the communities that were previously disadvantaged.

Exploring ways in which IKS can foster resilience and inclusivity

The second research objective explores ways in which IKS can be used as a tool in fostering resilience and inclusivity, with critical reflection and self-awareness, cultural identity and sense of belonging and community engagement emerging as three dominant themes. The study shows the potential of IKS integration as a transformative tool in cultivating resilience and inclusivity. In this context, the aspects of critical reflection and self-awareness are emerging as potential benefits of IKS integration, as transformative learning empowers students to interrogate conventional knowledge systems and adapt to perspectives that are more inclusive and flexible. As Masten and Cicchetti (2016) explain, the critical engagement approach provides support in developing skills key to problem-solving, which is essential in the cultivation of an individual's resilience from personal and professional levels.

Key to a student's motivation and self-esteem is the cultural heritage and sense of belonging in society, with an embedded IKS in education curricula and pedagogy, bridging the gap of marginalisation and promoting inclusivity. This is in line with transformative learning goals that place emphasis on the creation of inclusive spaces (Brookfield, 2017), enabling the connection

of personal experiences to the broader societal worldviews by the students. Community engagement is noted as crucial in strengthening the case for the integration of IKS. The study shows that through the fostering of the link between education and the well-being of society, IKS could empower students to make contributions to the development of the communities that they belong to. Besides benefiting individual students, it also strengthens the resilience of communities through the creation of a rippling effect in enhancing societal well-being.

The role of Transformative Learning Theory in the integration of IKS

The key role played by transformative learning in integrating IKS into education, as part of the third research objective, is highlighted by the challenging of worldviews, critical reflection empowerment, and agency, as the three main themes emerging addressing the objective. The study indicates that integrating IKS into education practices is highlighted as having transformative potential, particularly through applying Transformative Learning Theory. Through its challenge of worldviews, IKS can disrupt the Eurocentric paradigm dominance in South Africa's education practice. This could allow students to embrace diverse ways of knowing, with a study by Mdzanga (2021) pointing out how the process of transformative learning is key in the fostering of open-mindedness of the students, enabling them to thrive in a dynamic world which is interconnected and multicultural. This potential in transformative learning is reflected in the findings of a study by Letsekha (2013), examining how the integration of perspectives of indigenous Africans into the curriculum of higher education challenges colonial legacies while affirming epistemologies that had previously been marginalised. A similar study by Waghid and Davids (2017) posited that exposure to indigenous philosophy, such as *Ubuntu*, fosters ethical engagements and participatory citizenship, and these are key outcomes aligning with the goals of transformative learning.

Critical reflection, supported by IKS, has emerged as a foundation component of transformative learning where students engaging with indigenous knowledge interrogate their

assumptions. This leads them to explore new perspectives and critically evaluate the complex nature of their realities (Ngubane & Makua, 2021). The findings of this study indicate that such a reflective practice provides an insightful understanding of the students, strengthening their problem-solving skills while cultivating their resilience capacities in a challenging environment. The empowerment and agency nature of IKS' integration in education practice is emerging as a crucial transformative. Through valuing and validating indigenous knowledge, education practices can act as an agent in the uplifting of marginalised communities and cultivating confidence and a sense of pride in the identities of the students. This empowerment is crucial in the fostering of active participation by such students beyond their academic lives.

Implications for Practice

The study presents key challenges and potential opportunities that need to be addressed for a successful IKS integration into South African education practices. The challenges and recommendations are discussed below. A key significant barrier to IKS' integration is the lack of institutional support and cohesive policy frameworks. In the absence of strong policies outlining the values and objectives of IKS' integration and the lack of enforcement through institutional support, initiatives for including IKS in education practices are often disjointed. For the effectiveness of IKS' integration, IKS must be embedded in the education system at the policy level, with supporting resources and spearheaded institutional leadership. An identified gap in the success of IKS' integration is teacher readiness, and this is because teachers may not have had any experience or exposure to Indigenous Knowledge Systems during their education, making them ill-equipped to be effective in their teaching and learning practices where IKS is embedded. Addressing this gap requires theoretical grounding and practical approaches for teaching students from diverse cultural settings, and this can be achieved through tailor-made development programmes.

The development of curricula and integration of IKS requires strategic planning to avoid the dilution of academic rigour

in the process. Developers must identify ways of aligning IKS with the existing educational content and practices. Approaches that could be applied in achieving such an alignment include the involvement of cross-curricular initiatives, such as linking history, science or geography with IKS, enabling the learning of indigenous perspectives by the students in a manner which is both contextual and adhering to academic rigour. Resource availability has been pointed out in this study as a key factor for the success of IKS integration, with insufficient funding and resources posing potential challenges to colleges and universities in providing quality and effective IKS-integrated education. Investment in resources such as training of the educators, teaching and learning aids such as textbooks and digital platforms, and financial support for curriculum development are key to ensuring that IKS is effective and accessible to all students. The engagement of communities is emerging as a fundamental pillar in the integration of IKS. Through collaboration with indigenous communities, educational institutions of higher learning could ensure the authenticity, meaningfulness and cultural sensitiveness of the knowledge being impacted. This approach of collaboration has the potential to help in the preservation of indigenous cultures and the fostering of a deeper sense of trust, mutual respect, and understanding amongst the students. In addition, the involvement of communities facilitates knowledge exchange between academia and the local communities. This could contribute to an inclusive education system.

The study shows that IKS integration into the education system and practices in South Africa requires an approach that is multifaceted in addressing existing gaps. Examples of such gaps include a lack of comprehensive policy guidelines for the integration of IKS in curricula, leading to inconsistencies in the integration of IKS across educational institutions (Photo & McKnight, 2024). Mlotshwa and Tsaken (2024) also point out the lack of adequate training and resources for the teachers, leading to a negative impact on their effectiveness in teaching IKS. This also creates a disconnect between policy objectives and practices in a classroom. In integrating IKS into curricula, Ndlovu (2023) notes that insufficient involvement of local communities in the processes leads to a disconnect between the curricula of schools

and indigenous cultural practices. According to Ndlovu (2023), policymakers marginalise IKS and have a negative impact on curriculum development and the integration of IKS into mainstream education practices.

Reflections on the Findings

This study has pointed out the profound impact that the integration of IKS could have in the transformation of South Africa's education practices, the cultivation of resilience and the enhancement of inclusivity and social justice. The study's key reflection is on the role of IKS and its capability to redress historical injustices and marginalisation of communities through transforming education practices to align with indigenous knowledge systems. Through the reconnection of students with their cultural values and practices, IKS is cultivating identity consciousness and a sense of belonging, which are key to their personal and academic growth. The transformative nature of IKS integration into education practices benefits not only individuals but also communities by enhancing cultural preservation and the well-being of societies.

The study highlights the significance of aligning IKS with transformative learning, specifically emphasising the impact of critical reflection and the interrogation of conventional worldviews. The significance of this approach is in the empowerment of the students to be adaptive in this dynamic world and embrace diverse worldviews. However, critical gaps have been revealed by the findings of this study, ranging from ineffective policies, insufficient training of teachers, and lack of institutional support to the problems of resource allocation. These hinder the effectiveness of IKS implementation, and a multifaceted approach that includes strategic curriculum development and community participation supported by institutional leadership is required to address them.

The argument advanced by this study is that IKS helps in the cultivation of identity consciousness and the fostering of a sense of belonging, thereby reconnecting students with their cultural practices, traditions and values. This is key to an individual's personal development and academic success. However,

cultivating self-worth and identity consciousness within a specific community could bring about a feeling of disconnect and alienation to individuals who come from communities different from the mainstream IKS that are being elevated. In this context, the integration of IKS into educational practices should not be presented as a monolith or an exclusive system but as a collection of diversity, enriching the broader educational landscape, rather than the adoption of one definition of what "indigenous" means.

The case studies provided in this study of countries such as Canada, New Zealand and Tanzania further enrich different perspectives of IKS and its potential. In addition, these three countries possess national narratives that are grounded within the recognition of indigenous knowledge (IK) and national reconciliation. However, although there appear to be similarities with South Africa, in terms of colonisation and the marginalisation of certain communities, South Africa's context is unique, and the efforts in the decolonisation of education, such as the integration of IKS, must be multifaceted, involving negotiations that recognise and respect the country's diversities. To enrich its approach to IKS integration into education curricula and the cultivation of resilience, the country should learn from Tanzania, as it is a good example of integrating IKS into educational practices without excluding other communities. Tanzania's education policies emphasise the need to incorporate local knowledge systems into formal education. The policies also recognise the value of diversity in the country, and while Swahili is the country's national language and Tanzanian belongs to multiple ethnic or cultural groups, there are efforts in the incorporation of multilingualism and ethnographic knowledge into the country's curricula while reflecting the diversity of its various communities.

Reflecting on this chapter, framing Indigenous Knowledge Systems as a resource for resilience opens a genuinely useful line of thinking for South African higher education, though three areas remain where the argument could be taken further. The theorising of the specific mechanisms linking IKS to resilience, beyond the broad claim that it guards against marginalisation, is still emerging, and there is real value in future work that traces this

connection more precisely, perhaps through the socio-ecological resilience frameworks used elsewhere in this volume. The analysis presented here is also more conceptual and comparative than empirical, which is appropriate for establishing the terrain, but the natural next step is dedicated empirical research testing these ideas directly within South African classrooms and institutions. Finally, while the chapter draws on foundational literature, closer engagement with the recent wave of South African scholarship on decolonial curriculum reform would sharpen the argument further, and bringing that literature into conversation with this work is a promising direction for future writing.

These reflections affirm that while IKS demonstrates significant potential in the cultivation of resilience and inclusivity, it is critical to note that IKS does not serve to isolate or exclude but to foster cultural identity and socio-economic development. Such an approach will enable the transformation of South Africa's educational practices in a way that empowers all students, fostering identity consciousness while avoiding exclusion or romanticisation.

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Chapter 6

From Integration to Resilience: Design Principles for Supporting Disadvantaged Students

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Introduction

Sustainable development goals are explicitly aimed at being a "*blueprint to achieve a better and more sustainable future for all*" and "*to leave no one behind*" (UN, 2024). One of the main areas of inequality in Africa is access to, but more importantly, success in higher education (HE). The problem of poor student success rates is not a new phenomenon in HE. One big aspect of this problem is the challenge around the transition and integration of first-year students into higher education (CHE, 2013; Tinto, 2012; van Zyl, 2010). In the past, South Africa's HE sector was designed to serve a narrow group of people and exclude all others. Since 1994, the residual effects of this historical situation have often resulted in situations where poor black African students found themselves able to enter the institutions of higher learning but unable to achieve what Wally Morrow (1994) termed "*epistemological access*" (real access to the knowledge distributed by universities). Higher education success is a doorway to higher levels of social

mobility, financial success and status within society. Therefore, the question of how to effectively assist students from under-served parts of society to not just enter university but successfully integrate into it and succeed is crucial in the pursuit of equity and progress.

There should be no doubt that massive progress has been made regarding student success in South Africa over the past 15 years (DHET, 2022b). It is, however, also true that many students still struggle to complete their qualifications in regulation time, if at all. The South African Department of Higher Education and Training (DHET) (2022a) reported that the 2020 graduation rates (the rate of total students enrolled for a qualification graduating in a specific year) for diplomas and certificates were at 21%, and 17% for undergraduate degrees. This clearly indicates that students are taking longer than regulation time to complete their qualifications. Not only that, but the three-year graduation rates of South African qualifications have shown itself to be a *wicked problem* to address (Rittel & Weber, 1973), with these rates remaining stubbornly low at 24.2% (2018 cohort enrolled for undergraduate three-year diplomas at contact universities) and 30.8% (2018 cohort enrolled for undergraduate three-year degrees at contact universities) respectively (DHET, 2022b). The difficult and long road to graduation requires high levels of academic resilience from South African students. They are almost certain to 'stumble or fall' along their academic path.

Van Wyk et al. (2022) describe resilience as a multi-factorial and multidimensional construct that manifests itself in the capacity to deal with adversity and overcome challenges effectively. These authors conclude that resilience is a very important non-cognitive factor linked to student persistence and success. Abrica (2018) defines the phenomenon of "academic resilience" as a student's ability to "*persist toward educational goals in light of racial marginalization experienced in post-secondary contexts*". How can institutions of higher learning assist in this process and enable and facilitate student success? This crucial question needs academically sound interventions that make a real difference. This chapter reports on an extensive four-year Design-Based Research (DBR) process, which resulted in a

nationally acclaimed integration programme for under-served students. More importantly, the chapter includes a detailed set of substantive and procedural design principles developed through the DBR process and can be used as a guide by others who wish to pursue a similar goal. The study's results make practical strides towards achieving sustainable development goals 3 (Good health and well-being) and 10 (Reduced inequalities) but also indirectly link to goals 4 (Quality education) and 8 (Decent work and economic growth) through supporting student academic resilience and success.

Integration and resilience are treated in this chapter as mutually reinforcing rather than sequential: successful integration into the academic and social life of a university is not merely a precondition for resilience, nor simply its outcome, but one of the primary mechanisms through which resilience is built. Students who are well integrated, socially connected, academically oriented, and epistemologically included, are better positioned to draw on peer, staff, and institutional support when setbacks occur, while the process of overcoming early setbacks in turn deepens a student's sense of belonging and investment in the institution. The design principles that follow should therefore be read as principles for building resilience through integration, rather than as a separate integration intervention that happens to have resilience as a side effect.

Why Use the Design-Based Research (DBR) Process?

Many initiatives have been launched to support student academic resilience and success to achieve deep "*epistemological access*" (Morrow, 1994). The effectiveness of these interventions has varied, and many initiatives have been mainly informed by individual benevolence rather than solid theoretical and evidential grounding (van Zyl et al., 2022), an approach which, according to Boughey (2010) is only based on "*commonsense*" and "*perceived needs*". She contrasts this to a recommended approach to the problems, which is more scholarly. McKenney and Reeves (2012) explain that *"Effective interventions (*should*) meet their goals under regular 'real world' conditions…*". This is also supported by Mozelius et al. (2022), who suggest that support activities should

include real-world, authentic data and case studies. This approach is more likely to result in skills development opportunities that are contextualised and align with the foundational principles of self-determination theories (Brodén et al., 2024).

This chapter provides an example of such a move away from what we would call an *unscholarly-benevolence* approach towards a *scholarly-intentional* approach to addressing the issue of student success. This is most clearly seen in how the chapter aims to address the gap in knowledge on which it focuses by using an in-depth research approach that results in two sets of design principles (DPs) (Karsten & van Zyl, 2022). In this instance, these DPs result from a multi-year and in-depth development and implementation process of an integration programme for under-served students using the DBR methodology.

DBR as a Methodology

DBR is a cyclical, comprehensive, inclusive, and collaborative process of design, implementation, reflection and evaluation, followed by improved versions of the original design. DBR is known for its ability to produce knowledge with practical relevance to real-world problems in a given context (van den Akker et al., 2006:4; Plomp, 2007:9; Flick, 2007:6; Plomp, 2013:20). Easterday et al. (2014) define DBR as "*a process that integrates design and scientific methods to allow researchers to generate useful products and effective theory for solving individual and collective problems of education.*" Scott et al. (2020) and Karsten and van Zyl (2022) indicate that DBR is a methodology that has a wide range of applicability, including fields that vary from Biology to Higher Education.

DBR is made up of prolonged and slow engagements with the learning context in the form of what Scott et al. (2020) call "*iterative teaching experiments*". Its practical contribution is to provide a well-researched solution to an identified problem (for example, a practical intervention programme). In addition, its scientific contributions also include (1) making a theoretical input (relevant to validation studies) and (2) offering design principles (relevant to development studies) (Plomp, 2013). This chapter focuses on the second outcome, namely the newly created

design principles that can serve as a guideline when strategising and planning a supportive integration intervention for students entering HE. The DBR process followed in this research is represented graphically below:

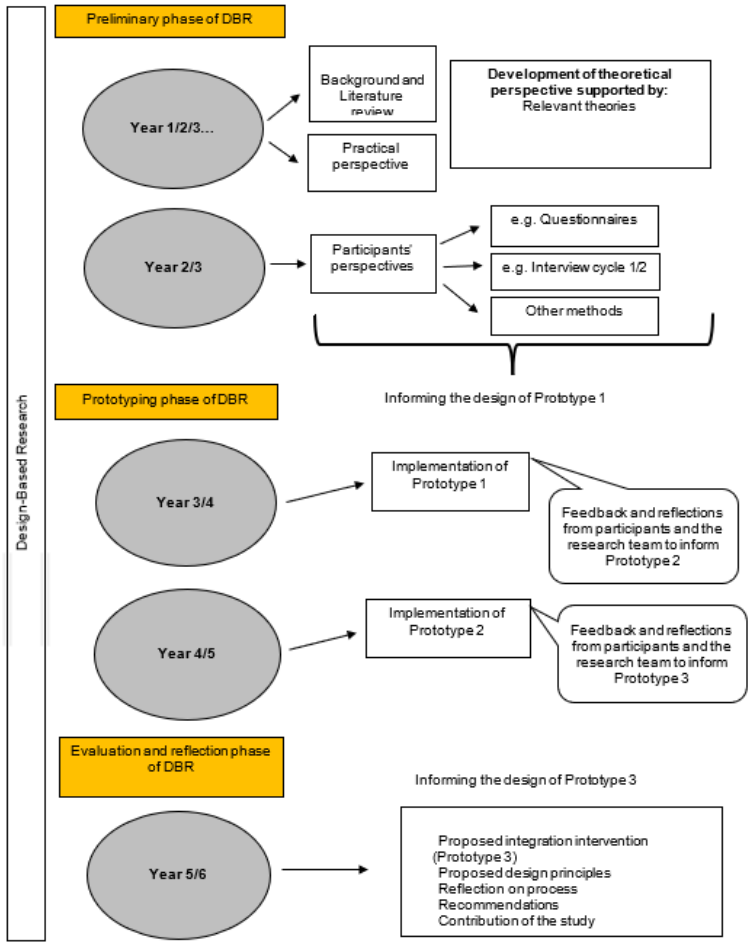


Figure 6.1: A proposed framework for the implementation of the DBR phases (Adapted from Karsten, 2018)

What are Design Principles?

As stated above, one of the results of DBR is the creation of design principles, which, according to Raval (2010), can be legitimately deduced and trusted because they result from the stated long-term and in-depth engagement with the investigated educational problem. Fu et al. (2016) provide the following formal definition for design principles: "*Design Principle: A fundamental rule or law, derived inductively from extensive experience and/or empirical evidence, which provides design process guidance to increase the chance of reaching a successful solution.*" DPs are therefore practical advice statements to others wanting to implement a similar solution on how to best approach the design process. Other researchers have called them "*intimate knowledge about the theoretical and design ideas involved in the intervention*" (Raval 2010), "*theory-based conjectures*" (Raval, 2010), and "*informed suggestions… meant to support designers in their tasks but cannot guarantee success"* Plomp (2013).

DPs are, therefore, a secondary but important outcome of the DBR process, and, therefore, they provide informed advice that approaches a level of generalisability far beyond anecdotal evidence (Fu et al., 2016). DPs emerge organically from prolonged and systematic reflection. They "*evolve*" and are "*infused*" (Herrington & Reeves, 2011) throughout the iterative implementation process and are then crystallised during the final stages of DBR projects (van den Akker, 1999; van den Akker et al., 2006). They are heuristic statements (van den Akker, 2013; Plomp, 2013) informed by their context (Anderson & Shattuck, 2012). They create "*design knowledge*" (Cronholm & Göbel, 2018). They are used to "*guide the design and evaluation*" of the results of a design process, to provide general guidelines instead of specific instructions to ensure that specific research findings are made more widely applicable for use in other settings, to create "*reusable guidelines*" for similar initiatives; to guide the design and evaluation of vestiges of the product that solved a specific problem (Cronholm & Göbel, 2018; Herrington, & Reeves, 2011; Scott et al., 2020).

Design principles are created to make newly created design knowledge available and accessible to others. According to

Easterday et al. (2014), this enables the use and communication of innovative, archival practices which are "*used to advance design science and solve future design problems, especially the pinnacle, wicked, and grand-challenge problems that face the world…*". On a practical level, this allows educational practices to contribute to teaching artefacts in differing classroom settings from the context of the original intervention. Raval (2010) reminds researchers and practitioners that the test for design principles is whether they work in practice when used to inform activities' design and implementation.

Types of Design Principles

In the main, two types of DPs are identified. Plomp (2013) distinguishes between:

1. **Substantive Design Principles (SDP) (the most important aspects and characteristics of the intervention being developed),** which include the features of the design itself. SDP is substantive knowledge, according to Plomp (2013), and represents knowledge about the vital characteristics of the intervention that has emerged from the final version of the intervention and is separate from the intervention itself (Raval, 2010).
2. **Procedural Design Principles (PDP) (advice to those who want to design an intervention to address issue X in context Y. They are encouraged to follow the following procedures).** Procedural knowledge is referred to by Plomp (2013) as being the features of the design approach that would most likely result in the intervention as being successful. The PDPs, therefore, delineate the broader process-based aspects that have shown themselves as contributors to the programme's overall effectiveness.

Van der Akker (2013) puts the roles of the two types of DPs together in the statement below: "*If you want to design intervention X [for the purpose/function Y in context Z], then you are best advised to give that intervention the characteristics A, B, and C [substantive emphasis], and to do that via procedures K, L, and M [procedural emphasis], because of arguments P, Q, and R.*"

Design principles for the creation of an integration programme into higher education for disadvantaged students

As stated above, this chapter reports the design principles that were precipitated from the comprehensive DBR process that is described above and of which the detail of these DPs was reported in summarised form in Karsten and van Zyl (2022) and in full in Karsten (2018). This DBR process focused on developing an integration programme for newly entering first-year students at a South African university. It was supported by Tinto's (1993) Longitudinal Interactionist model and Deci and Ryan's (1985) Self-Determination Theory. It was conducted in an educational environment at one residential South African university and involved three cohorts of first-year students. The substantive design principles for creating an integration programme for under-served students are listed and discussed first, followed by more detailed descriptions of their practical implications. After this, the procedural design principles are listed and explained.

Substantive Design Principles (SDPs) for the creation of an integration programme into higher education for disadvantaged students

As stated above, the SDPs constitute crucial attributes of the intervention being designed. The following substantive design principles emerged to guide and inform others when they endeavour to create a university integration programme for disadvantaged students where high levels of student diversity are present:

SDP 1	**The appointment of an intervention manager in a position of sufficient authority** Manage tasks and roles of the intervention team Authorised access to student academic and personal data Appointed as a member of the institutional student success committees	Evidence in support of this principle: Reported experience of intervention managers from various HE institutions Feedback from main stakeholders
SDP 2	The formulation of a fair and clear policy and procedures for the selection of suitable participants	Evidence in support of this principle: SAICA documentation HE institution requirements and policy documents Student academic results from the last 15 years
SDP 3	The appointment of an intervention facilitator to implement the intervention	Evidence in support of this principle: Reported experience of intervention managers from various HE institutions Feedback from SAICA (as reporting stakeholder) Research: "*It is crucial to foster an empowering teaching mindset towards students, encouraging them to take responsibility for their own learning journey while providing a safe space to learn in experimental settings*" (Bernert, Wanner, Fischer & Barth, 2025).
SDP 4	**Appoint and train senior students as mentors as part of the intervention team**	**Evidence in support of this principle:** Reported experience of intervention managers from various HE institutions Feedback from student participants

SDP 5	Appoint and train senior students as tutors as part of the intervention team	Evidence in support of this principle: Researcher experience Feedback from student participants Findings from other research: "*... peer feedback, social interaction and external guidance are crucial elements in this (kind of) programme ...*" (McKenny & Reeves, 2020).
SDP 6	**Structure the intervention plan according to the infrastructure of the institution and available resources**	**Evidence in support of this principle:** Reflections from the research team Research: "*However, local educational actors must meet the challenge of how to ensure that there is both the will and adequate resources to embed such modules into higher education institutions. This action must happen from the top down by ambitious academic leaders in higher education institutions via mission statements, changes to institutional structure and resource allocation, and from the bottom up by engaged academic staff who choose to develop and lead suitable educational programmes*" (Bernert et al., 2025).
SDP 7	**Structure the intervention to follow a logical sequence that allows for practical implementation**	**Evidence in support of this principle:** Reflections from the research team Feedback from student participants Reported experience of intervention managers from various HE institutions

SDP 8	Select and integrate the principles of a chosen theoretical approach to student holistic development into the activities of each topic	Evidence in support of this principle: Reported experience of intervention managers from various HE institutions Student participant reflections Literature: "*Students' interests, hobbies, and passions, their values, and their goals in life contributed to the complex interplay of cognition and motivation*" (Reilly & Reeves, 2024).
SDP 9	**The formal intervention activities should be structured according to specific outcomes**	**Evidence in support of this principle:** HE policy on teaching and learning practices Reflections from the research team
SDP 10	Regularly and clearly inform first-year lecturers (involved with selected participants) of the intervention structure and aims.	Evidence in support of this principle: Reported experience of intervention managers from various HE institutions Literature: "*Creating safe environments for students to learn in a self-directed way and to explore sustainability problems with practitioners demands a high degree of support from course leaders*" (Bernert et al., 2025). "*Moreover, we encourage lecturers in this field to further connect, mutually reflect on their experiences, and establish support networks across institutions where they can jointly address the challenges they encounter in their practice*" (Bernert et al., 2025).
SDP 11	Regularly evaluate the content, mode, relevance and contribution of the intervention to allow for changes in HE contexts and student cohort compositions.	Evidence in support of this principle: Reported experience of intervention managers from various HE institutions Literature: "*... continuous reflection and feedback within the teaching team and between the teaching team and the students ...*" is a key component of an intervention that wants to stay.

Discussion of the Practical Application of the SDPS

A. SDP 1: The appointment of an intervention manager in a position of sufficient authority

The position of intervention manager is a key element in enabling an effective intervention. This person should be given **sufficient authority** to take substantive and substantial decisions that impact the successful implementation of the intervention. This creates a situation where the person who is responsible for managing the day-to-day implementation can be **decisive and agile** enough to make adjustments to the programme when data and feedback necessitate this. The person should also have full **membership in the relevant success-supportive institutional structures** (committees and forums) and full **access to the relevant institutional data**. The intervention manager is the one who **takes the main responsibility** for liaising with the institutional management, managing the intervention team, including the facilitator, mentors, tutors, possible motivational speakers, and other role-players and monitoring and controlling the intervention implementation.

Detailed suggestions relevant to SDP 1 require the intervention manager to have specific competencies to manage the intervention structure and team with autonomy. These include the intervention manager being an **effective communicator** with **good networking** skills. The intervention manager also needs to be competent with **budgeting and basic financial management** and be a skilful **administrator**. The person should also have a sound **understanding of student success enablers** in the **context within** which the intervention is being implemented and a developed **vision** for the initiative.

B. SDP 2: The formulation of policy and procedures for the selection of suitable participants

The fact is that all first-year students could benefit from institutional support towards holistic integration during their first year, but some students need the support more acutely. The impact of the limited institutional resources and infrastructure must, therefore, be optimised, and this is achieved through an

effective selection process. The context of each institution is unique, and the criteria and processes for selecting the most appropriate participants should be evidence-based, fair, **and transparent**. The selection process must include **quantitative** and **qualitative** indicators and the entry requirements must be **adjusted over time as the data might be required**.

- **Suggestions relevant to SDP 2** recommend the formulation of data-informed, fair and clear criteria for the selection of suitable candidates for participation in the intervention. The following criteria emerged as most important from the current research and are linked to the successful uptake of this integration intervention (Prototype three).
- Students with **high levels of autonomy,** specifically regarding their choice of qualification
- Students with **high proven cognitive competence** relevant to the chosen qualification (existing marks in threshold subjects) when their context is considered (for example, their socio-economic status and school quintile)
- **First-generation** students
- Students from **challenging socio-economic backgrounds.**

C. SDP 3: The appointment of an intervention facilitator to implement the intervention

Depending on the size and scope of the intervention, the intervention manager mentioned in principle 1 requires a person to be the facilitator of the intervention. The role of facilitator could either be lodged in the same person as the intervention manager, or it could be a different person who works closely with them. The success of the integration intervention is directly related to the **depth and quality of the relationship** between the facilitator and the participants. The facilitator should invest **sufficient time** to develop **meaningful relationships** with the participants by creating **formal** and **informal opportunities to interact** with them. The above requires a person passionate about student development and well-developed **facilitation, communication, and interpersonal skills**.

The facilitator should also be **well-versed in the chosen theoretical approach** of the intervention to provide holistic integration support to the participants. This links to SDP 8. Specific responsibilities include: 1) maintaining **good communication** within the intervention team; 2) building **trusting relationships** with the participants, which would require the clarification of their role within the intervention; 3) **facilitate the selected intervention activities** whilst **integrating the principles of the chosen theoretical approach**; 4) **monitoring the participants' academic and personal integration** progress through comprehensive information management; 5) **addressing any emerging problems** throughout the intervention process; 6) **offer extended support** when required; 7) **continuously refine the intervention** according to the feedback from role-players; and 8) being **highly committed** to the intervention process.

D. SDP 4: Appoint and train senior students as mentors as part of the intervention team

Senior students are included in the intervention team as **mentors** to assist the facilitator in supporting the participants. The **roles and responsibilities** of these mentors should be clearly delineated. Relevant **training** should be provided to these selected mentors to **equip them to offer emotional and social peer support**. Mentors should be **academically competent** to offer academic support, but they should have the option to **refer** students to tutors or academic advisors and/or institutional services when required. Mentors are in a unique position to observe student experiences and can therefore provide **valuable feedback to the facilitator** regarding both the effect of the intervention and possible problem areas.

The **suggestions relevant to SDP 4** propose that the mentors have specific competencies and characteristics and therefore should be carefully selected by the intervention facilitator. These competencies and characteristics include **a willingness to invest sufficient time** to support **positive interpersonal skills** and proven **time-management skills** to cope with the additional responsibilities in their roles as mentors. It is also crucial that they are **trustworthy** since the participants may share personal and confidential information. Ideally, these mentors should

study **towards the same qualification** as the participants, replete with a **competent academic record**. It would be an advantage to the intervention if the mentors were **previous participants in the intervention**. **In-depth and detailed knowledge of the institution's structure and processes** would be an advantage, since referring participants to various other departments and/or service providers might be necessary.

E. SDP 5: Appoint and train senior students as tutors as part of the intervention team

Senior students are appointed as **tutors** to form part of the intervention team to provide **additional academic support** to the participants. Tutors' involvement could include 1) the facilitation of academic topics, 2) managing small group sessions, and 3) **consulting with individual** participants. The tutors' **roles and responsibilities** should be clarified in collaboration with the facilitator and the intervention manager. Relevant **training** should be provided to the selected tutors.

Since the tutors focus on the academic aspect of student support, they have specific selection criteria, including: **Studying towards the same academic qualification** as the participants; Being **proficient in academic studies themselves;** Being trained to effectively **facilitate academic tutoring sessions**; and Being able to **manage their own time effectively**.

F. SDP 6: Structure the intervention plan according to the infrastructure of the institution and available resources

Most HE institutions have **existing student success and transition programmes** in place. Any newly designed integration interventions are **additional and complementary** to this measure and are aimed at a **selected group of participants** rather than the full first-year cohort. The intervention plan should consider the infrastructure of and resource availability at the relevant institution to **optimise cooperation** and **avoid duplication**.

The intervention team should take all i**nstitutional support opportunities into account**. The intervention committee should have access to the relevant committees and structures to ensure that their plans and work **dovetail with institutional actions**. This

provides the opportunity to **customise, individualise, and make support programmes practical for** the target group and to provide enrichment opportunities. Lastly, the interventions must aim at **academic and social integration** facilitation for its participants.

G. SDP 7: Structure the intervention to follow a logical sequence that allows for practical implementation

Each HE institution should plan its intervention according to its **existing academic calendar and orientation schedule**. The **alignment should consider the academic rhythm of the qualification(s) in which the students are enrolled**. The sequence and timing of the intervention and its activities should be **logical and practical**.

- The approach advocated for in an integration programme for first-year students lead to an adaptable intervention structure consisting of five broad and overlapping steps.
- **Step one entails the selection of participants** for the intended intervention. This should follow the proposed policy guidelines (SDP 2).
- The **second step entails the arrival of students on campus**. This usually happens just before or during the institutional orientation period, which is already structured to welcome and orientate all first-year students. Participants in the intervention should be encouraged to also fully participate in the institutional orientation. Parallel to this, additional social and academic integration activities should be implemented.
- In **Step Three, during the first academic semester**. Just-in-time and customised interventions should be distributed throughout the first semester. The mentors and the tutors will facilitate interventions to facilitate the initial transitions intentionally. Continuous monitoring of participants' progress concerning social and academic integration in this phase is vital because participants are expected to struggle most with adapting to the new environment. The main emphasis of this phase will be on the social integration component.
- **Step four comprises curated and intentional extended support opportunities provided to the participants during**

the second academic semester. The main risk during this time is academic failure and drop-out, as students are now likely to have adjusted socially. This could comprise group or individual sessions and should be data-informed (monitoring and student success data). Referrals to support providers within the institution can also form part of this step.

Students who pass their first year of study, conclude the intervention in step five with the anticipated outcome of being an integrated student of the institution. Integration skills acquired during the intervention can be further developed to strengthen students' integration experience and manage new challenges presented in senior years.

H. SDP 8: Select and integrate the principles of a chosen theoretical approach to student holistic development into the activities of each topic

To offer holistic support to first-year students, a carefully selected theoretical approach is suggested to support all interactions and activities. The selection of such a theoretical approach to support the holistic development and support of students should be undertaken while keeping in mind the **institution's context, the character and needs of the cohort, and the aim of the intervention**. The proposed intervention in this study embraced Tinto's interactionalist theory of student persistence and Self Determination Theory (SDT) as its conceptual and theoretical frameworks. This meant that the **programme was built around** addressing the participants' needs for autonomy, competence and relatedness within the social and academic spheres of the institution. A template was used to **map the activities** and their support for these theoretical constructs. This clear theoretical base allowed the implementation team to share **ideas** for their discussions and a **focused mandate**. It also enabled the team to **exclude certain ideas and/or activities** because they did not align with the implemented theoretical approach.

I. SDP 9: The formal intervention activities should be structured according to specific outcomes

Selected activities to be facilitated with the participants should follow a **logical, practical structure that includes regular feedback.** This is achieved through a planning document which specifies relevant outcomes per activity.

Where the specific and more formal activities are facilitated, several **suggestions relevant to SDP 9** are proposed. It is suggested that a **logical structure** be followed to include some reference to **students' prior knowledge** and cultural and/or other differences related to the selected topic. The structure should also include **time for facilitating new knowledge**, followed by opportunities for **practical application or exposure**. Students should be assisted and allowed time to **integrate the knowledge** personally via **life-focused activities and exercises with accompanying follow-up strategies** to promote a sense of accountability. The interactive nature of facilitating the activities (SDP 6), should allow for continuous opportunities for **student-feedback**. The proposed template used to guide each activity in the Prototyping phase of the study was specifically designed to include **reference to the preceding activity** and emerging conversation in the following sessions. In other words, the feedback at the end of every session should not be exclusively focused on the activity itself, but also on the preceding one. The information gathered from these feedback forms was then used to inform and develop both the following prototypes (the content and implementation of a specific theme) as well as the very next activity of the same prototype (methodologies, questions and presentation types).

J. SDP 10: Regularly and clearly inform first-year lecturers (involved with selected participants) of the intervention structure and aims

Since student support should be the joint effort of all role-players, regular and open communication between **all relevant stakeholders** involved with the academic journey of the participating first-year students is imperative. **First-year lecturers in particular** should be made aware of the intervention,

its structure and its aim so that they are able to refer to it and integrate its content into their lectures where appropriate.

Suggestions relevant to SDP 10 acknowledge that first-year lecturers are in positions to make valuable contributions to the intervention and therefore to the participants. By **regularly and succinctly informing first-year lecturers** on the structure, content and aim of the intervention, they should be able to identify their respective roles in supporting the students. The intervention team should create a **trusting, inviting and supportive relationship** between themselves and the other role-players. As first-year lecturers become increasingly aware of their role as well as of student challenges and experiences, they are likely to acknowledge the value of the intervention and then be more likely to willingly contribute to its success and, by extension, to the success of the students.

K. SDP 11: Regularly evaluate the content, mode, relevance and contribution of the intervention to allow for changes in HE contexts and student cohort compositions

Both HE environments and student cohorts' composition, needs and nature constantly change. Therefore, regular and open feedback from all role-players should be incorporated into the intervention process to ensure the continuing relevance of the intervention content schedules and modes. It should not be assumed that because an intervention is of value in a particular time and place to assume that this contribution will remain constant in perpetuity. This principle also provides a channel to incorporate and value the ***student voice*** in the intervention by listening to and critically considering student inputs, feedback and suggestions.

Procedural Design Principles

The below procedural design principles were salient aspects of the process followed to design an integration programme into higher education for underserved students.

Table 6.2: Summary of Procedural Design Principles (PDP) for the implementation of DBR in the design of interventions

PDP 1	DBR is time- and labour-intensive and requires the careful selection of a research team appropriate to the intervention
PDP 2	Allow sufficient time for several iterative cycles of the intervention to contribute a viable final prototype
PDP 3	Select a suitable conceptual, theoretical framework relevant to the problem
PDP 4	Implement the DBR process in structured phases
PDP 5	Incorporate continuous feedback from the participants and research team members (observations, formative evaluations, individual discussions, focus groups)
PDP 6	Continuously reflect on and refine possible design principles as additional contribution of the DBR process
PDP 7	Maintain very high ethical standards and implement them carefully.

PDP1: DBR is time- and labour-intensive and requires the careful selection of a research team relevant to the intervention

Since DBR follows a cyclical pattern, it requires the design of an initial prototype, followed by one or more implementations to improve the design of subsequent prototyping. **This extended process takes time and effort** (van den Akker et al., 2006; Reeves et al., 2011; Plomp, 2013; Fransman, 2014). For this reason, DBR often involves a **research team** (Plomp, 2013), which allows the sharing of work and, more importantly, additional inputs on all findings and conclusions to be verified.

PDP 2: Allow sufficient time for several iterative cycles of the intervention to contribute a viable solution (final prototype)

As mentioned in Procedural Design Principle one, DBR is a slow, deliberate and labour-intensive process with the aim of devising a practical solution to a real-world problem (van den Akker et al., 2006; Plomp, 2013). Herrington et al. (2007) suggest that the

nature of the problem and the context within which it is being investigated directly influence the time that the DBR process will take.

Thus, to be true to its reflective nature, **the outcome/s of the research should be critically evaluated for its relevance and value in real educational situations** (Anderson & Shattuck, 2012; Plomp, 2013). This comprehensive **process requires sufficient time to enable it to provide its full value**.

When a **complex intervention programme** is being developed, **each component of the programme should be separately and jointly evaluated** and given feedback about. The process is illustrated in Figure 6.2.

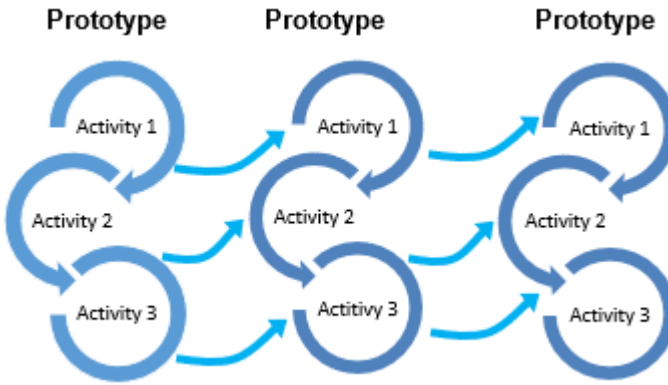


Figure 6.2: Schematic representation of formative evaluations informing the following activity for the same activity of the next prototype (Karsten, 2018)

PDP 3: Select a suitable conceptual theoretical framework relevant to the problem

Research is best **built on existing theory** (Herrington et al., 2007; McKenney & Reeves, 2012; Nieveen & Folmer, 2013; Plomp, 2013), and it is therefore important to **select a theoretical framework** that is suitable to that **problem**, but also relevant to the proposed **solution**. The selected theory will inform and influence the initial prototype as well as the development of subsequent prototypes.

DBR is a way of testing the implementation and impact of a theory by applying it to a real-life situation.

PDP 4: Implement the DBR process in structured phases

The process of **DBR characteristically consists of phases** (Mor, 2010; Plomp, 2013). Although the phases **intersect** with each other (Mor, 2010), they provide a very helpful structure to assist the research team in planning and designing the processes and procedures.

The **Preliminary phase** entails gathering information focused on an identified problem and its context (van den Akker, 2010; McKenney & Reeves, 2012; Nieveen & Folmer, 2013). **The Prototyping phase** includes the design of the initial prototype, using the information gathered during the Preliminary phase. After that **implementation**, the **feedback** serves as a guideline to **improve the prototype** for a **second and again a third implementation** (Nieveen & Folmer, 2013). **Prototype three** was the **final prototype** (Nieveen & Folmer, 2013) to answer the research problem. The **Evaluation and reflection phase** assessed the study's process and contribution and presented the two outcomes of the process (the proposed intervention for first-year integration into HE and a list of design principles).

PDP 5: Incorporate continuous feedback from the participants and research team members

The function of the **research team** is to continuously **discuss and reflect** on the process by asking, "**What has been done**?" and "**How can this be done better**?" Not only this but **the differing views** and **perceptions** on any given issue provide the DBR process with a rich and diverse set of inputs, allowing a more comprehensive solution to emerge. This process includes observations, formative evaluations, individual discussions and/or focus group discussions. It is strongly suggested that **thorough records** be kept of all the feedback, reflections, discussions, and observations. The aim is to **constantly improve the design of the prototype by integrating the observations and feedback from the participants and other role-players.**

PDP 6: Continuously reflect on and refine possible design principles

Together with the iterative design of the prototypes, **continuous discussions of the potential design principles** should take place (van den Akker, 1999; van den Akker et al., 2006; Plomp, 2013). This is then **finalised during the final stage of the DBR process** (van den Akker, 1999; van den Akker et al., 2006).

PDP 7: Identify high ethical standards and implement them carefully

Conducting design-based research would not be possible without participants. As Creswell (2012) says, it is important to show respect to the participants and the research readers. Respecting the participants can be achieved by **informing** them of the purpose and the envisioned contribution of the study (Creswell, 2012), clearly stating what involvement would entail, emphasising that involvement would be **voluntary**, **taking their voices and inputs seriously**, and informing them that they would be able to **end participation at any time** (Creswell, 2012; Flick, 2014). **Care**, **benevolence (Lichtman, 2010), and respect** should be evident in all that the DBR team does when interacting with **participants**. This includes obtaining informed and voluntary consent from participants to take part in the research (Marshall & Rossman, 2011; Creswell, 2014) and keeping information private and confidential. Respecting the readers of the research should be conducted by **consistently reporting data and findings** that are true and accurate (Creswell, 2012).

How should Design Principles be used?

Design principles are not rarified scientific principles that are true for everyone in all contexts. Consequently, the outcomes of DBR cannot be directly generalised to other contexts (Plomp, 2013). On the contrary, they strongly reflect the circumstances in which they were developed. Even so, they are still able to assist those who are considering similar problems. The one purpose of design principles is to communicate design knowledge that can be reused in new situations (Cronholm & Göbel, 2018). Therefore, design principles are not step-by-step recipes that should be followed to

the letter but rather general procedural and substantive guidelines that should be considered and applied according to contextual needs and circumstances (Herrington & Reeves, 2011). They also assist those using them in adjusting both the circumstances within which the implementation is taking place and building the design of their intervention on a more solid footing (Anderson & Shattuck, 2012). In effect, design principles guide others who face similar problems.

As has become apparent, design principles are best expressed in active terms, and they provide sufficient clear guidance to other researchers whilst remaining adaptable to the context variations between environments (Scott et al., 2020). They enable teachers and designers to use them in similar contexts and problems. Therefore, DPs endeavour to communicate formalised design knowledge, and their main value lies in their contribution to the professional community (Herrington et al., 2009). An increase in the generalisability of the design principles is achieved with an increase in the number of implementations within similar contexts. The generality aspect of the principles allows them to apply to a specific group of problems with common attributes or what Cronholm and Göbel (2018) call a "*class*" of problems. In addition, Gebka et al. (2021) believe that design principles should be viewed together with the activities, goals and deliverables that they are related to when guiding co-creation in a parallel context.

Another important part of making design principles available to the broader academic community is that they are further refined by sharing them with other researchers and practitioners through presentations and publications. This amounts to a process of peer review of said design principles. This peer review process is essential for the overall enhancement of professional practice to eventually yield improved educational outcomes, such as increased student engagement (Herrington & Reeves, 2011).

Conclusion

This chapter provides a series of design principles that can be used to guide the planning and implementation of student success-focused interventions. These principles have been distilled from

a comprehensive design-based process and represent design knowledge that goes far beyond the reach of purely anecdotal evidence. This is an example of a decisive move away from uninformed benevolence towards intentional informed action and as Vince Tinto (2012) said:

> "Improvement in rates of student success requires intentional structured and proactive action, that is systematic in nature and coordinated in application"

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Chapter 7

Thinking Forward, Designing Backward: Developing Resilient Curricula through Backward Design

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Introduction

The coronavirus disease 2019 (COVID-19) pandemic triggered unprecedented global disruption in higher education, compelling universities to shift to emergency remote teaching from 2020 to 2021 and in some cases, even into 2022. Institutions had to rethink their operational strategies, academics had to adapt their teaching and student engagement approaches, and students had to navigate new learning modalities amidst immense uncertainty.

However, disruption in South African higher education predates the pandemic. The #FeesMustFall protests, peaking in late 2016, led to campus closures and the urgent transition to online learning. For many contact institutions, including the University of the Free State (UFS), this marked the first time that examinations were conducted online. While #FeesMustFall remains one of the most significant student-led movements in South Africa's recent history, it was not the last to impact academic continuity. At the UFS, where over 70% of undergraduate students rely on the National Student Financial Aid Scheme (NSFAS), ongoing protests over late disbursements

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have periodically disrupted the academic calendar. Additionally, persistent electricity shortages (load shedding), particularly since 2019, have necessitated rescheduled lectures, interrupted student study routines, and forced universities to invest heavily in backup power.

Beyond these local challenges, higher education worldwide faces rapid shifts driven by technological advancements, particularly artificial intelligence (AI), which continues to reshape teaching, learning, and assessment. Such an environment demands resilience - not only from students and staff but also from the curricula that support higher education. This chapter explores the concept of resilient curriculum design, examining how curricula capable of withstanding disruption and uncertainty can be developed.

Defining Resilient Curriculum

Resilience is broadly defined as the "capacity of an object or entity to successfully return to its original state in the face of disruption or change" (Quintana et al., 2021:80). The Dartmouth Center for Advancement of Learning (2025) describes resilient courses as those either "not susceptible to" change or specifically designed to "recover from disruptions." While resilient pedagogy gained international attention during the COVID-19 pandemic, designing resilient curricula has been a priority in South African higher education for several years because of frequent disruptions.

For instance, the University of the Free State's pre-COVID Learning and Teaching Strategy prioritised flexibility to enhance resilience and adaptability:

> *"The development of a flexible, blended learning environment will create resilient students that are able to learn at different times in different ways. Furthermore, the learning and teaching environment should be adaptable in the face of interruptions to the academic programme (such as political disruptions and load shedding)"* (CTL, 2019: 5).

The terms "resilient" and "agile" curriculum design are often used interchangeably, whether referring to institutional,

programme-, or course-level approaches (Brink et al., 2021; Menon et al., 2022). This chapter focuses on course-level curriculum design. The Curriculum Renewal Programme (CRP), explored later, is a professional development initiative at the UFS. It equips academic staff with the skills to reconceptualise and redesign one of their courses, expecting these skills to be transferable to other courses that they teach.

A framework for resilient curriculum design

In this chapter, we draw on the Resilient Design for Learning (RDL) framework put forward by Quintana et al. (2021) to frame our study. The RDL framework is based on three guiding principles: designing for extensibility, fexibility, redundancy. Each of these is summarised in the sections that follow.

Designing for extensibility

The principle of extensibility in the RDL framework emphasises designing courses that can be modified with minimal effort (Quintana et al., 2021: 82). A lean but effective course should be built around clear learning goals while considering key situational factors such as class size, mode of instruction, and NQF level. While these factors shape the current needs of the module, designing for extensibility requires a forward-thinking approach that anticipates future growth and evolution. Courses designed with this principle are streamlined yet adaptable, ensuring that they can be expanded or refined without disrupting their core structure.

The backward design aligns closely with designing for extensibility, beginning with defining clear learning outcomes (Wiggins & McTighe, 2011). A lean course is structured around essential content and assessments, eliminating unnecessary complexity while ensuring that students achieve the intended learning goals. This structured approach allows for gradual and strategic enhancements over time. Berthoud et al. (2021) illustrate how constructive alignment, a key aspect of backward design, enabled the development of a resilient engineering curriculum, facilitating rapid adaptations during the COVID-19 pandemic. This example highlights how backward design and a well-structured

course provide a stable foundation for future expansion, ensuring that courses remain both relevant and adaptable.

Designing for flexibility

The flexibility principle of resilient design focuses on designing courses that can adapt to unanticipated changes in the learning environment (Quintana et al., 2021: 84). Like designing for extensibility, this principle requires academics to consider situational factors when designing adaptable elements in a course. To ensure continuity in teaching and learning in unexpected disruptions, academics who design a flexible course need to proactively create strategies that can accommodate student needs and address technological constraints while maintaining the learning outcomes of the course. While both principles allow changes with minimal effort to be made to a course, there is a nuanced difference between them; designing for extensibility is focused on the long-term scalability of a course, ensuring that the course design remains relevant as the learning environment inevitably changes over time, while designing for flexibility is about immediate adaptability to unexpected changes or shifts in the learning environment.

Flexible design can be achieved by implementing Universal Design for Learning (UDL) principles into the design of a course. UDL, a curriculum and instructional design framework, is based on neuroscientific research that focuses on how the brain reacts and responds to varied types of information (Dalton et al., 2019: 3). At its core, UDL is based on three principles for course design: multiple means of engagement, multiple means of representation, and multiple means of expression (CAST, 2024). By incorporating UDL principles, courses can adapt to diverse student needs and changing learning environments. For example, providing content in multiple formats (e.g., text, audio, diagrams, interactive media, etc.), recognises that students perceive information in varied ways and are aligned with the multiple means of representation principle of UDL. Varied assessment options, such as written reflections, problem-based case studies, presentations, etc., allow students to demonstrate their learning differently (multiple means of expression). Finally, flexible interaction formats, such as group discussions during synchronous classes, asynchronous

discussion forums, and individual reflection activities, allow students to have multiple means of engagement. Proactively incorporating UDL principles into course design allows for variability and choice, enables learning to remain accessible in different contexts and ultimately helps to achieve more design flexibility.

Another way that flexible design can be achieved is by effectively implementing a blended learning approach. Blended learning is the intentional integration of face-to-face and online activities to create a cohesive learning experience where students have some control over aspects such as time, place, space, and/or pace of learning (Christensen et al., 2013: 7). Effectively incorporating technology in teaching plays an important role in a flexibly designed course (Loon, 2022: 12). It provides alternative opportunities for both synchronous and asynchronous learning. Some examples include offering a blend of face-to-face, synchronous classes as well as online options to engage with content such as recorded videos and interactive text-based resources; students participating synchronously in in-class group discussions and asynchronously in discussion forums; and the flipped classroom approach, where students engage with content online in preparation for class, while synchronous in-person class time is spent on interactive discussions.

Designing for redundancy

Designing for redundancy focuses on designing courses with strategies to prevent failure when a key instructional element is disrupted (Wiggins & McTighe, 2011). For example, if a course relies heavily on synchronous classes or lecturers, a strategy that can help to prevent failure if synchronous classes are not possible is to ensure that students can access the content in alternative ways such as downloading a pre-recorded lecture, accessing class slides and supplementary learning materials. The key to designing for redundancy is to identify single points of failure and design strategies to ensure continuity.

Designing for redundancy can also be achieved through UDL by incorporating the Plus-One Approach (Tobin & Behling, 2018). This approach encourages the incremental addition of

flexible elements by adding only one way for students to access content, engage with learning, or demonstrate their learning at a time. This ensures that no single instructional method becomes a point of failure. It provides a practical and systematic method for implementing redundancy and ensures that students always have a backup option to continue learning effectively despite unforeseen disruption. **Figure 7.1** summarises the RDL framework and the design elements that we have intentionally included in the CRP for each of the framework's principles.

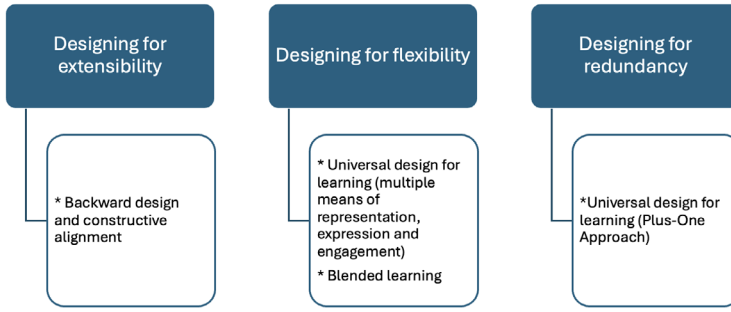


Figure 7.1: Summary of alignment between the Resilient Design for Learning framework and the Curriculum Renewal Programme

Backward Design as an Approach to Curriculum Design

In any design process, the designer aims to produce a product that can be successfully used for its intended purpose and meets the initial standards and envisaged aims. Higher education curriculum designers, including academic staff and academic support professionals, are guided by national and professional bodies, institutional standards, criteria, and regulations. From a design perspective, the backward design process, therefore, makes sense, as it starts with the end goal in mind - the curriculum designer purposefully aligns the design of the course or module with the intended aim (Wiggins & McTighe, 2011). The backward design process is well-known and widely used in curriculum design, and its three stages are briefly described in the following sections.

Stage 1: Determine the aim and learning outcomes

The first stage in the backward design process is determining a course's main aim and learning outcomes (Wiggins & McTighe, 2011). Several factors will play a role in writing the aims and outcomes of a module. These include adherence to pre-determined criteria, standards and regulations, and situational factors (Fink, 2005). The first stage will influence all subsequent design decisions, as every aspect of a course will align with the aims and outcomes of the module. Purposeful alignment in a systematic way is key to the backward design process, ensuring an integrated design that will ultimately provide students with the opportunities to achieve the course outcomes (Fink, 2005).

Stage 2: Plan assessments

The second stage in the backward design process is to plan the assessments for the course. Wiggins and McTighe (2011) describe this stage as determining what you expect your students to understand, do, or know based on the outcomes of the module. In other words, assessment is the evidence that your students will provide to show that they have achieved the course outcomes. The curriculum designer should plan assessments so that students' progress and performance are tracked throughout the course, explicitly aligned to the outcomes set in the first stage of the process (Michael & Libarkin, 2016).

Stage 3: Plan learning activities

Once the assessments have been planned, the third stage of the backward design process is to plan the learning activities that will support learning and prepare students for the assessments (Wiggins & McTighe, 2011). According to Michael and Libarkin (2016), this stage requires the designer to plan learning activities that will engage students in the learning process and assist them in retaining the knowledge and skills necessary to be successful in the assessments.

As previously mentioned, purposeful alignment between the aim, outcomes, assessments, and learning activities in curriculum design leads to a final product that is fit for purpose.

Although the backward design process turns the entire design process on its head, it is a very logical and systematic way to design extensible curricula that are relevant and easily adaptable for future expansion. **Figure 7.2** is used in the CRP to explain the three stages of the backward design process.

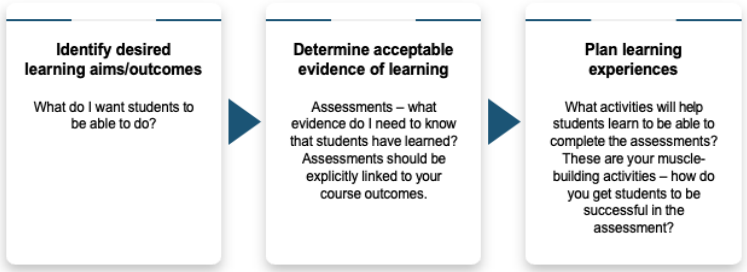


Figure 7.2: Overview of the backward design process

An Academic Staff Development Approach to Resilient Curriculum Design

The UFS Centre for Teaching and Learning (CTL) identified a need for a programme to support academic staff when they renew their curricula. In 2019, staff members from the CTL attended a workshop led by colleagues from the Curriculum Design Institute at the University of Virginia (USA) in preparation for the development of such a programme.

The CRP aims to guide academic staff through the redesign or renewal of a module, focusing on the purpose of the module, the students, and the institutional context, all while applying sound curriculum design principles. In the conceptualisation and development of the CRP, the designers drew upon insights from the University of Virginia's successful curriculum design institute and Fink's model for significant learning (Fink, 2005), which incorporates the backward design process. Additionally, the programme was shaped by national and international trends in higher education and was intentionally aligned with the specific context of the UFS. Further details on the design and structure of the programme are outlined in **Table 7.1**.

The CRP aims to allow academic staff to reflect on and renew their curricula to suit the UFS context. As discussed earlier, designing resilient curricula has been a priority in South African higher education for several years because of frequent disruptions. Thus, the CRP guides staff through the backward design process in the renewal of curricula and incorporates other elements for designing resilient curricula aligned with RDL principles. Throughout the programme, participants are guided to include the UDL principles and blended learning in their design. **Table 7.1** indicates where the RDL principles were intentionally included to support staff in designing disruption-proof curricula.

Table 7.1: Curriculum Renewal Programme Outline

Unit Outcomes	Unit Objectives	RDL Principles
Unit 1: Learning-centred Teaching		
Reorganise the value of understanding your students as part of a learning-centred curriculum design and implementation approach	Discover the factors that affect motivation in the classroom. Apply the value-expectancy motivation theory in a blended learning classroom. Consider student experiences and expectations when designing your content.	UDL Blended learning
Unit 2: Designing effective aims and outcomes		
Appreciate the value of backward design, specific to Fink's approach, in creating or redesigning your curriculum. Identify what your study guide should look like in terms of structure and content.	Learn about writing aims, outcomes, and objectives as the first step in the backward design process. Create effective aims and outcomes aligned with Fink's dimensions. Use aims and outcomes to create a module description for your study guide.	Backward design UDL
Unit 3: Planning your assessment		
Develop an assessment plan that is aligned with the module outcomes	Align your assessments with your outcomes. Design transparent assessment instructions.	Backward design UDL Blended learning

Unit Outcomes	Unit Objectives	RDL Principles
Unit 4: Planning your learning activities		
Develop an activity plan that is aligned with the module assessment	Understand the principles of effective learning activities. Design an effective learning activity. Complete your assessment and activity plan.	Backward design UDL Blended learning
Unit 5: Integrating backward design principles with your teaching context		
Reflect on redesigning your module within the context of UFS's strategic objectives. Take time to plan your way forward regarding integrated curriculum design.	Finalise your study guide. Recognise the value of reflection regarding curriculum design. Consider the various approaches covered during the CRP in the continuation of your teaching commitments. Take time to plan for the incorporation of graduate attributes and decoloniality in your curriculum design. Reflect on your teaching philosophy as part of your teaching portfolio.	Backward design UDL Blended learning

The delivery and structure of the programme support the learning process, providing ample opportunities for participants to learn key concepts and apply them to their own contexts as part of the curriculum renewal process. **Figure 7.3** illustrates the structure and flow of each unit.



Figure 7.3: Curriculum Renewal Programme Unit structure

Reflection sessions at the end of each unit are designed to provide feedback on homework, reflect on the unit, and make connections between the various aspects of the programme. Additional support is provided through the instructional design of the programme on the learning management system (*Blackboard*), where all learning

materials and resources are easily accessible, and participants can submit their homework and receive feedback. The homework assignments are designed to guide participants through the backward design process, ultimately creating a renewed study guide. Fillable templates and exemplary documents from previous cohorts are available to assist participants in completing their preparation and homework, as well as curriculum documents and the study guide. By the end of the programme, participants will have developed an integration map, an assessment and activity plan, and a study guide (or syllabus).

The CRP was piloted in 2021 as a fully online programme, completed over five weeks. After each iteration, evaluations and reflections both from participants and presenters are carefully considered, leading to ongoing improvements to the programme. From 2021 to 2024, more than 380 UFS staff members completed the CRP, with delivery modes ranging from fully online and blended five-week programmes to face-to-face, five-day programmes.

Research Methodology

This study employed a mixed-methods approach, collecting quantitative and qualitative data through an online survey. The survey was distributed to participants who had attended the CRP at least six months prior. It included Likert-scale items alongside open-ended questions to explore the impact of the CRP on their teaching. Descriptive statistics were used to analyse the quantitative data. At the same time, deductive thematic analysis was applied to the qualitative responses, using the RDL framework as a conceptual lens to identify themes related to resilient course design.

Findings

A total of 94 CRP attendees completed the survey, which yielded a response rate of 27%. **Table 7.2** shows the characteristics of the sample. Most respondents were from the faculty of Natural and Agricultural Sciences (27%), followed by the faculties of Health Sciences and the Humanities (22% respectively). A few respondents are employed in academic support departments

such as the Centre of Teaching and Learning (9%) and the library (2%). A total of 86% of the sample are academic staff, while 14% are academic support professionals. The sample included representation from all experience levels, although the majority have five years' or less experience in their current role (47%).

Table 7.2: Overview of the sample

	N
Faculty/ department	
Faculty of Economic and Management Sciences	5 (5%)
Faculty of Education	9 (10%)
Faculty of Health Sciences	21 (22%)
Faculty of Natural and Agricultural Sciences	25 (27%)
Faculty of The Humanities	21 (22%)
Faculty of Theology and Religion	3 (3%)
Centre for Teaching and Learning	8 (9%)
UFS Library	2 (2%)
Appointment type	
Academic staff	81 (86%)
Academic support professionals	13 (14%)
Years of experience	
0 - 5 years	44 (47%)
6 - 10 years	22 (23%)
10+ years	28 (30%)

The following sections present the quantitative and qualitative data findings for each of the three RDL framework principles. Quantitative findings include survey items related to each principle, while qualitative findings highlight key themes that emerged from the open-ended survey responses.

Extensibility

Extensibility is one of the principles of a resilient design (Quintana et al., 2021), implying that a course should be designed to be modified with minimal effort. The backward design process

provides a framework that assists course designers in not only creating a lean, effective course to meet the current needs of the module but also allows for ease of adaption and improvements in the fast-evolving higher education environment.

Table 7.3 shows the survey responses related to the extensibility principle of the RDL framework. Participants rated their agreement with statements on a four-point Likert scale, where 4 = Strongly Agree and 1 = Strongly Disagree. The findings suggest that respondents generally agree that the CRP has enhanced their ability to design courses with long-term adaptability. Respondents strongly agreed that the CRP has positively impacted their ability to align outcomes, assessments, and learning activities, reinforcing the principles of constructive alignment (M = 3.55, SD = 0.52). Similarly, a high level of agreement (M = 3.38, SD = 0.59) reflects the application of backward design in curriculum development, which supports extensibility by ensuring a structured yet adaptable course framework. These findings highlight how the CRP helps academics to create lean, well-structured courses that can be modified and expanded to meet evolving teaching and learning needs.

Table 7.3: Survey responses related to extensibility

	N	Mean	SD
I have applied the principles of backward design in my curriculum development since completing the CRP.	94	3.38	0.59
The CRP has positively impacted my ability to align outcomes to assessments and learning activities in my modules.	94	3.55	0.52

Survey respondents elaborated on the usefulness and extensibility of the backward design process that was applied in the CRP in their written responses to the qualitative items of the survey. The themes that were identified in the analysis of these comments can be divided into two prevalent themes: backward design creates a streamlined curriculum, and backward design can easily be applied to modify a course.

Backward design to create a streamlined curriculum

The backward design guides CRP participants to purposefully align their courses' aims, outcomes, assessments, and learning activities. The process focuses on the key elements of backward design and assists the academic in creating a streamlined course.

> Instead of overloading my students with additional work and skills, they are now more aligned with the learning outcomes and the skills necessary to complete the module. I've realised that it defeats the purpose to try and teach them everything.
>
> It ensured that I focus on what I need to do to ensure my students are proficient in the learning outcomes of the module at the end.
>
> CRP has had a positive impact on my teaching practices. Focusing on learning outcomes and aligning assessments to those outcomes has improved the clarity and purpose of my module.

Backward design can easily be applied to modify a course

Participants indicated that the backward design process enabled them to design a well-aligned course while also making it relatively easy to modify certain aspects of the course when needed. Curriculum design is an iterative and dynamic process, and modifications to the course will inevitably have to be made because of the changing environment. However, if the course outcomes are clear (first stage of the backward design), modifications to the content, assessment, and/or learning activities are simplified.

> When in crisis, focus on the key outcomes.
>
> The CRP introduced me to a wide range of more theoretical components of my teaching responsibilities, reducing these to more explicit statements of what the real outcomes in my modules are - the programme linked this to different ways of reaching the same outcomes, which allows me to adjust my approaches when challenges such as access

> and staff-student numbers unexpectedly change between cohorts or even during the semester.
>
> Having to move online during protests and suddenly having less time to complete the same amount of work, I was able to focus on what the core outcomes were and adapt my content without any significant damage to students and their learning.

Flexibility

The second principle of the RDL framework is designing for flexibility. This principle emphasises adaptability in a changing environment and proactively accommodating variability in changes to student needs and/or the teaching and learning environment. The key to flexible design is in offering choices and adaptable structures in how the course is delivered and how students engage in the course.

Table 7.4 presents the survey items related to the flexibility principle of the RDL framework. The same four-point Likert-scale was used for the items on extensibility (4 = Strongly Agree, 1 = Strongly Disagree). The results indicate that respondents generally agree that the CRP has enhanced their teaching flexibility. The highest mean (M = 3.46, SD = 0.54) reflects increased confidence in implementing blended learning, a key aspect of flexible course design. Participants also reported adopting more flexible teaching approaches (M = 3.39, SD = 0.57) and integrating Universal Design for Learning (UDL) elements (M = 3.27, SD = 0.54) to support diverse student needs. Finally, respondents also use technology more effectively in their teaching since completing the CRP (M = 3.21, SD = 0.62). These findings highlight how the CRP supports instructors in designing courses that can adapt to changing learning environments and student needs, reinforcing the principle of flexibility.

In the qualitative data, survey respondents elaborated on how the CRP has helped them to design more flexible courses. Four main themes emerged from the data, each of which is discussed below.

Table 7.4: Survey responses related to flexibility

	N	Mean	SD
I have integrated Universal Design for Learning elements into my teaching following the CRP.	94	3.27	0.54
After completing the CRP, I feel more confident about implementing blended learning in the modules I teach.	94	3.46	0.54
The CRP has led me to change to a more flexible approach in my teaching.	94	3.39	0.57
Since completing the CRP, I have used technology more effectively in teaching and learning.	94	3.21	0.62

Adaptability in a changing environment

Respondents reflected broadly on how the CRP has equipped them to be more responsive and flexible during disruption or rapid change. The quotes below illustrate how the CRP equipped participants to adapt more to a changing environment.

> The skills, knowledge, and strategies I gained from the CRP provided me with the tools to be proactive, flexible, and resourceful in responding to unexpected challenges. Whether it's adjusting my teaching methods, using new technologies, or handling diverse student needs, the renewal programme helped me to cultivate a mindset of continuous learning and adaptation. This made me more resilient in the face of challenges and better positioned me to provide my students with a learning and students-centered enriching learning experience.

> During times of protest or student unrest, we are able to now adapt our curriculum and activities for those times. This allows us to continue teaching and assessing students, as well as designing the module in such a way that learning is not disrupted during these times.

> I am less rigid in my teaching approach, if something didn't go as planned I could easily make a change without having to stress and worry about an assessment that didn't work.

> I have prepared my learning material to be versatile, with no need for drastic change during adverse moments, like the COVID-19 restrictions.

Blended learning to facilitate flexibility

Several respondents specifically mentioned how designing a more blended course has made the course more flexible. The CRP equipped participants to design blended learning courses by effectively integrating face-to-face and online components into their modules, allowing students to engage with the content and their learning in different ways. A well-designed blended course is flexible and adaptable in a changing environment.

> During the COVID-19 pandemic, it was not easy to move from a face-to-face approach to a digital/online method, but the CRP programme had prepared me for how to adapt these two seemingly incompatible environments to have at least similar outcomes.
>
> I am no longer concerned that I might not be able to deliver a lecture, but I can plan face-to-face lessons supported by online activities.
>
> The CRP helped me to streamline my respective modules, and to incorporate blended learning more effectively in them. The latter makes life easier in case of unexpected events and challenges, enabling me to keep teaching and learning going despite outside challenges such as disruptions to the academic programme.
>
> I have adopted a blended learning approach (i.e. flipped classroom) where I have discussions with students in class and refer them to Blackboard Ultra to do activities in preparation for the summative test.

Using technology to improve flexibility

In addition to comments on blended learning, respondents also gave more specific examples of how the CRP helped them to use technology more effectively in their modules. Academics must be

aware of the technology available and how these tools can be used in specific teaching environments. To design an effective blended learning course, they also need the skills and confidence to use the technology effectively. The quotes below illustrate how the CRP created awareness of how technology can be used in flexible design and equipped participants with skills and confidence to use technology more effectively in their course design.

> The use of different approaches and technologies in the classroom allows for better flexibility, not only for when there are emergencies or sudden changes, but also for cases where students are not responding well to one method.
>
> The module presented does not allow for much change in the content, but there are so many digital tools available that enrich the teaching environment. The CRP helped me to be aware of this and also apply it in a positive way in class and online.
>
> The CRP enhanced my confidence in using technology and emphasised the importance of active learning and student engagement.

Responding to diverse student needs

Several respondents reflected on how the CRP equipped them with the knowledge and skills to implement UDL principles into their course design. Offering students different options to engage in their learning, express themselves through various assessment methods, and/or by representing content in multiple ways enhances the flexibility of the course.

> For example, I can present classes online and conduct various forms of assessment online. I also consider the different ways different students learn or understand information and incorporate different teaching methods that may appeal to the different types of students in my class.
>
> CRP helped me to accommodate learner variability. I plan my lessons such that I create a conducive learning

environment for learners to collaborate with one another. I became aware that learners may successfully learn better from other learners. Additionally, it has become evident that some learners learn better through engagement with concrete manipulatives and technology.

Where I used to very strictly stipulate the required items students had to complete for their progress portfolio, I now allow them choices of e.g. reflections on videos or scientific articles or sketching key concepts, which has increased the number of complete portfolios submitted, as well as the quality of the work submitted.

CRP made me more aware of different student needs (e.g. preferences in forms of engagement), which I was able to incorporate into my class preparation and class reflection activities. Because of this awareness, I have diversified the assessment activities and given students more freedom to choose which aspects they prefer to engage with more, while still providing the necessary structure and repetitions.

Redundancy

A third principle of the RDL framework is to design for redundancy (Quintana et al., 2021). Designing for redundancy ensures that if one instructional element fails, alternative options are available to maintain continuity. It involves identifying single points of failure (e.g., reliance on a single assessment type or technology) and building alternative pathways to achieve the same learning outcomes.

Table 7.5 presents survey responses related to the redundancy principle of the RDL framework. Participants rated their agreement with statements on a four-point Likert scale (4 = Strongly Agree, 1 = Strongly Disagree). The findings suggest that the CRP has contributed to instructors' ability to anticipate and manage disruptions in their teaching environments. The highest mean (M = 3.38, SD = 0.57) shows that participants regularly reflect on and adjust their teaching practices based on what they learned in the CRP. Additionally, respondents reported improved

adaptability to changes in the teaching environment (M = 3.3, SD = 0.58) and greater confidence in handling unexpected challenges (M = 3.24, SD = 0.68). These results highlight how the CRP supports the development of contingency strategies, reinforcing the redundancy principle by ensuring that instructors can respond effectively to disruptions while maintaining the integrity of their courses.

Table 7.5: Survey responses related to redundancy

	N	Mean	SD
I regularly reflect on and adjust my teaching practices based on what I learned in the CRP.	94	3.38	0.57
The CRP has led to noticeable changes in how I handle unexpected challenges in my work.	94	3.24	0.68
My ability to adapt to changes in the teaching environment has improved because of the CRP.	94	3.3	0.58

In their qualitative responses, participants further elaborated on how the CRP helped them to design resilient curricula by being able to design for redundancy. Two main themes on designing for redundancy emerged from the data: designing courses with backup plans in place and the ability to respond quickly to challenges that emerge.

Courses are designed with a Plan B in mind

Participants indicated that the courses that they renewed through the CRP include pre-planned contingencies to be ready for unexpected challenges. Furthermore, the feedback suggested that implementing UDL principles in the course design can provide a backup option in case of unexpected challenges, similar to the Plus-One Approach (Tobin & Behling, 2018) discussed earlier in the chapter.

> I have a clearer "roadmap" of my course, with all the available de-tours also mapped out. This enabled me to detour when interactions with students indicated

that a specific course of action was not as effective as I had planned.

An assignment in a practical didn't work out as I had planned and I could change it another form of assessment which worked better.

The restructuring exercise helped me to critically evaluate what I do in the course and how I do it. Various "solutions" were evaluated in the process, and the most efficient ones were decided upon. This resulted in a range of options (Plan B's), but I was also aware of their limitations. Therefore, when challenges occur, I have at least a backup plan, and I am less panicked when it does.

Ability to implement change to overcome challenges

In addition to having plans for unexpected challenges, participants indicated that after completing the CRP, they could implement changes to overcome them. The CRP prepared them better to not only expect and plan for challenges but also to quickly respond to unexpected challenges and easily make changes to continue learning and teaching.

The CRP equipped me with knowledge and skills on how to shift the classroom experience, especially, in cases where students are demotivated to participate in a classroom activity. I have managed to navigate this dilemma through highlighting the value proposition of the task that students need to complete. I gained this strategy from the CRP workshop.

Because of time constraints, many of our f2f sessions were moved to online platforms to accommodate more lecturers. In addition to the shift, all online sessions are recorded so lecturers can always go back to the recording whenever they need a refresher.

In one of my modules this year, I had a group that really struggled and did not engage with Blackboard activities.

> Rather than giving them a traditional take home examination or in-class assignment, I gave each student a different exercise to complete, which they had to come to my office individually (after arranging a time that suited them) and present and explain their answer in 10 minutes.

Conclusion

The Curriculum Renewal Programme (CRP) has played a significant role in equipping academic staff with the knowledge and tools to design courses that can adapt to disruptions and the evolving higher education landscape. Through backward design, participants could streamline their curricula, ensuring alignment between learning outcomes, assessments, and learning activities, making their courses more adaptable and scalable. Furthermore, the intentional integration of Universal Design for Learning (UDL) principles and blended learning strategies in the CRP enabled participants to create more inclusive and flexible learning environments that accommodate diverse student needs and to be prepared for unexpected challenges.

It is worth making explicit the theoretical relationship this chapter assumes between curriculum design and resilience. The Resilient Design for Learning principles applied here, flexibility, extensibility, and alignment, treat resilience primarily as a property of the curriculum artefact: a course's capacity to absorb disruption without losing coherence. This is a necessary but partial account. Curriculum design becomes a resilience mechanism, in the fuller sense used elsewhere in this volume, only insofar as it shapes the lived experience of the staff who redesign their courses and the students who study them; a well-designed, extensible curriculum does not itself produce resilience so much as it removes obstacles that would otherwise force staff and students to absorb disruption through improvisation and personal strain. Read this way, the chapter's original contribution to resilience scholarship is to demonstrate, through the Curriculum Renewal Programme, a practical pathway by which staff-level designer resilience, the subject of growing interest in this literature, can be deliberately cultivated through structured professional

development, rather than assumed to arise spontaneously from experience or goodwill.

As higher education continues to experience technological advancements, socio-political disruptions, and shifting student expectations, the need for resilient curricula remains critical. This study highlights the importance of intentional curriculum design that meets immediate teaching and learning needs and anticipates future challenges and opportunities. By embedding backward design as a foundational approach, institutions can foster sustainable, responsive, and learning-centred curricula that remain relevant in an ever-changing educational landscape. In future, academic staff development initiatives, such as the CRP, should continue to evolve, ensuring that academics are empowered with the skills and strategies needed to navigate uncertainty while maintaining the integrity and effectiveness of their courses.

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Chapter 8

Resilience-Enabling Assessment Pedagogies for Vulnerable Students to Find Meaning and Rise Above Adversity During Difficult Times

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Introduction

The uncertainty, complexity, and everyday stressors of the times that we are living in create difficult conditions for students to focus on their studies. Young adults at universities often experience stressful transitional developmental times (Bojuwoye, 2002). Feeling alienated and struggling to find their way around a new metropolitan university far away from friends and family, being underprepared for university, and coming from high-risk communities make students vulnerable to failure (Motsabi et al., 2020). These students become labelled and marginalised as '*having no ability to learn*' and '*hopeless cases*' (Biggs & Tang, 2011; Walker & Mathebula, 2020). These students are also blamed for 'never attending class' and 'never taking responsibility for their own learning' (Oswald et al., 2003). Becoming stuck in cycles of

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self-fulfilling prophecies and fake sick notes, vulnerable students drop out (Black et al., 2004). These are the ones absorbed in worrying statistics on failure rates, rising student debt, and unemployment (Pather & Dorasamy, 2018).

However, some seem to be strong. Some students seem to bounce back and overcome tragedy, violence, neglect, illness, and many other cruel life challenges (Choe et al., 2024). Often, youth from under-resourced communities can learn to rise above adversity, cope academically, and become prominent high achievers in society. These students are not merely lucky. Resilience is not genetic and is not served on silver platters. Contrary to widespread belief, resilience is not a biological predisposition or personality trait (Luthar et al., 2015).

While students may be born into tough conditions or experience elevated levels of life stressors as they transition to university, resilience involves overcoming these adversities and becoming functioning members of society who achieve their goals (Abate et al., 2024). Resilience explains why students from meagre beginnings and those recovering from trauma related to wars and crises, such as the global coronavirus disease 2019 (COVID-19) pandemic, can bounce back, rebuild their lives, and achieve remarkable life goals (Chiramba & Ndofirepi, 2023). These are the students who learned to be resilient.

Experiencing purposeful and personally meaningful activities helps individuals to build resilience (Rudd et al., 2021). When teaching university students, learning engagements and assessment activities are selected because they enable resilience (Oswald et al., 2003). Moreover, learning is not only reserved for a typical three-hour examination that students cram-pass-and-forget at the end of a semester. Instead, learning becomes a meaningful experience when assessments are presented as valuable, deep learning opportunities for real-world challenges (Mizokami, 2018). When assessments are approached as meaningful learning opportunities, students enjoy the challenge of solving complex, relatable problems facing their communities and discovering how to approach real-world complexities and conflicts (McDowell & Sambell, 2010).

While a multi-faceted interplay of risks plays a role in student dropout, perceiving university as a waste of time and expensive exercises in memorising facts for high-stakes examinations strongly correlates with failure (Brabner & Hillman, 2023). On the contrary, students who experience learning to be meaningful persevere and complete their studies because a sense of purpose builds the resilience needed to succeed against all odds (Makola, 2015).

In the context of the research problem explored in this chapter, first-year students are already hailing from high-risk communities and are ill-equipped for university life (van Breda, 2017). In the context of this study, students encountered a perfect storm of challenges when universities reopened their doors for face-to-face learning after the COVID-19 pandemic restrictions were eased. Red flags about the devastating effects of the pandemic on academic success became clear as the results of traditional tests and quizzes indicated a particularly high failure rate. However, the researchers observed that the same students excelled at complex projects in which assessments prepared them to become future professionals. Since these alternative assessments were meaningfully linked to employable skills and competencies, a quantitative study explored first-year University of Johannesburg (UJ) public relations students' perceptions of alternative assessment methods for meaningful learning in a stressful context.

The results suggest that learning experiences that enable students to enjoy a sense of meaning, purpose, and identity as future public relations professionals may protect them from the negative impact of life's stressors. Therefore, the contribution of this chapter is a theoretical framework to conceptualise resilience-enabling assessment pedagogies for university teachers, which is an emerging research topic.

This chapter first explores the researchers' reflections on their pedagogies and research methods in the context of the research problem. Thereafter, the broader context of the research problem is examined, starting with the state of student dropouts in higher education. The chapter then explores the vulnerabilities that place students at risk of failure. Furthermore, assessments

are discussed as opportunities to support learning in resilience-enabling classrooms. Finally, the chapter reports the study's results, which will be interpreted to outline a framework for resilience-enabling assessment pedagogies.

Pedagogies to Contextualise The Research

The first-year students who participated in this study simultaneously faced several overlapping life stressors. They were the first cohort of first-year students to attend campus classes in the aftermath of the COVID-19 pandemic. With over 100,000 deaths, South Africa recorded the highest number of deaths on the continent (Statista, 2022). The devastating pandemic was not only a health crisis during which loved ones died but was also an educational crisis. The pandemic accentuated South Africa's under-resourced education system, with only 11.7% of school-going youth having access to emergency remote teaching when a national disaster was declared. Education institutions closed for lockdown on 18 March 2020 (Stats SA, 2022a). As a result, unemployment and unresolved socioeconomic and technological inequalities were exacerbated, with poor communities where many of our students came from, suffering the most (Motala & Menon, 2020). After the pandemic, when universities opened for contact learning again in February 2022, the country's failing infrastructure spiralled into violent protests about disruptive electricity and water shortages alongside increasing employment, crime, rising inflation rates, and hunger (Dlamini & Hull, 2025). A study by the United Nations International Children's Emergency Fund (UNICEF) (2022) found that 72% of young people suffered from mental well-being challenges, feeling depressed and hopeless about the future. Under these conditions, the researchers were teaching two semester modules, Media 1A and Media 1B, for first-year students enrolled for the Diploma in Public Relations and Communication at the University of Johannesburg, together, and the outcomes of these two modules sought to teach students the basics of working with journalists and creating multimedia content to engage audiences in public relations and digital marketing campaigns.

Transitioning to university is a source of academic stress for most first-year students (Struyven et al., 2006). For our students, mainly from disadvantaged communities, this may have caused increasing levels of distress to adjust to on-campus learning after being isolated during strict lockdown regulations. Our students were likely impacted by the widespread learning losses experienced during the COVID-19 pandemic. As reported, school learners have been behind in their academic progress by approximately 75% of a school year compared to where they would have been without educational disruptions (UNICEF, 2022). Returning to in-person learning after the lockdown, one felt awkward and socially uneasy, having forgotten what it was like to learn with others in the same classroom (Karnbach et al., 2022).

Being concerned about students' well-being because of the highly stressful hurdles that they had to overcome to cope with their studies, we adopted several pedagogies. Pedagogy is any student engagement strategy that enhances learning experiences in specific contexts (Steele et al., 2019). The following pedagogies were adopted.

Providing multiple traditional assessment opportunities to learn

When assessing for learning, we designed diverse activities with opportunities for self-assessment and feedback (Black et al., 2004). In other words, assessment for learning was not just about justifying choices along the polarising 'formative / summative', 'traditional / alternative' assessment and 'of learning / for learning' debates (Hargreaves, 2005).

As indicated in Table 8.1, the students completed various traditional tests and quizzes. Previous studies have failed to establish conclusive relationships between assessment types and academic success. For example, a study by Parker et al. (2021) concluded that student success in assessment is contingent upon variables like academic stress alongside other variables such as performance, study habits, and retention. Likewise, a study by Johannset al. (2017) found that traditional and alternative assessments are equally effective, each contributing to the development of distinct skill sets. Similar studies concluded that

the choice of assessment type depends on a particular context, implying a trade-off between student performance, preferences, effort, and academic stress levels (Gharib & Phillips, 2013; Gharib et al., 2012). These vary between disciplines and cohorts.

Shortly after the results of the first few traditional, timed tests and quizzes were released, we realised that the pandemic had left its scars on the academic performance of our students. On average, 41% of students failed the traditional tests and quizzes, and a concerning number of students failed to attend or complete the assessments, as indicated in Table 8.1. It was a phenomenon that we had not encountered before, with previous cohorts having similar tests.

Table 8.1: First-year cohort assessment results over one year

Type of assessment	Assessments over one year	Ave %	% attended or completed the assessment	% Passed
Traditional	Take home online quiz 1	56	75	54
Traditional	Take home online quiz 2	32	76	18
Traditional	Take home online quiz 3	43	87	42
Traditional	Test 1, closed book	29	94	21
Traditional	Test 2, closed book	52	97	75
Traditional	Test 3, closed book	39	94	38
Alternative	Multimedia group project	61	95	89
Alternative	Individual video résumé project	57	93	87

Teaching with tenderness and mutual compassion in brave spaces

We regularly engaged students by checking their well-being and opening spaces to express our care. Using the polling application *Mentimeter*, we co-reflected on and compassionately engaged students' anonymous comments. Engaging students in their troubles opened a brave space that nurtured learning experiences of care, tenderness, and mutual compassion (Arao & Clemens, 2013; Thompson, 2017). As illustrated in Figure 8.1, a sample of students bravely shared their troubles, such

as hunger, exhaustion, depression, a lack of money, and other academic stressors.

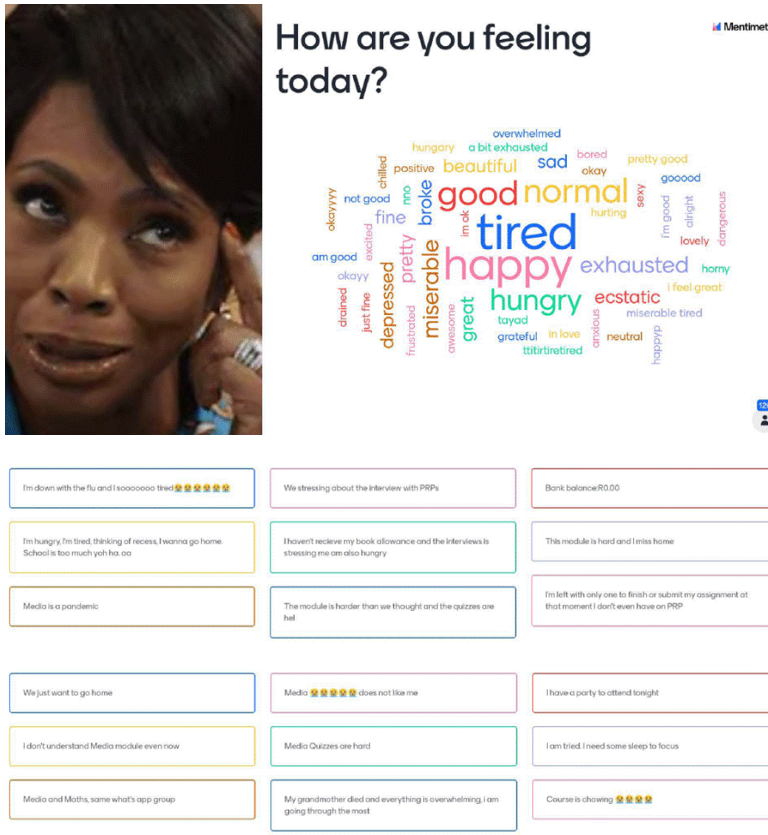


Figure 8.1: Students voicing stressors and adversities in a *Mentimeter* poll

When teaching with tenderness, Gilmour (2021) and Denial (2019) argue for a pedagogy of kindness. Kindness helps teachers to become relatable and approachable, enables difficult conversations, and gives students a sense of belonging.

As with our students, Gilmour (2021) relied on *Mentimeter* to 'hear the student voice' and engage students as active classroom partners. Another instance, linked to this research, of opening a brave space for mutual compassion, sharing and caring can be

seen in student reflections using the *Mentimeter* application, illustrated in Figure 8.2.

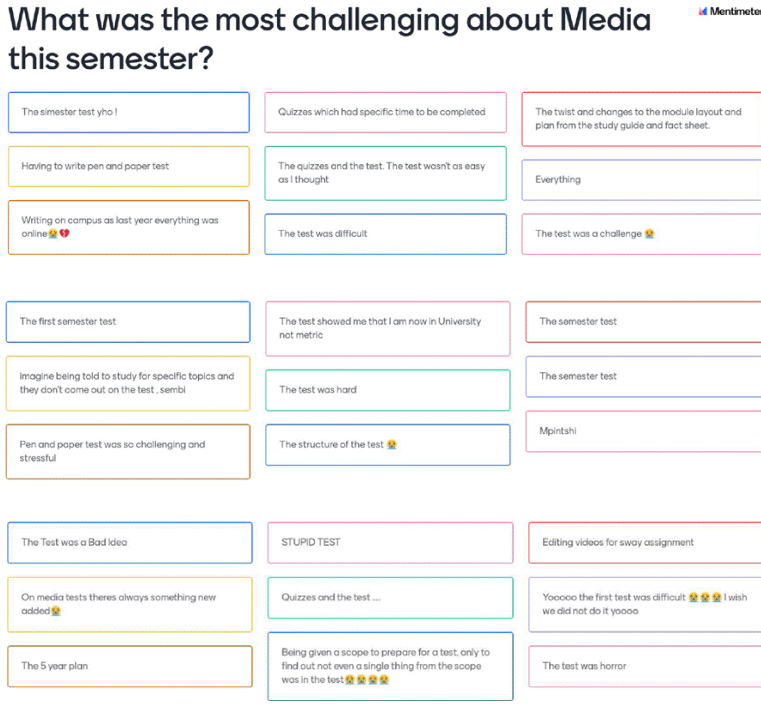


Figure 8.2: Students voicing learning challenges with traditional assessments in a *Mentimeter* poll

A real-world community of practice of the curriculum

Deep and meaningful learning occurs when learning collaboratively with peers and disciplinary experts from the real world inside and outside the classroom (Lave & Wenger, 1991). As Cormier (2008) articulates, the 'community is the curriculum' when teachers cease control over what students learn. In our case, alternative group assignments required students to interview journalists and public relations professionals about the ethical use of artificial intelligence. The interviews needed to be recorded using Microsoft Teams or Zoom. Thereafter, these were edited into short. These videos, alongside students' insights, had to be presented on websites using Microsoft Sway.

Small-group classes were presented by a tutor in computer laboratories to support assessments as learning opportunities. These supportive weekly topics guided students through the weekly steps needed to complete the projects (Anderson, 2016). To help those who have never used computers, facilitators from the university's Centre for Academic Technologies (CAT) provided introductory computer orientation sessions in small groups. In addition, the researchers made pre-recorded videos available to take students through the marking rubric expectations for completing the multimedia projects. The project included an authentic assignment requiring students to create video résumés on TikTok. As future professionals working in social media marketing, learning about content creation and multimedia editing skills is crucial.

The alternative assessment methods indicated in Table 8.1 were opportunities for learning, as they formed part of an authentic apprenticeship teaching process to make learning meaningful (Hargreaves, 2005; Sfard, 1998).

The learning curve was steep because many students came from communities and schools with very few Internet and computer facilities. At the time, only 7% of households had Internet access, of which 66,8% used smartphones (Stats SA, 2022b). However, as illustrated in Figure 8.3, students expressed positive and meaningful learning experiences about the complex assignments.

Given the disparaging results between traditional and alternative assessments, further investigation was necessary.

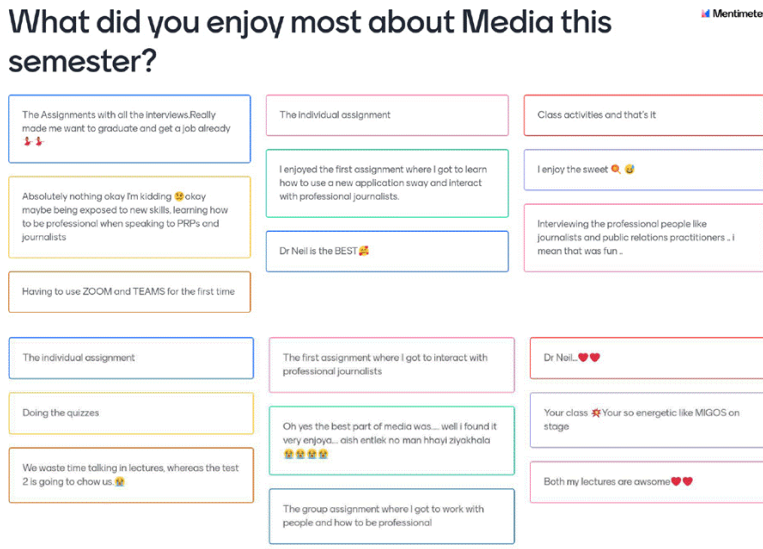


Figure 8.3: ??

Methods to Explore the Research Problem

The study aimed to explore first-year UJ public relations students' perceptions of alternative assessment methods for meaningful learning in a stressful context. A sample of 88 students in the cohort of 182 first-year students participated in the study by anonymously completing pen-and-paper Likert-scale questions. A 100% completion rate was ensured.

The teaching of the modules in question occurred in 2022. To mitigate ethical concerns, data collection occurred early in 2023. This timing allowed students to recall their experiences after a short holiday while ensuring that the researchers were no longer teaching the relevant modules to the now second-year students. In this manner, students were free to give unbiased answers, since participation in the study could not be conflated with expectations for marks. Informed consent and voluntary participation were ensured. The UJ's Faculty of Humanities Research Ethics Committee approved ethical clearance for the study.

Data was analysed using IBM® SPSS® Statistics. The reliability of the Likert-scale questions in this study was assessed

using Cronbach's Alpha. Scales from a related study by Pereira et al. (2022) were adapted for data collection. Results indicated a good internal consistency for all four constructs measured, with Cronbach''s Alpha values ranging from 0.759 to 0.809. Specifically, Traditional Assessments yielded a Cronbach's Alpha of 0.769 (five items), Alternative Assessments 0.774 (five items), Meaningfulness of Alternative Assessments 0.809 (five items), and Academic Stress 0.759 (two items). Items indicated acceptable values of 0.7 and above, suggesting reliable measurement across the study's key constructs (Pallant, 2020).

By analysing the data, we could delve deeper into why students experience some assessments as meaningless and seemingly buckle under the pressure of adapting to university alongside everyday adversities while still being affected by the whiplash of a historically significant global pandemic.

Student Adversities and Bleak Success Rates in Higher Education

South Africa, like its global counterparts, is concerned about multifaceted student vulnerability factors that contribute to the bleak success rates at universities (Subotzky & Prinsloo, 2011; Tinto, 1975). Vulnerabilities are defined as the circumstances that make students more at-risk and susceptible to academic, social, and emotional challenges in higher education (Luthar et al., 2015).

While numbers vary from country to country, the developed world typically records an average of 31% of students dropping out of higher education (OECD, 2010). The worrying rate of failures, dropouts and slow completion of qualifications globally are attributed to students who cannot cope with everyday stressors alongside academic stress (Davidson & Wilson, 2017; Lorenzo-Quiles et al., 2023; OECD, 2010). Academic stress is defined as the negative emotions, physical reactions, thoughts and behaviour that students experience because of not coping with academic demands (Octasya & Munawaroh, 2021: 27). Academic stress is even more pronounced as a vulnerability for first-year students.

At UJ, for example, the annual dropout rate for student bursary holders is around 8%. In comparison, those without funding are even higher at around 19% (DIPEM, 2024b). The

NSFAS (National Student Financial Aid Scheme) is a government-funded programme in South Africa designed to provide financial assistance to students who cannot afford to pay for their tertiary education. At the University of Johannesburg, 64.3% of students receive financial assistance (DIPEM, 2021, 2024a). NFSAS funding helps poor students pay tuition fees, accommodation, living allowances, and other study-related costs.

Students and their families who cannot afford a university qualification are up against many odds. Some are related to the broader socio-economic and political legacy landscape of post-colonial, post-apartheid South Africa, where intergenerational wealth and university qualifications historically benefited students from the white ruling class (van Breda, 2018). As a result, many students from poor communities do not have parents with university qualifications to help them to prepare for the road ahead (van Zyl et al., 2020).

Being academically vulnerable, students who rely on bursaries negotiate many everyday life stressors that affect their ability to concentrate on their studies. A fear of failing is associated with shame and disappointment when failing the expectations of families and friends (Bojuwoye, 2002). Then there are also worries about financial deprivation, food insecurity, inadequate access to learning resources, challenging living and study conditions, a crippling workload, relationships, safety and the well-being of their families back home (Akram et al., 2022; Pillay & Ngcobo, 2010; Ruswa & Gore, 2021). Faced with these adversities, persistence and resilience are needed to thrive and succeed academically (Motsabi et al., 2020)

For vulnerable students and at-risk youth from low-income backgrounds, academic pressure to earn good marks and having a graduate in the family brings hope for employability, social mobility, and a pathway out of poverty (Strumbos et al., 2018). But for many, the prospects of finding employment are rather grim. A scarcity of employment opportunities and barriers to the labour market are just some of the drivers for the 16.3% global youth unemployment rate (World Bank, 2023). Understandably, students face fierce competition to earn good marks with market-related competencies and qualifications that are valuable and meaningful

(Ventura, 2024). Given the tough competition for limited choices of work placements, taking longer than anticipated to complete a degree, drop-out rates, and multiple expenses to cover, families and students question whether a university degree is worth all the effort and expense (Clark et al., 2023).

The long-established respect for universities as the preferred custodians of knowledge and workplace readiness is declining as the public questions the value and relevance of degrees (Brabner & Hillman, 2023; WEF, 2023). Because of the rapidly changing advances in workplace technologies and fundamental shifts in global workforce trends, critics argue that what and how students learn at universities is archaic (Deloitte, 2024). Employers do need good note-takers, quiet backbenchers and sleepy social loafers. Employers not only seek graduates with hard skills but also soft skills from collaborative problem-solvers, critical thinkers, flexible, adaptable, creative innovators, and agile creators (Clark et al., 2023).

These so-called 'soft skills' are sought-after career-advancing skills, including networking, self-awareness, conflict management, leadership and communication competencies (Hussein, 2024). In contrast, job-specific technical abilities are known as 'hard skills' (Strampe & Rambe, 2024).

Despite the ongoing criticism about what and how students learn, studies consistently demonstrate that graduates with higher marks, particularly from esteemed universities, secure employment more readily and earn higher salaries than their peers (Toft Hansen et al., 2021). Therefore, the challenge remains for universities to prepare students for a dynamic future workplace, reinforce the value of a university degree, and seek pedagogies that care about the multifaceted vulnerabilities affecting student success.

Navigating Vulnerabilities that Place Students at Risk of Failure

During times of highly stressful life situations, such as the aftermath of the COVID-19 pandemic and transitioning from school to a residential university, such as the case being studied, it is understandable that students may experience mental health

setbacks and find it difficult to focus on their studies. Even more so, students from high-risk communities may find the overlapping challenges to their well-being rather overwhelming. High-risk communities are often underdeveloped with rampant risks such as poverty, neglect, violence, trauma, substance abuse, illness, criminality and absent caregivers (Luthar et al., 2015). These risk factors interfere with healthy developmental milestones (Charles, 2015). In sub-Saharan Africa, these risks are significantly pronounced since adolescents lack the cognitive, emotional, and social resources that build the foundation for well-being and resilience (Bandeira et al., 2023; Gama & Theron, 2023).

Sadly, vulnerable students from marginalised backgrounds experience stigmatisation and the burden of being labelled according to their perceived deficits, such as being troubled youth or incapable of academic success (Constantine et al., 1999). These prejudices often fuel narratives such as having to 'fix the students' or simply 'blaming the students' for poor academic performance (Benard, 1993). As a result, teacher attitudes of hopelessness towards stigmatised students often led to cycles of self-fulfilling (Constantine et al., 1999). Experiencing a spiral of destructive behaviour and emotions because of feeling overwhelmed and not being cared for, students may suffer from low self-esteem, disillusionment, depression, and fear of failure to meet the expectations of their families and communities (Bojuwoye, 2002). Students are at risk of dropping out when they are absent from tests and when they believe that they are not coping (Davidson & Wilson, 2017).

For students jostling for limited employment opportunities in a country with high youth unemployment rates, the intense academic pressure to earn good marks places immense strain on student expectations and perceptions about the purpose of assessments and the meaningfulness of their university qualifications (Sotardi & Dutton, 2022). Stressors related to tests and exams are often ranked the highest when surveying students (Cardozo et al., 2020). In one such study, rural students perceive fear of failing academically and failing assessments as the top reasons for feeling stressed and vulnerable (Pillay & Ngcobo, 2010). Others reported that assessment-related stressors result

from struggling to complete a large amount of assessments in short periods (Bojuwoye, 2002), academic burnout (Nuñez Cruz & Vásquez de la Bandera Cabezas, 2022), exhaustion and frustration with heavy assessment loads and clashing assessment deadlines (Harland et al., 2015). When reflecting on these risks to academic success, especially in stressful contexts, university teachers could consider alternative approaches to what and how we assess.

Approaching Assessments as Opportunities to Support Learning in Resilience-Enabling Classrooms

We can all think of someone who emerged from dire hardships and managed to beat the odds to make a success of their lives. That is because resilience is not a biologically pre-determined personality trait but a dynamic set of behaviours, emotions, and engagements with others that can be learned and strengthened (Luthar et al., 2015). Accordingly, resilience is the evaluative cognisance of adverse circumstances coupled with an unwavering commitment to overcome obstacles and achieve one's objectives despite exposure to unfavourable conditions (Garmezy, 1991). Stated differently, resilience is defined as an adaptive developmental trajectory wherein a person demonstrates positive outcomes and adjusts their behaviour to succeed in the face of substantial environmental challenges (Luthar et al., 2015).

Resilience is a dynamic and complex phenomenon, typically more pronounced in one or another context of one's lifetime. This explains why some students excel in emotional resilience while others excel in behavioural resilience, academic buoyancy (Martin, 2013) or academic resilience (Flouri et al., 2015; Pather et al., 2017). Likewise, top achievers at university may struggle to succeed in the workplace and build professional resilience to overcome career challenges (Mallak & Yildiz, 2016). Therefore, the predictors for resilience remain somewhat uncertain since variables such as culture, historical and structural oppression, personal characteristics, prior academic achievement, and family background also play a complex role (Alyahyan & Düştegör, 2020; Pérez et al., 2025; Tinto, 1975; Ungar et al., 2023).

Many examples exist where vulnerable students, even those with multiple and severe risks in their lives struggle to cope in one context or learning environment, show a remarkable ability to adapt and bounce back to achieve success in another learning environment (Benard, 1995; Gama & Theron, 2023; Goodman et al., 2023; Luthar et al., 1993). Similarly, as this study discovered, students in the same cohort taught by the same teachers can fail traditional assessments while succeeding at alternative assessments.

Resilience and coping strategies are best learnt in a supportive, enabling context that facilitates group social engagements (Ungar et al., 2023; Vygotsky, 1978). Experiencing activities that give people a sense of meaning, purpose, and identity promotes positive mental health and protects them from the negative impact of life's stressors (Charles, 2015). These may include religion and spiritual practices (Barton & Miller, 2015) caring for and caring about one another (Charles, 2015), recognition and feeling valued in a community (Versfeld et al., 2023), building confidence when receiving support to complete difficult tasks (Deeley et al., 2019), opportunities for self-reflection (Finney, 2013), self-expression, feeling welcome, connected and belonging (Thompson, 2017) personal agency (Merckel, 2021) and enjoying mentally stimulating and deep learning activities (Gulikers et al., 2008). Collectively, these are called resilience-enabling support resources, defined as an interplay of contextually meaningful protective mechanisms that may buffer adversities› negative, resilience-hindering effects when enabling young people to learn to become resilient (Ungar et al., 2023).

Given that enabling environmental conditions can help studentsto learn to become resilient and capable of rising above stressful circumstances (Oswald et al., 2003), it stands to reason that university teachers can select assessment pedagogies to create learning experiences that negotiate student vulnerabilities so that students can build academic resilience. In other words, university teachers can incorporate resilience-enabling pedagogical practices during their engagements with students to give them conditions and transformative opportunities

to modify the negative impacts of adversities (Luthar et al., 2015). Resilience-enabling pedagogical practices may protect students from academic failure, especially when approaching assessments as activities where students receive support to enable meaningful learning.

Resilience-enabling assessment pedagogies are defined as meaningful learning experiences that create a supportive buffer against adversaries so that students can acquire academic resilience and rise above the risks and adversities in their lives. This working definition, for the purpose of this study, is based on the resilience-enabling and resilience-promoting factors identified in related studies (Abate et al., 2024; Bandeira et al., 2023; Oswald et al., 2003; Ungar et al., 2023; van Breda, 2018). Moreover, the working definition for resilience-enabling assessment pedagogies is also inspired by the body of work on assessment for learning, which emphasises enabling and supportive engagements which turn assessments into meaningful learning events in their journey to become members of a professional community (Biggs & Tang, 2011; Black et al., 2004; Dann, 2014).

How students are being assessed fundamentally impacts what and how students learn (Struyven et al., 2005). Assessment methods and pedagogies influence student learning behaviors, what they think learning entails, and the competencies that graduates acquire (Das, 2020).

The constructivist notion of assessment *for* learning is defined as assessments which are not separate from but part of the teaching process so that assessments are experienced as learning events (Hargreaves, 2005). When blurring the boundaries between assessment and learning, assessment is approached as an aspect of learning, which Dann (2014) terms assessment *as* learning. Along the same lines, Carless (2007: 396) use the term learning-oriented assessment. For this study, assessment *for* learning is defined as the quest to understand how students learn as multi-faceted, whole human beings and then to select pedagogies based on their impact to support students to learn meaningfully (Hargreaves, 2005). In this sense, having a sense of meaning and purpose is defined as understanding that one's

presence and efforts matter, creating value and importance in one's personal journey and broader societal context (Constantine et al., 1999). Likewise, meaningful assessments are defined as those that require critical thinking while learning relevant competencies for the discipline and the world of work (Johanns, Dinkens and Moore, 2017; Pereira et al., 2022).

When creating enabling assessment environments that *support* student learning instead of testing memory (Black & Wiliam, 1998; Earl & Katz, 2008), learning is conceived of as a meaningful process of *becoming* a member of a professional, disciplinary community (Sfard, 1998). When learning takes place best *during* assessments, traditional boundaries between teacher and passive student also collapse so that both are active, collaborative co-creators of knowledge (Hargreaves, 2005). Here, students become engaged apprentices while teachers become the preservers of practice.

When assessments are alternative assessments instead of traditional assessments, learning is typically enabled by working in groups to solve problems, creating artefacts, or undertaking experiential learning projects in communities to address real-world challenges. Alternative assessments are complex and meaningful learning engagements, where students perform tasks by applying knowledge to actual, real-life (authentic) cases (Hargreaves, 2005; Struyven et al., 2006; Litchfield & Dempsey, 2013). However, it remained unclear how students experienced these as opportunities to learn. Therefore, the aim of the study was to explore first-year UJ public relations students' perceptions of alternative assessment methods for meaningful learning in a stressful context.

Discussion of Results

The results of the data collected through a five-point Likert-scale are reported in Table 8.2.

Table 8.2: Descriptive statistics

Construct	Key Item	Mean	SD
Traditional Assessments	**Long study hours**: "*I spend more hours studying for traditional closed-book tests or exams.*"	4.05	1.39
	Effectiveness: "*Closed-book tests are effective methods to assess my learning.*"	3.41	1.39
	Confidence: "*I feel more confident when my work is assessed through traditional, closed-book tests.*"	3.09	1.35
	Performance: "*I get better marks when I complete traditional closed-book tests and exams.*"	3.05	1.35
	Forgetting: "*After doing traditional, closed-book tests, I usually forget most of the topics I studied.*"	2.27	1.13
Alternative Assessments	**Performance**: "*I get better marks when I complete alternative projects and tests.*"	4.13	1.07
	Effectiveness: "*Alternative projects and tests are effective methods to assess my learning.*"	3.87	1.11
	Confidence: "*I feel more confident when my work is assessed through alternative projects and tests.*"	3.82	1.22
	Long study hours: "*I spend more hours on my studies for alternative projects and tests.*"	3.53	1.21
	Forgetting: "*I usually forget most of the topics I studied after doing alternative assessments.*"	3.33	1.26

Construct	Key Item	Mean	SD
Meaningfulness of Alternative Assessments	**Real-world application:** *"Alternative projects and tests are more meaningful because I can apply what I have learnt in the real world."*	4.36	0.82
	Career relevance: *"Alternative assessments are more meaningful because I can use what I have learnt as a future public relations practitioner."*	4.35	0.76
	New skills: *"Alternative assessments are meaningful when they enable me to improve my technical and soft skills."*	4.31	0.94
	Deeper learning: *"Alternative assessments are meaningful because they enable deeper learning."*	4.17	0.94
	Learning engagement: *"I notice that my learning is more engaged when I complete alternative assessments."*	4.00	1.02
Academic Stress	**Stress levels:** "*My stress levels were the highest during the traditional, closed-book tests in Media 1 last year."*	4.51	0.83
	Fear of failing: *"I was mostly stressed about failing the traditional, closed-book tests in Media last year."*	4.28	1.01

Traditional assessments such as closed-book tests, were associated with high levels of academic stress. Students reported the highest stress levels during these tests, with a mean score of 4.51 (SD = 0.83). They also expressed significant concern about failing traditional assessments (M = 4.28, SD = 1.01). Despite the stress, students invested considerable time studying for traditional tests (M = 4.05, SD = 1.39). However, students reported only moderate confidence (M = 3.09, SD = 1.35) and perceived effectiveness (M = 3.41, SD = 1.39) for these assessments.

In contrast, alternative assessments were viewed more favourably. Students reported higher confidence levels (M = 3.82, SD = 1.22) and perceived these methods to be more effective in assessing their learning (M = 3.87, SD = 1.11). They also believed that they performed better on alternative assessments (M = 4.13, SD = 1.07). Students rated alternative assessments as being highly meaningful, particularly in applying learning to real-world contexts (M = 4.36, SD = 0.82) and relevance to future careers (M = 4.35, SD = 0.76).

The meaningfulness of alternative assessments was a significant finding. Students strongly agreed that these assessments allowed them to apply their learning in real-world scenarios (M = 4.36, SD = 0.82) and were relevant to their future careers in public relations (M = 4.35, SD = 0.76). They also valued improving technical and soft skills (M = 4.31, SD = 0.94) and engaging in deeper learning (M = 4.17, SD = 0.94).

Analysis and interpretation of results in a conceptual framework for resilience-enabled assessment pedagogies

To explore the research problem, data was collected from a cohort of first-year students, many from underdeveloped, high-risk communities, during a time in their lives when they had to cope with many disparities and vulnerabilities. Poorly prepared for university, some had to travel long distances from rural homes to a large, urban university, and these students arrived at our doors. They were the first cohort to attend classes after returning to campus after the disastrous two-year COVID-19 lockdown period, which exacerbated socio-economic ills. Whereas pre-pandemic predecessors easily passed timed traditional closed-book tests, this cohort mostly failed. Yet, surprisingly, over a one-year period, students excelled at complex, time-consuming assessments requiring rather advanced computer skills to showcase innovative and creative content as future public relations professionals.

Insights were gained from researchers' reflections about pedagogies discussed earlier when contextualising the research problem and the results illustrated in Table 8.2. Based on these, researchers conceptualise a theoretical framework for resilience-enabling assessment pedagogies as follows.

Assessments that elicit a sense of identity, meaning, and purpose to build a buffer against adversaries

Results suggest that vulnerable first-year students doubted their confidence to effectively complete assessments, especially if these were traditional assessments (M = 3.09). Slightly higher confidence levels were rated for alternative assessments (M = 3.82).

Lower confidence in traditional tests likely reflects the fallout from emergency remote teaching during the pandemic, suggesting a subsequent educational crisis that it spawned (Aborode et al., 2020; Stats SA, 2022a). Lower confidence levels in traditional tests may also indicate the vulnerabilities of first-year students from poorly resourced schools, where teaching and assessment in English are limited or non-existent (Bhuda & Maditsi, 2024).

As this study discovered, students' capacity to overcome hardship and adjust to difficult situations largely depends on a context where learning takes the form of an inclusive apprenticeship (Lave & Wenger, 2001). That is because results indicate that alternative assessments helped students to obtain better marks (M = 4.13) which were personally meaningful to students since they strengthened their identities as future professionals. As the data suggests, academic success was achieved because students thought that their efforts mattered and were tied to a broader, future-orientated purpose and identities as they were 'learning to become' members of a professional community (Constantine et al., 1999; Diert-Boté & Moncada-Comas, 2024; Sfard, 1998). Having a sense of identity, purpose, and meaning is conducive to building academic resilience (Charles, 2015).

Considering the stressful vulnerabilities that students experienced in the context of the study, results confirm that resilient-enabling assessment pedagogies serve as a positive shield or safety net around vulnerable students by providing meaningful assessment environments that help them bounce back from setbacks and achieve academic success (Benard, 1998; Oswald et al., 2003).

Complex yet enjoyable real-world assignments appear less time-consuming than memorising a textbook for a test behind a desk

Interestingly, the results suggest that there are frustrations that students experienced with traditional assessments since they reported many more long hours studying for tests (M = 4.05), which were moderately effective (M = 3.41) in assessing surface-

level learning. In comparison, students did not think that they had to spend much time on their studies for alternative assessments (M = 3.53). Perhaps this statistic indicates the word choice in the Likert-scale question since 'studying' may not have the same connotation as 'learning'. Nevertheless, when adding up the extensive amount of time spent during tutorial classes, working in groups, watching pre-recorded assignment briefs, interviewing professionals, learning computer skills to create and edit multimedia digital content for the first time, and learning how to use Microsoft Teams, Microsoft Sway, and TikTok for the first time, it is safe to say that alternative assessments required more effort and time.

This may suggest that when students find assessments career-relevant (M = 4.35), they feel energised and motivated to learn about the 'real world' (M = 4.36); that these learning experiences are not associated with the traditional drudgery of studying many hours, only to remember the textbook facts (M = 2.27), motivated by an intense fear of failure (M = 4.28). Fear aggravates academic stress, which detracts from the confidence needed to build academic resilience (Ungar et al., 2023).

As the saying goes, time flies when you are having fun (Csikszentmihalyi, 2014). As confirmed in the informal comments of student reflections using *Mentimeter* discussed earlier, students expressed enjoyable sentiments about alternative assessments. Enjoyment reduces stress, increases motivation, and motivates engagement, which, in turn, builds self-esteem and resilience (Hammad Al-Rashidi & Çakmak, 2024). Therefore, immersing in challenging yet meaningful, real-world relevant projects is a resilience-enabling assessment pedagogy to help students to reach their full potential.

A supportive community of practice as the curriculum for deep learning

It is fair to say that complex alternative assessments requiring rather advanced technical computer skills may have caused further stress to vulnerable students. Yet, results indicate that their worries become manageable when resilience-enabling resources were available, such as tutor support, bolstering

difficult assignments, and engaged learning (M = 4.00) through peer support in small groups (Ungar et al., 2023). For this reason, students rated the mix of soft and hard skills (M = 4.31) that they acquired.

When working in groups, students had to navigate soft skills like conflict management, collaboration, and social loafing when performing group work. The importance thereof was emphasised in this study (Kostiainen & Pöysä-Tarhonen, 2022). As illustrated earlier in students' *Mentimeter* reflections, group interviews with professional journalists and public relations practitioners were particularly meaningful. Having received support from inside and outside the classroom (Mercieca, 2017). Students' highly engaged learning (M = 4.00) indicates that learning became distributed amongst supportive co-participants in an extended community of practice inside and outside the classroom (Lave & Wenger, 1991).

Results suggest that allocating less time to memorising the textbook and more time to opening opportunities for collaboration enabled 'the community to become the curriculum' (Cormier, 2008). Therefore, students appreciated engaging in collaborative meaning-making since alternative assessments satisfied their need for deep learning (M = 4.17). Deep learning was, therefore, the product of higher-order thinking (analysis, synthesis, evaluation), which students may have enjoyed more than one-sided listening to lectures (Matsushita, 2018).

As the results of this study suggest, being engaged with tutors, lecturers, peers, and workplace professionals in supportive communities of practice activated students' supportive zones of proximal development (Vygotsky, 1978). Together, these assessments, as deep and meaningful learning experiences, nurtured and replenished academic resilience to rise above troubling circumstances and achieve better marks (M = 4.13) (Hobfoll et al., 2011; Nash et al., 2011; Choe et al., 2024).

In other words, the findings confirm that effective assessments that support learning do not depend on the surface memorisation of content or what students learn when studying for tests but rather on how much curious students engage with others, which equates to deep and meaningful learning to solve complex, real-life problems (Deeley et al., 2019; Lynam & Cachia,

2018; Marton & Säljö, 1976; Pereira et al., 2022). Therefore, as a curriculum for deep learning, a supportive community of practice is a resilience-enabling assessment pedagogy.

Conclusions about Conceptualising Resilience-Enabling Assessment Pedagogies

To conclude, this study confirmed the findings of an earlier South African study by Makola (2015), who discovered that vulnerable first-year students who experience their learning as meaningful feel motivated about their studies and learn to become academically resilient. When learning academic resilience in their first year of study, these students are less likely to drop out and are more likely to persist in their studies and achieve academic success in later years (Makola, 2015).

As a shortage of prior research about resilience-enabling assessment pedagogies exist, the value of the study lies in conceptualising enabling assessment environments where vulnerable students can discover their academic strengths and resilience to succeed (Finney, 2013; Walker & Mathebula, 2020). These resilience-enabling assessment pedagogies include:

- Assessments that elicit a sense of identity, meaning, and purpose to build a buffer against adversaries.
- Complex yet enjoyable real-world assignments appear less time-consuming than memorising a textbook for a test behind a desk.
- A supportive community of practice as the curriculum for deep learning.

It is worth situating this contribution within the broader South African higher education response to the post-pandemic crisis specifically. Much of the sector's initial response to the disruption caused by emergency remote teaching and the subsequent return to campus focused on remediation, catching students up through additional contact time, bridging content, and revised timetabling, treating the crisis primarily as a knowledge or preparedness gap to be closed. This chapter's findings suggest an alternative and complementary response: rather than only remediating what was lost, assessment itself can be redesigned as

a site where students recover a sense of identity, competence, and belonging that the crisis eroded. In this respect, the resilience-enabling assessment pedagogies described here extend the sector's crisis response beyond catch-up teaching towards a more fundamental rethinking of how assessment practice itself can either compound or counteract the effects of crisis on vulnerable students.

Finally, the resilience-enabling pedagogies that emerged from the study provided learning environments where students could experience a protective shield against the resilience-hindering effects of overlapping adversaries. In these supportive communities of practice inside and outside the classroom, communities of kindness enabled marginalised students to discover their scholarly abilities and achieve academic success.

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Chapter 9

Mentoring for Resilience: The Impact of the SAEF Mentoring Programme on Student Success in South African Higher Education

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Introduction

Resilience in higher education contexts is essential for navigating the dynamic landscape shaped by South Africa's historical injustice, the effects of which are perpetuated by, amongst other things, transgenerational trauma, which impacts beliefs, confidence, and self-esteem. Understanding the context of systemic challenges faced by students from disadvantaged backgrounds, in particular, allows institutions to equip themselves better to design and implement strategies that foster resilience, which is a prerequisite for student success in these environments. In higher education, resilience addresses the capacity of institutions and students to adapt to internal and external challenges, overcome adversity and thrive despite the obstacles that are faced. Because of the historical inequalities that impact higher education significantly, students face internal and external challenges, notably influencing their resilience and ultimate success. Mentorship programmes should be designed

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around the challenges that students face. Internal challenges are often personal and linked to individual circumstances, while external ones originate in broader systemic, societal, and environmental factors.

Research has shown that students grapple with anxiety, depression, and the psychological strain of academic pressures, finding exacerbation in genealogical histories rooted in systemic disadvantage (Pillay, 2020). This is additionally compounded by attendance at under-resourced schools, leading to gaps in foundational knowledge. As a result, these students find it harder to integrate or keep up with the demands of higher education (Boughey & McKenna, 2021). Furthermore, despite financial aid initiatives like the National Student Financial Aid Scheme (NSFAS), we still have students experiencing persistent stress regarding food security, transport and accommodation (Peters, 2024). They also find themselves plunged into university contexts subject to broader social, economic, and political realities extending beyond their understanding and control. The decolonisation agenda testifies that universities acknowledge that they may unintentionally perpetuate exclusion through Eurocentric curriculums, language barriers, or inadequate support for first-generation students (Le Grange, 2016) and others facing many challenges. Another external challenge is the high unemployment rate and poverty, creating additional complexity, with students often having to support families financially while studying (Seekings, 2021). The average South African student has to navigate deeply personal struggles while contending with historical and systemic barriers, which require resilience to succeed.

Mentoring programmes in higher education serve an essential function of fostering resilience in students, particularly within contexts fashioned by systemic inequalities and historical injustice (Crisp & Cruz, 2009). They are often intentionally designed to address the dual layers of challenges that students face and to equip them with skills to navigate adversity and succeed (Ragins & Kram, 2007). The safe spaces that they provide allow students to discuss their struggles relating to mental health anxiety, depression, and feelings of isolation (Ramaswami, 2007).

Mentors also bridge foundational knowledge gaps by helping students to improve their academic performance. They mentor in study techniques, time management, and navigating complex academic systems (Allen et al., 2004). Another contribution that mentors make is to encourage students to realise that they have strength, set goals, and overcome imposter syndrome, which is prevalent amongst marginalised groups (Ibarra & Hansen, 2011). For example, South African universities' "Thuthuka Mentorship Programme" supports accounting students from disadvantaged backgrounds, boosting their self-esteem and professional aspirations (University of South Africa, 2023). A similar approach is taken for all students in the First Year Experience programme at the University of KwaZulu-Natal (UKZN, 2023).

The UKZN School of Accounting, Economics and Finance (SAEF) mentoring programme responds to the need to promote the holistic well-being of SAEF students so that they pass their modules timeously and are prepared for life after graduation. Students meet online with their mentor every fortnight, creating a "safe space" in which they can voice their fears, self-doubts, dreams, and goals. Mentors are trained in the services offered by the university, which allows them to facilitate a broad range of support, from providing motivation when a student is feeling discouraged to encouraging a student to contact a tutor if they are underperforming academically and steering a student who is deeply depressed to the appropriate student support services.

Conceptual Framework

Resilience is a complex construct that varies significantly across individuals and situations and is influenced by biological, psychological, social, and cultural factors (Southwick et al., 2014). Resilience typically refers to the ability of individuals to overcome adversity and adapt positively to challenges. Scholars have identified various protective factors contributing to resilience, including cognitive processes, social relationships, and transformative life experiences. The social aspect is particularly significant to this chapter, which focuses on developing student participants' resilience via a mentorship programme. In academic contexts, resilience is often explicitly defined as "the capacity

of students to perform well in school despite a disadvantaged background" (Ye et al., 2021). This definition emphasises the importance both of individual characteristics and environmental factors in shaping academic success despite adversity. It reinforces the idea of overcoming, breaking through and succeeding in the process.

Resilience: A Theoretical Overview

Literature has revealed the evolution of resilience theories from simplistic, trait-based models to more dynamic and ecological approaches. Rutter (1979, 2012, 2013) emphasises the role of individual mental attributes, such as determination, self-confidence, agency, and planning, in overcoming adversity. His works propose that key life experiences serve as catalysts for personal growth and adaptability. These experiences can be positive or negative, but in the context of resilience, they often represent opportunities for individuals to adapt, grow, and overcome challenges. In a university setting, key experiences typically involve situations that test and foster a student's ability to cope with adversity, develop skills, and achieve personal growth. In our South African context, adversity can easily be seen in adjustment to the novelty of environments, challenges and experiences. In further reinforcing the ideas around *psychological resilience and individual attributes*, Werner and Smith's study (1982) highlights the importance of competence and determination in achieving higher education and stable employment despite early life challenges. For our students, challenges that predate their existence are a reality that they grapple with daily. The findings highlight the balance between stressors and protective factors, suggesting that resilience depends on the interaction between internal strengths and external supports.

An additional dimension is suggested in Garmezy's ecological framework (1991), proposing three domains of resilience: individual attributes, family dynamics, and external support systems. He identifies family stability and external networks as critical for managing stress and maintaining competence, particularly impacting a child's ability to manage stress and maintain competence in adverse situations (Shean,

2015). Another *ecological and socio-ecological perspective* is forwarded by Luthar et al. (2000), who emphasise that resilience is not uniform but multidimensional and is characterised by individuals showing adaptability in some areas while struggling in others. This is further enhanced by Ungar (2008, 2013) through the socio-ecological model, which argues that resilience depends on individual growth potential and access to resources within familial, community, and societal contexts. He highlights the significance of health-sustaining resources provided through meaningful relational and ecological support.

Masten (2014) identifies *positive adaptation* and the availability of resources as critical for navigating developmental challenges. The author posits that protective factors are vital for achieving *developmental milestones* and navigating challenges (Masten & Wright, 2009; Masten, 2014). Consequently, it highlights the importance of protective factors, including relationships and skills, in achieving academic and personal success. The fourth theoretical approach is that of *cultural and indigenous perspectives on resilience.* In southern Africa, Ebersöhn's concept of "flocking" (2019) offers an indigenous perspective, emphasising collective resilience through mutual support within communities. This approach is particularly relevant in contexts of resource scarcity and historical adversity. It applies in the South African context, where communities are collective in nature. Collective communities exhibit the same characteristics as those described in the concept of "flocking". Both describe the behaviour of individuals as in sync with a larger group. While collectivism often involves prioritising group goals over individual ambition, and concepts like "flocking" refer to coordinated, collective responses to hardship, it is important to recognise that communities are complex. Although collective support can foster belonging and resilience, community dynamics are not always uniformly positive and can, at times, reinforce exclusion or limit individual autonomy (Couzin & Krause, 2003). Social norms and expectations often guide individual behaviour in collectivist societies, and models like Reynolds' (1987) flocking metaphor help to illustrate how local interactions can produce coordinated group movement. While this analogy supports an understanding of resilience as being shaped through collective and relational

processes, it is important to acknowledge that "community" is not a homogeneous or uniformly positive force. Communities can both enable and constrain resilience, depending on the social dynamics, inclusion practices, and cultural norms at play.

Mentorship as a Pathway to Resilience

Resilience emerges from the interplay of personal, social, and structural factors, as highlighted by the socio-ecological approach supported by South African scholars such as Jefferis and Theron (2019), van Breda and Theron (2018), and Theron (2016). This perspective moves beyond an individualistic view to emphasise the importance of supportive social environments, characterised by "flocking". Ungar (2013) similarly argues that resilience depends on personal growth potential and access to supportive resources within an ecological context.

For southern Africans, Ebersöhn's concept of "flocking" provides an indigenous perspective on resilience, emphasising collective support amongst individuals facing difficulties. This communal approach is particularly relevant in contexts marked by historical injustice and resource scarcity (Ebersöhn, 2019). Research further highlights the significant role of supportive non-parental adults in fostering resilience amongst children and youth facing adversity (Ashton et al., 2021; Masten et al., 1990; Werner & Smith, 1992). The educational implications of these insights challenge the idea that resilience is merely an individual trait, rather highlighting the importance of social support and active coping strategies. Nurtured relationships with non-parental figures are of particular importance. Consequently, educational institutions are encouraged to create and maintain social connections and implement programmes that nurture student resilience.

An integrative model allows us to approach resilience as a dynamic process shaped by resources, such as mentorship and peer support, along with coping strategies developed in response to challenges. Fullerton et al. (2021) propose a model emphasising the interplay between resilience resources and coping strategies for positive adaptation in academic contexts. Mentorship programmes play a key role in this framework by providing essential emotional and practical resources to promote agency and

personal growth (Rutter, 2007; Ungar, 2013). The development of resilience is a process by which personal resources (or protective factors) interact in the context of some adversity, and has become increasingly popular. This approach is well-suited to addressing the challenges that students face in adapting to and thriving within higher education (Fullerton et al., 2021).

SAEF Mentoring Programme: Objectives and Structure

The SAEF mentoring programme, funded by the Insurance Sector Education and Training Authority (INSETA), was introduced in 2020 with the objective of promoting the holistic well-being of students by addressing resilience-building around the intrinsic challenges faced by students. Mentors meet regularly with mentees to discuss their general well-being and academic performance and to provide motivation, guidance, as well as advice as required. When mentees raise issues requiring additional intervention, they are guided to the appropriate UKZN support service for further assistance, allowing mentors to play the role of a "boundary spanner" (Weerts & Sandmann, 2010) where mentors use their positionality and experience to provide knowledge and links to mentees. Mentors are encouraged to develop a sincere and honest relationship with their mentees, gaining their trust and thereby filling the role of a supportive, non-parental adult.

Since 2020, the programme has grown to include 300 actively engaging SAEF students. Mentors and Project Assistants (PAs) are appointed through a formal interview process and are required to undergo training provided by College Student Support psychologists. At the interview stage, applicants who strongly desire to support and develop their future mentees are identified for the role. It is evident that mentors who have a desire to "give back" and "make a difference" in the lives of their mentees record the highest levels of engagement with their students. For a mentor-mentee relationship to be successful, a mentor needs to possess the attribute of care, which at times is only fully demonstrated once the mentor has started in their role. To ensure that mentees are provided with a "safe space", mentors are also required to sign a confidentiality agreement which promotes confidence in mentees to share their challenges. Mentors are

also required to have a strong work ethic, for example, excellent time management skills and the ability to meet deadlines and appointments, which ensures that they interact with their mentees in a respectful and professional manner.

The overall objective of a mentor is to motivate students to take responsibility for and feel enthusiastic about their path to success and, wherever possible, steer students to the appropriate interventions that will promote their holistic well-being. Students have been noted as reluctant to seek help (Sithaldeen et al., 2022). A significant aspect of resilience is recognising the need for help and using one's agency to seek it actively. Mentors effectively serve as "boundary spanners", connecting their mentees to resources and departments that they are unaware of or do not regularly come into contact with but that are essential for resilience-building and ensuring the mentee's holistic success, where their academic achievement is at the fore, based on their psycho-social wellbeing.

In addition to the fortnightly one-on-one meetings with their mentors, students are also required to attend a monthly group session that includes a PA, a mentor, and all the students in their mentor's group. The objective of these sessions is to discuss topics including time management and options after graduation and promote sharing and interaction amongst peers. This strategy recognises preparedness and its perception as key factors in building resilience. All individual and group meetings are designed to provide sustained support for the duration of their studies and share coping strategies, thereby developing resilience. To enhance the value of the mentoring programme, industry specialists are invited annually to engage with mentees and provide advice on the career options and opportunities available to them. An on-campus function is also organised to allow mentees to meet their mentors and PAs "in person", facilitating more casual engagement between mentors and mentees. By prioritising empowerment through skills transfer, preparedness for university and the world of work through knowledge-sharing, and connection through mentors, PAs and presenters placed in industry, the SAEF mentoring programme promotes resilience-building over-dependence. By equipping students with the skills,

networks, and knowledge needed to navigate internal and external challenges, the programme fosters resilience with the potential for enduring beyond the students' university experience.

Methodology

The study from which the analysed data was derived adopted a mixed-methods research design to explore students' perceptions of the value of the mentoring programme. This chapter discusses its impact on fostering resilience. Data was collected through surveys administered to participating students throughout 2023. Responses were gathered at the start and end of each semester to capture perceptions before engaging with the programme and at the semester's end. Thematic analysis was used to determine the factors that students identified as key to their success, indicating resilience being fostered and whether it has not been effectively built. This approach allowed for a nuanced understanding of the programme's impact on participants' resilience and provided insights into areas where the mentoring programme could be improved.

At their point of need: Student perceptions of resilience development

Once we entertain the idea that students are individuals coming to the university environment with varied experiences from diverse knowledge systems, we will more easily engage with the reality that they also tend to have their own perceptions and understanding of resilience, often shaped by their unique experiences, framed within cultural backgrounds, and social contexts. In South Africa, where many students grapple with psycho-social and economic challenges, the concept of resilience has to be defined beyond its traditional parameters, including adaptive strategies such as community reliance, resourcefulness, and perseverance in the face of systemic inequities (van Breda, 2018b; Mkwanazi, 2023). Transgenerational trauma significantly impacts students' adjustment to university, influencing their social, cultural, personal, psychological, and academic experiences. This type of trauma is characteristically passed down in families because of historical oppression (apartheid and

colonialism in South Africa) systemic inequality, or collective adversity, which shapes students' resilience and coping mechanisms (Danieli, 1998; Mohatt et al., 2014). In social and cultural contexts, inherited trauma may manifest as feelings of isolation or difficulty integrating into institutional environments that do not reflect their lived experiences (Sonn, 2012). On a personal and psychological level, students may struggle with anxiety, self-doubt, or imposter syndrome, which can hinder their academic performance and overall well-being (Brave Heart, 1998). Academically, transgenerational trauma can limit access to opportunities or perpetuate a lack of confidence in their ability to succeed in competitive environments (Atkinson, 2002). Therefore, before any intervention is formulated within these contexts, it is necessary to recognise and validate the individualised understandings of resilience, as it is essential for effective mentoring. This ensures that interventions are relevant and address students' specific needs. More than this, the perceptions regarding resilience-building require commensurate investigation and consideration when designing intervention and mentorship programmes.

Meeting students where they are refers to recognising and responding to their current academic, emotional, and social realities. By "where they are," we refer to students' current developmental, emotional, academic, and socio-economic situations, shaped by their lived experiences and unique challenges. This includes their background, access to resources - current and historical - levels of academic preparedness, emotional well-being, and self-perceptions of resilience. Meeting students "here" means engaging with them empathetically and responsively, acknowledging their individual starting points without imposing a standardised expectation of progress or success. It is a prerequisite for effective resilience-building approaches, ensuring that their lived realities are acknowledged and that support is adapted to their individual expressed needs.

The reviewed literature has reported South African students as often drawing heavily on relational and community resources to sustain resilience, particularly in navigating adversity in higher education (Reed et al., 2018; Burger & Naudé, 2020). Collectivism

is characteristic of African-based communities, often exacerbated by the effects of colonialism. This suggests that actively engaging with students' understandings of resilience and deliberately tailoring support to their perceptions will ensure that mentorship programmes - implemented through their mentor - can foster a stronger, more meaningful connection, with the potential to empower students to make use of their existing strengths and develop coping mechanisms designed to address the emerging challenges; coping mechanisms well-suited to navigate higher education and the world beyond. An approach where mentors acknowledge that students are not helpless, have agency, which they can use, and can take the risks involved with engaging in unfamiliar contexts, not only enhances the effectiveness of mentoring programmes, but also creates a supportive environment that nurtures students' holistic growth. This is intentionally facilitated by the programme design, supporting one-on-one and group interaction, as well as enhancing the potential and effectiveness of individualised support.

Furthermore, a student-centred approach to resilience-building aligns with broader goals of equity and inclusion in South African higher education. Addressing students' unique perspectives and barriers is essential to ensure that mentoring practices are both culturally and contextually appropriate. This ensures that efforts to build resilience are aligned with the diverse and dynamic student population (van Breda, 2018a; Wills & Hofmeyr, 2019). In addition, meeting students at their point of need ultimately creates pathways for their success, as it enables them to overcome challenges and thrive in all areas of their lives. The mentor-mentee relationship emerges as a cornerstone of effective mentoring programmes, potentially creating opportunities for growth, resilience, and development. Table 9.1 presents a thematic analysis of student responses, which will be discussed thereafter.

Table 9.1: Thematic analysis of student responses

Theme	Key student responses	Mentor actions highlighted
Emotional Support and Encouragement (psychosocial)	"It made me feel like the university really cares." "I am able to share my challenges freely in a judgement-free space, with someone who understands where I am coming from". "The one-on-one support makes all the difference and stopped me from giving up". "helped reshape my mindset and overcome my insecurities" "I had lost all hope, and he reminded me that I am capable." "You do all the best if you know someone cares." "My mentor helped me navigate hardships by merely listening and advising me as best she could" "In times where I had lost hope, the mentor gave me hope to keep pushing." "You feel way more relieved after speaking." "My mentor is very understanding, always listens, never judges, gives great advice." "I can be honest about my challenges." "My mentor is so friendly, welcoming and approachable." "The one-on-one support makes all the difference and stopped me from giving up."	Providing reassurance, expressing belief in the mentee's potential, offering a judgement-free space, and being a constant emotional anchor. Providing a Sense of Belonging and Care Creating a Judgement-Free Space for Sharing Challenges Personalised One-on-One Support Encouragement and Mindset Reshaping Emotional Relief and Stress Reduction

Theme	Key student responses	Mentor actions highlighted
	"You get the feeling that someone is walking along with you and actually cares about what you are doing." "It is of great help, sometimes you feel like you are this alone in any difficult situation...but when you have someone you can share it with, especially someone that mentors you, it's different. You do not feel judged. You feel way more relieved after speaking". "Most of all, he believed in me."	
Practical Academic and Time Management Support	"My mentor helped me plan for my studying timetable and time management." "It is good to have someone to check about how you're keeping up with your studies." "Mr K was able to help me with fixing my time management skills, stop procrastinating and be prepared and well-organised for my classes" "There were very helpful tips to manage time and studying techniques." "I was struggling with balancing my work and studies." "My mentor asks specific questions about my modules."	Offering practical advice, such as study schedules and techniques, tailored guidance for specific academic challenges, and helping manage competing priorities. Personalised Planning and Advice Accountability and Follow-Up Skill-Building for Academic and Personal Growth

Theme	Key student responses	Mentor actions highlighted
Non-judgemental Listening and Validation	"My mentor was always willing to not just listen to me but hear me out and validate my feelings." "It gave me someone I could freely confide in with my struggles without expecting anything in return or any condemnation" "I can be honest about my challenges." "You feel way more relieved after speaking." "You become free and able to talk to the mentor." "It helps you to be able to talk about things you wouldn't necessarily talk about to other people."	Providing an empathetic, open, and non-judgmental space for students to share struggles and feel understood without fear of condemnation. Active Listening and Validation Creating a Safe, Judgement-Free Environment Encouraging Open Communication Providing Emotional Support Without Expectation Promoting Catharsis and Stress Relief
Personalised and Relational Engagement	"She's grown to be more of an older sister." "It reflects me to myself through questions." "I also felt as if I had an obligation to make my mentor proud." "Frequent questions of concern as to what highs and lows I'm facing." "The mentor was hands-on from beginning to end."	Building a personal connection, providing regular check-ins, and creating a dynamic where students feel seen, valued, and personally accountable.
Motivation and Resilience Building	"My mentor helped reshape my mindset and overcome my insecurities." "You get the feeling that someone is walking along with you and actually cares about what you are doing."	Motivating students to persevere through challenges, offering guidance to boost self-confidence, and helping them focus on strengths and potential.

The emergent themes, seen in Table 9.1, are now discussed

Emotional Support and Encouragement

Students' responses revealed their appreciation for the emotional support mentors provide, especially when they are doubtful and stressed. Feeling cared for and supported enhances a student's sense of belonging within the academic environment, which helps them to integrate into university systems more effectively. The mentor actions identified in the comments highlight the key role of relational, emotional, and practical support in mentoring relationships. They meet students' needs and contribute to their long-term resilience by fostering self-confidence, independence, and optimism. We have noted responses such as "It made me feel like the university really cares" and "You get the feeling that someone is walking along with you and actually cares about what you are doing", demonstrating the importance of this relational connection. The mentors ensure that students remain engaged and motivated by showing genuine interest in their mentees' success and, therefore, foster a sense of belonging. We have found that emotional stability is particularly critical for our students who face challenges. This reinforces their confidence in their abilities and their value in the world. The one-on-one interactions and the connection fostered ensure that students feel supported, which builds resilience and a foundation of trust and motivation to persevere. Mentors play a vital role in making students feel valued and cared for.

Another core aspect of the mentoring relationship, valued by students, is the creation of a judgement-free environment where they can discuss their challenges without fear. Students expressed that they valued the opportunity to share openly, reflected in comments like "I am able to share my challenges freely in a judgement-free space, with someone who understands where I am coming from." This shows that mentors who listen actively and validate students' experiences while offering constructive feedback without criticism are more effective; feelings of isolation and associated stress are thereby alleviated. Mentors are encouraged to create a relationship that enables students to process emotional and academic challenges, which fosters problem-solving skills and emotional resilience. The

student understands resilience-building as validating their unique experiences while guiding them towards solutions that can address their individual circumstances. In doing so, mentors encourage and equip students to confront challenges constructively, which builds resilience.

The one-on-one mentoring facilitates individualised attention tailored to students' needs. Comments such as "The one-on-one support makes all the difference and stopped me from giving up" reflect the transformative impact of personalised guidance. In times of doubt and difficulty, mentors who are accessible and consistent in their support offer a critical safety net. Meeting students at their point of need is made possible by an individualised focus, which ensures that students feel seen, heard, and valued. This makes it possible to reach students who wouldn't necessarily seek help on their own and who struggle to access broader institutional support.

Furthermore, mentors have a unique advantage through the programme regarding student access; it is the opportunity and ability to instil hope and reshape their mentees' mindsets. Comments such as "I had lost all hope, and he reminded me that I am capable" and "Helped reshape my mindset and overcome my insecurities" demonstrate the profound impact of encouragement and the influence that mentors have on student access and success. The reframing of challenges fosters a growth mindset, helping students to see opportunities for learning and development. Self-belief in their potential helps students to persist through adversity. Resilience is built by teaching students to navigate difficulties with optimism and determination. Accountability is fostered through consistent and regular sessions with the mentor, who can follow up on implementing strategies.

Some of the other findings revealed that mentors provide emotional relief during stressful times, often serving as a calming and reassuring presence. Students emphasised this in comments such as "You feel way more relieved after speaking" and "It just helped to have someone to assure you that everything was going to be okay." The mentor's approachability and willingness to listen create a supportive environment where students can express their concerns freely. This emotional support reduces stress, allowing

students to focus better on their academic and personal goals. One of the key aspects that the mentoring programme aims to address is the help-seeking behaviours of students. By fostering a positive association with help-seeking provided by the various support services in the institution, students can proactively manage stress and build resilience. While this support is critical, mentors should balance their guidance with efforts to cultivate students' independence, ensuring that they are equipped to handle future challenges autonomously.

Emotional support builds resilience by fostering hope, reducing feelings of isolation, and instilling a sense of capability. Students feel empowered to face challenges with confidence, providing consistent and reality-based reassurance ("Most of all, he believed in me") and offering a supportive presence during low points ("In times where I had lost hope, the mentor gave me hope to keep pushing"). To sustain this impact, mentors balance their supportive roles with strategies encouraging autonomy and self-reliance.

Over-reliance on a mentor for emotional stability may hinder the student's ability to self-regulate emotions. For example, excessive dependence could prevent the student from developing independent coping mechanisms.

Practical Academic and Time Management Support

Mentors are key in equipping students with practical tools to navigate academic challenges, of which one of the key identified ones is time management. Student responses highlight the value of tailored advice, maintaining accountability, and teaching essential skills to address immediate needs, and the programme interprets this as fostering long-term resilience. One of the aims of the SAEF mentoring programme is to do more than just improve students' academic performance; it is to prepare them to manage similar challenges in their professional lives. This suggests that a mentor's ability to provide firm strategies for managing academic workloads and improving productivity is a valuable attribute. This includes, amongst other things, helping students to create structured and individualised academic plans. Students highlighted this by stating "My mentor helped me plan

for my studying timetable and time management," and "Mr K was able to help me with fixing my time management skills, stop procrastinating and be prepared and well-organised for my classes." This demonstrates how mentors address the unique needs of students, helping them to develop effective strategies to manage their academic workload. Personalised support provides a sense of control and confidence, which is crucial for building resilience. Mentors empower students to take charge of their schedules by providing tools to overcome challenges and approach their studies positively.

Regular checking in with students about their academic progress and challenges performed by mentors develops a culture of accountability. This role is appreciated in comments such as, "It is good to have someone to check about how you're keeping up with your studies," and "My mentor asks specific questions about my modules." By maintaining consistent follow-ups, mentors help students to remain focused on their goals. The ongoing communication reassures students that they have support along their academic journey. Regular accountability sessions motivate students not to give up on difficulties, building their resilience by reinforcing their determination to succeed.

Students are often overwhelmed by the technical demands of academic work, and mentors enhance students' resilience in academic pursuits by equipping them with practical tools and techniques to handle these challenges effectively. Comments such as, "There were very helpful tips to manage time and studying techniques," and "I was struggling with balancing my work and studies" highlight the importance of imparting skills. A proactive approach, providing targeted interventions, allows mentors to teach students time management and study skills, which help them to navigate present challenges while preparing them for future demands. This approach ensures that students manage their current workload and develop transferable skills to thrive in other areas of their lives. Adaptability is a key attribute for resilience, and as students become more self-reliant and adaptable, they develop resilience.

Many students noted their need for and development of time management skills. This is important in building resilience,

as developing time management skills is an essential stepping stone towards effective self-management. When individuals learn to prioritise tasks, set realistic goals, and allocate their time appropriately, they develop a sense of control over their responsibilities and commitments. This organised approach reduces stress and enhances student performance, ensuring success, allowing for a more balanced life; where one achieves set goals. As students become more adept at managing their time, they also gain greater self-awareness and happiness, recognising their strengths and areas for improvement. They become accountable to themselves. This accountability starts with being accountable for the regular meetings with their mentor. Consequently, developing planning skills and good time management contributes to fostering a proactive mindset, enabling individuals to make positive choices that align with their values and aspirations, leading to overall personal growth and fulfilment and, therefore, achievement. The lack of time management can thus contribute to an overall despair and lack of control over one's life, where one falls prey to failure. Resilience can thus be linked to the inculcation of time management and planning skills in the mentorship programme.

Mentoring to equip students with time management and study skills is a critical component of fostering self-efficacy, academic resilience and ultimate success. When mentors teach students how to create study schedules and balance academic responsibilities - such as "helping me plan for my studying timetable and time management," as one student shared - they not only provide support for students' immediate needs but also promote long-term confidence in their ability to manage academic pressures. The building of confidence is congruent with resilience-building. These practices align with research depicting structured time management training as enhancing students' self-efficacy, independent learning, and engagement (Liu & Lu, 2024). However, mentorship needs to ensure a careful balance: if mentors become overly directive, students may become overly reliant and miss opportunities to develop their own problem-solving skills and autonomy. Autonomy-supportive mentoring, in contrast, empowers students to take responsibility for their learning while still benefiting from structured support (Holmes,

2023; Duchatelet & Donche, 2019). By promoting autonomy and practical strategies, mentors help to cultivate both resilience and academic success in students navigating complex higher education environments.

Non-judgemental Listening and Validation

Students value a safe, judgement-free space to share their challenges, which suggests that mentors should listen without discrimination, acknowledge their experiences, and offer emotional support. Active listening involves giving undivided attention and genuinely acknowledging the mentee's emotions and experiences. One student noted, "My mentor was always willing to not just listen to me but hear me out and validate my feelings," demonstrating the mentor's commitment to understanding the mentee's perspective. Validation in these contexts provides emotional support and builds trust, enabling students to approach challenges confidently and with a sense of self-worth. By reinforcing their mentees' feelings and providing support, mentors contribute significantly to their resilience and emotional growth.

Creating judgement-free spaces where students feel comfortable expressing their challenges and vulnerabilities is in keeping with the training that mentors receive. One student reflected, "It gave me someone I could freely confide in with my struggles without expecting anything in return or any condemnation," while another shared, "I can be honest about my challenges." These comments indicate that the mentor successfully created a safe and supportive atmosphere that allowed students to confront challenges. This environment encourages resilience-building in students by encouraging them to articulate their concerns and equipping them with problem-solving skills which foster emotional stability.

Open communication encourages mentees to express their thoughts and concerns without fear of prejudice. One student remarked, "It helps you to be able to talk about things you wouldn't necessarily talk about to other people," while another stated, "You become free and able to talk to the mentor." This demonstrates the mentor's role in creating a space where students

feel heard and understood. Open communication reduces stress and feelings of isolation and empowers students to articulate their struggles. This ensures mental clarity and improves problem-solving, which is critical for building resilience. Usually, when critical thinking is engaged, better decisions are made, and confidence is built in oneself vis-á-vis resilience. In addition, the data revealed that students value mentors who offer guidance and empathy without expecting anything in return. A mentee noted, "It gave me someone I could freely confide in with my struggles without expecting anything in return," emphasising the mentor's selflessness. Unconditional support reinforces students' sense of self-worth without judgement or expectation, giving them the confidence and emotional strength required for resilience through challenges. Mentors play the role of trusted confidants, helping mentees achieve catharsis by providing a safe space to share their challenges, process their emotions and build the emotional stamina necessary to navigate the complexities of university life. One student reflected, "You feel way more relieved after speaking," highlighting the emotional relief from sharing concerns with a supportive mentor.

Validation and listening with empathy are important elements of effective mentoring, allowing students to process emotions, reduce stress, and build the confidence necessary to navigate academic and personal challenges. When mentors actively listen - "not just listen to me but hear me out and validate my feelings," as one student remarked - they create a psychologically safe space where students feel seen and supported. This sense of emotional awareness builds trust and honesty, encouraging students to discuss issues that they might not otherwise disclose. The reviewed literature confirms that emotionally available mentors who validate students' experiences contribute significantly to their personal growth, academic success, and resilience (Ramos-Díaz et al., 2024; Collins, 2021). Nevertheless, we recognise that mentoring must be balanced: overemphasis on validation without promoting personal agency has the potential to reinforce a victim mentality, comforting students unintentionally but leaving them unmotivated to change or grow. Effective mentoring, therefore, must combine empathy with challenge - offering validation while also encouraging

constructive action and autonomy (Sandoval-Lucero et al., 2020). A balanced approach ensures that students not only feel supported but are also empowered to take ownership of their learning and development.

Personalised and Relational Engagement

Students value mentors who establish personal and meaningful connections and show a genuine interest in their growth. Responses such as, "She's grown to be more of an older sister," and "Frequent questions of concern as to what highs and lows I'm facing," suggest that students feel most supported when their mentors demonstrate consistent care, presence, and authentic engagement. Accountability and a sense of purpose are nurtured by the relational depth, as students often feel motivated to succeed not only for themselves but also out of respect for the mentoring relationship. Research highlights that when mentors engage in need-supportive interpersonal behaviours - such as empathy, encouragement, and personalised support - it leads to greater motivation, well-being, and engagement amongst mentees (Firzly et al., 2021). Furthermore, strong relational bonds in mentorship have been shown to improve mentees' psychosocial development, academic adjustment, and general fulfilment with their educational experience (Dreer, 2021; Ismail et al., 2021).

While personal connection is critical, it is equally important to preserve clear mentor-mentee boundaries. Over-familiarity may distort roles, possibly undermining the mentor's ability to provide objective guidance. For example, if a mentor is seen merely as a friend, students may hesitate to receive or implement academic feedback or structured advice. Studies have highlighted the importance of managing role boundaries within mentoring relationships, particularly in educational settings, to avoid role confusion and ensure professional mentorship remains effective (Dorland et al., 2019). Therefore, successful mentoring requires both relationship and role clarity to ensure that students receive emotional support as well as academic and personal development guidance.

Motivation and Resilience-Building

Students appreciate mentors who motivate them to strive for their best and reframe challenges as opportunities for growth. Mentors who model and nurture a growth mindset help students to view setbacks as part of the learning journey, nurturing adaptability, confidence, and perseverance. One student noted, "My mentor helped reshape my mindset and overcome my insecurities," while another shared how reassuring it was "to have someone assure you that everything was going to be okay." This type of motivational mentoring aligns with current research emphasising the role of growth mindset mentorship in empowering students to navigate uncertainty and persist through difficulty (Mason & Fluet, 2023; Templeton et al., 2021). When mentors engage students in affirming and constructive dialogue, they help to build resilience by reinforcing the belief that effort, not perfection, is key to success.

However, the emphasis on achievement must be carefully balanced. Over-praising outcomes without addressing failures constructively can place undue pressure on students and inadvertently undermine their resilience. Encouragement that lacks critical reflection may lead students to avoid acknowledging challenges, fearing that they may disappoint their mentors or themselves. Effective mentoring should, therefore, include honest conversations about failure, framed as learning experiences. The research highlights that resilience and long-term growth are best supported when mentors not only motivate but also equip students with the mindset and tools to overcome setbacks (Ibrahim & Lim, 2024). In this way, mentors can help to foster emotional strength and academic persistence.

Conclusion

This chapter provides compelling evidence that the SAEF Mentoring Programme fosters resilience amongst students. Student feedback demonstrates that mentors play a key role in validating mentees' experiences, offering encouragement, and helping them to navigate personal and academic challenges. These relational dynamics enhance students' emotional well-being and reinforce a sense of belonging. Mentors also promote proactive

help-seeking behaviour - a critical skill, particularly for students from under-resourced backgrounds where access to support is limited. This shift in behaviour reflects a developing sense of agency and contributes directly to resilience. Furthermore, practical interventions, such as teaching time management and providing structured yet flexible accountability, equip students with self-regulation skills that foster personal accountability, independence, and adaptability. Emotional support, motivation, and practical skill-building are embedded throughout the mentorship process, collectively strengthening students' capacity to persevere through adversity and develop resilience.

Beyond illustrating these theories in practice, the SAEF programme's findings make a more specific theoretical contribution: they surface a tension in existing resilience scholarship that is often stated but rarely examined empirically, namely, that relational resources intended to build resilience can, without deliberate structural safeguards, tip into the dependency that resilience theory explicitly warns against. Where Ebersöhn's concept of flocking and the broader socio-ecological model establish that resilience depends on access to supportive relationships, this chapter's findings suggest a necessary refinement: the resilience-building value of a mentoring relationship is not a fixed property of the relationship itself, but is actively produced through specific design choices, mentor rotation, withdrawal of scaffolded support over time, and clear boundary-setting, that determine whether a relational resource strengthens a student's own coping capacity or substitutes for it. This positions structured, time-limited, and boundaried mentoring as a distinct and under-theorised mechanism within the socio-ecological resilience literature, one that merits further conceptual development beyond its current treatment as a general instance of social support.

The programme aims to nurture resilience rather than foster reliance. This is evident in its design and operational strategies. Students are not permitted to request the same mentor in subsequent years, a practice that encourages them to seek help from different individuals and reinforces the understanding that resilience involves looking for, and building

new, trusting relationships - not dependency on a single person. Similarly, while students are initially supported in creating study timetables, they are ultimately responsible for maintaining these independently. Mentors check on their progress, but the onus is placed on students to sustain these habits. This supportive approach, as conceptualised by Vygotsky (1978), gradually withdraws structured support as students internalise key skills. The mentorship model thus fosters independence, self-efficacy, and adaptive coping - central attributes of resilience - ensuring that support structures serve as stepping stones rather than crutches.

While the SAEF Mentoring Programme has been designed with the purpose of building resilience amongst students, it is crucial to critically examine the potential risk of nurturing dependence, particularly in how support is delivered and internalised by mentees. Mentorship offers a relational safety net - an emotional and practical buffer against adversity. However, if inappropriately managed, this strength can lead to unintended consequences where students begin to rely too heavily on their mentors for validation, decision-making, or academic accountability. The programme's current structure attempts to mitigate this through, for example, mentor rotation and a supportive approach to skills development. However, the risk of dependence still warrants attention. For instance, the emotional closeness reported by students - though rather affirming - can distort boundaries in the mentor-mentee relationship, especially when mentors are perceived as friends or familial figures. This can complicate the mentor's ability to provide objective guidance and may unintentionally foster emotional reliance rather than self-determination. The mentor's role must remain professional, and mechanisms should be in place to ensure consistent boundary-setting and role clarity across the mentoring team.

Moreover, the programme's check-in and tracking practices, while beneficial in promoting motivation, may unintentionally create external motivation loops. Students may begin to perform or engage primarily for mentor approval rather than developing intrinsic motivation and self-regulation. Without the mental fortitude required for ongoing reflection and tapering

of these practices, the mentoring relationship risks shifting from one that empowers to one that maintains a student's sense of vulnerability and dependency. In addition, mentors differ in how they manage their relationships. Without consistent training and supervision, some may unintentionally reinforce dependence by being overly available or solving problems on behalf of the mentee. This highlights the need for structured, ongoing mentor development -not only to build mentoring skills, but to reflect on their own influence critically, avoid over-functioning, and better promote autonomy in their mentees.

Furthermore, students entering the programme with limited prior exposure to supportive adult figures - as is the case with most of the students on our programme - may initially respond to mentorship with heightened emotional attachment. This makes the process of detachment and transition - whether at the end of a semester or academic year - potentially disruptive. Support structures that ease this transition, such as gradual handover, peer-support networks, or group mentoring sessions, could reduce the emotional strain and help students to internalise support strategies rather than externalise them in a single relationship.

While the programme demonstrates considerable success, there are still opportunities for refinement to sustain and enhance its impact. Ensuring that mentors fully understand the scope and demands of their role is essential. Although current training is effective, clearer pre-engagement expectations and the consideration of more stable employment arrangements may help to reduce turnover and strengthen the mentoring cohort. Selecting mentors who are empathetic and committed is vital, given their specialised role in students' lives. Increasing opportunities for face-to-face interaction - both between mentors and mentees and amongst mentees themselves - would also be beneficial. The in-person engagements help to cultivate a sense of community, reinforcing collective resilience through the indigenous concept of "flocking," where mutual support networks are formed in response to shared challenges. With the necessary structural investment, including a full-time programme coordinator, the

programme could be expanded to benefit students from other faculties, extending its proven benefits across the institution.

In conclusion, while the SAEF Mentoring Programme actively aims to avoid reliance, its success hinges on deliberate and continuous attention to relationship dynamics, mentor boundaries, and the careful balance between support and autonomy. Without this, the programme may risk undermining the very resilience that it seeks to foster.

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Chapter 10

Innovative Pedagogies: Integrating Active Learning and Lesson Study in Higher Education

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Introduction

Institutions of higher learning are undergoing significant changes, driven by demands for transformation, inclusivity, and student success, alongside the pressures of government funding requirements. This chapter examines how higher education responds to students who come from backgrounds in which they have experienced various forms of adversity. Chiramba and Ndofirepi (2023) argue that students in South African higher education are shaped by the legacy of apartheid - a history fraught with challenges, including social and educational inequalities. This context highlights the critical need for resilience amongst both students and lecturers to ensure academic success in higher education.

Resilience is often a response to difficult or traumatic experiences. The concept of resilience is defined differently across the literature; however, a common thread is the ability of an individual to overcome challenges (Schoon & Bynner, 2003). According to Durso et al. (2021), a resilient student is one who, despite experiencing significant stress or challenges during their

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undergraduate studies, manages to complete their programme with a sense of satisfaction and commitment to their chosen career. Durso et al. (2021) outline examples of challenges which require resilience in the higher education environment: low initial motivation for a programme; personal health problems; faculty didactic-pedagogical deficiency; difficulties in relationships with peers and competing professional demands.

The recent coronavirus disease 2019 (COVID-19) pandemic, increasing concerns about gun violence in American schools, the prevalence of gender-based violence - particularly affecting women and children - and rising suicide rates associated with emotional trauma from social media misuse highlight the importance of resilience. These challenges highlight the need for teaching and learning approaches that recognise and address the adversities faced by students and educators in higher education. Without sustained resilience, neither group can achieve long-term success.

According to Haras et al. (2017), improving the quality of teaching is an institutional prerogative because quality teaching will lead to better student outcomes, which is ideal for the institutions. Considering the adversities that students at all levels of higher education have experienced, either directly or indirectly, it is important for higher education institutions to develop a curriculum that responds to the calibre of students that they admit. It is equally important to ensure responsive professional development of lecturers to equip them with the skills and knowledge to build and enhance students' resilience. In that context, it is equally important for the lecturers to be resilient to ensure that students under their care are successful. Thus, according to Stigler and Hiebert (1999:13):

> improving something as complex and culturally embedded as teaching requires the efforts of all the players, including students, parents, and politicians. But teachers must be the primary driving force behind change. They are best positioned to understand the problems that students face and to generate possible solutions.

Hence, it is imperative that teachers in all spaces of learning, which includes university lecturers, should be empowered to meet the needs of students to cultivate this resilient culture. In the evolving landscape of higher education, traditional teaching methods are increasingly being challenged by the calibre of the current students and by innovative, student-centred approaches. Teaching in higher education requires innovative pedagogies that acknowledge students' experiences and knowledge as a critical component of their learning and also meet students where they are instead of grouping them into one category or using a one-size-fits-all approach (Setilo, 2023). Innovative pedagogies can also be enhanced by the use of technology as well as using active learning (AL) as a teaching strategy to create a constructive learning environment.

The Conference Board of Mathematics Sciences (CBMS, 2018) has acknowledged AL as a prominent teaching strategy in higher education. For this research, we used desk study research to gather data and information from existing sources. Desk research relies on existing information that has already been collected and published by others, such as journal articles, websites, reports, books, and other existing project documentation (Pubrica, 2025). We used this research methodology to gather background information, support our research, and make appropriate recommendations. We examined and synthesised information from already available information as this would give us a more comprehensive understanding of the topic and identify gaps, which will inform the next steps of our research (Gell, 2023). A qualitative methodology was employed as it enabled us to analyse existing data and delve deeply into the context and meaning behind the data (Gell, 2023).

It is worth stating upfront why this combination of frameworks belongs to resilience scholarship rather than to educational innovation literature more broadly, since AL and LS are, on their own, well-established pedagogical tools not originally designed with resilience in mind. Their relevance to resilience specifically lies in structure rather than novelty of technique: Lesson Study's cycle of planning, teaching, observing, reflecting, and reteaching mirrors, at the level of professional

practice, the adaptive cycle resilience theory attributes to individuals, encountering difficulty, drawing on support, adjusting, and recovering strengthened. Applied to lecturers, this reframes LS not merely as a teaching-improvement tool but as a structured mechanism for building collegial resilience, directly addressing the isolation this chapter identifies as a threat to sustained academic practice. Applied to students, AL's emphasis on productive struggle within a supported, peer-connected classroom operationalises resilience as something built through safe, repeated exposure to difficulty rather than through exhortation to "be resilient." This chapter's original contribution to resilience scholarship, then, is a structural one: showing that frameworks not originally framed around resilience can nonetheless function as resilience-building mechanisms for staff and students alike, once that connection is made explicit.

This chapter advocates for the integration of AL strategies in higher education. It highlights the value of lesson study (LS) as a professional development model to introduce and refine AL as the teaching strategy of choice. AL is a pedagogical strategy that actively involves students in the learning process, encourages participation and allows students to be excited about their learning (Prince, 2004). AL promotes critical thinking, deeper understanding, and retention of knowledge by encouraging students to use their prior knowledge for depth of understanding. LS is a form of professional development that originates from Japan. It is a collaborative process in which educators come together to plan, teach, observe, reflect, refine and reteach the lesson. LS is focused on the students' learning, not on the educator and provides room for the educators to learn from each other and share insights about students' responses during the learning process. This chapter seeks to discuss key AL elements that would empower lecturers to teach students who have previously proven to be resilient but who need to maintain that resilience to be successful in higher education.

It is essential for the curriculum to remain dynamic and responsive to the evolving needs of contemporary students. While recognising the diverse backgrounds from which students in higher education originate, it is equally important to acknowledge

the necessity of providing professional development support for lecturers. Equipping educators with the skills required to navigate the changing educational landscape ensures that they are adequately prepared to facilitate student success in a rapidly shifting academic environment.

It is important for the curriculum to remain dynamic and responsive to the evolving needs of the current generation of students. Inasmuch as we acknowledge the different backgrounds from which students in higher education come, it is equally important to acknowledge that it is crucial to provide professional development support to empower lecturers or teachers. Equipping them with the skills required to navigate the changing educational landscape will ensure that they are adequately prepared to facilitate student success in a changing academic environment. Stefani (2010) argues that the changing higher education landscape must be met by changes in academic development, including understanding the changing student body and legislative changes that relate to equality shifts in government while also taking note of employer expectations of graduates and, most importantly, changes in curriculum delivery. Nicholls (2014) concurs that the changing student intake highlights the need to adjust pedagogical strategies and curricula.

AL ensures that students take an active part in their learning and bring their lived experiences into the classroom. AL is an innovative teaching strategy that allows students to acknowledge their potential past trauma so that they remain resilient enough to succeed in their chosen qualifications, leading to their dream place in the workplace. Student success is a far-fetched dream unless higher education institutions take professional development seriously. Nicholls (2014), who conducts research into professional development in higher education, argues that lecturers are university teachers who have the internal identity of professional teachers and the external identity of a subject specialist.

LS is a widely used professional development framework that will be outlined in this chapter to empower lecturers to use the AL strategy in teaching resilient students for success. Through the cyclical phases within the LS framework, lecturers

form a collaboration network where they come together to learn about AL as a pedagogical strategy of choice, strengthen their understanding of the content that they plan to teach in their classes in a collaborative manner and gain insight into how students react to their teaching through observation and reflection.

What is Active Learning?

According to Weltman (2007), AL is open-ended and evolving, and ideas about AL strategies date back to the 5th century BC. He argues that AL is regarded as appealing and fun for students because they collaborate and interact with each other (Weltman, 2007). Since the term was introduced by an English scholar, R.W. Revans, between 1970 and 2003, there has been advocacy for this approach. This is because the idea of learning in the form of learners who only sit and listen to a lecturer is unproductive and yet this was a dominant approach to learning (Mokotjo, 2017). It is argued that students should be actively involved in what they are learning and doing. Hence, Misseyanni et al. (2018), Petersen and Gorman (2014), and Prince (2004) define AL as a process that brings together the knowledge of objects, learning contexts, humans, and social problems, as well as challenges for the present and future of our societies (Misseyanni et al., 2018; Petersen & Gorman, 2014; Prince, 2004). They also point out that AL promotes a new and different way of thinking in which truth and reality are not just black and white, where teaching and learning are exploratory journeys to diverse realities and a wealth of knowledge, and where nothing is taken for granted except the provision of a productive learning environment that is full of interactions and can show everyone their path to inner fulfilment and success (Misseyani et al., 2018).

AL is also a holistic approach because it is applicable in higher education and has direct implications and criteria for administration, faculty, government, and various stakeholders. Furthermore, it links the human minds and souls in a creative spiral of knowledge transformation and skills development at individual, group, and institutional levels. It is also about interdisciplinary integration and intersection, which is an

additional challenge for higher education because, without a systematic process of launching interdisciplinary programmes and curricula, there will always be a critical lack of creativity and impact (Misseyani et al., 2018). Because of the lack or slow pace of innovation in some schools or subject areas, we propose that teachers try to link innovation with AL strategies that interact simultaneously with many disciplines.

For us, a learner is not an abstract concept because they are complex beings with a personality, a psychological background, and intellectual capabilities that develop within certain social circumstances. AL can be implemented in a classroom because it can create a supportive environment, which is achieved through the positive attitude of both the learner and teacher. We argue that AL strategies that encourage students to interact with their peers not only foster learning but also help to build resilience by strengthening relationships between peers (Cassidy, 2015). Peer relationships can be a positive source of encouragement and resilience for those experiencing challenges and adversity. Resilience can be built into the learning process if teachers can make the learning process enjoyable, fun, and exciting for learners. For instance, learners can be given a group challenge in class and can be offered rewards. If learners are taught how to be resilient through engagement, they can bounce back stronger and be more challenged to engage in the learning process (see Ungar & Liebenberg, 2013; Masten, 2001; 2006).

Active Learning as a Pedagogical Strategy in Higher Education

Several authors describe the AL strategy as a pedagogical approach that allows learners to participate in learning (see White et al., 2016; Bonwell & Eison, 1991). AL can also be used as a pedagogical strategy that places students at the centre of the learning process. This is achieved by encouraging them to be involved and excited about their learning process. AL also fosters and promotes critical thinking, deeper understanding, and knowledge retention while encouraging students to use their prior knowledge for a deeper understanding. This is because students coming into higher education bring in a wealth of knowledge

and capabilities. Participation entails actively doing something other than being passive listeners and reflecting on what they are doing. This enhances the learning process through higher-order thinking (Punja et al., 2014). The traditional way characterised by students just sitting and being fed information has proven ineffective (Mokotjo, 2017).

A more productive way is to involve students in the learning process. Students should be at the centre of the learning. When implementing the AL strategy, a teacher must involve students in the learning process. In this way, they will learn by doing and thinking about what they are doing, which can create a high order of thinking. With AL, students develop critical thinking by engaging in reading, writing, discussing, and solving problems. One of the benefits of AL is that it engages all students in the learning process and thus ensures that no student is left behind. This is because students own their learning process, irrespective of their abilities. For Drake and Battaglia (2014), passive listening is discouraged by fostering an active learning approach in the classroom. This argument is supported by Faust and Paulson (1998) as well as Röj-Lindberg (2001), who attest that, as part of AL, students actively engage with the learning materials. This is possible through activities such as group assignments or projects that require them to apply what they have learnt in the real world and listening exercises that help them to assimilate what they hear.

Thus, we encourage all teachers to tap into the knowledge that students bring to make the learning experience much more engaging both inside and outside the classroom. The Chinese philosopher Lao-Tse remarked, "If you tell me, I will listen; if you show me, I will see. But if you let me experience, I will learn". We support this statement because we believe that teachers should facilitate learning, and students must become active problem-solvers by working individually and collectively, thereby facilitating the learning process.

Elements of Active Learning Strategies

Active learning strategy encourages students to engage in their learning process by thinking, discussing, investigating, and

creating (Prince, 2004). During the classroom learning process, students also practice skills, solve issues, grapple with complex topics, come to conclusions, offer answers, and use writing and conversation to put concepts into their own words. Hence, we are in agreement with Lao-Tse's quote. Feedback from classmates or the teacher is vital to this learning process in real time. According to education research, students' learning experiences are much improved when AL techniques are incorporated into university courses (Freeman et.al., 2014). Students who are active and engaged in the classroom are more likely to perform well academically, form stronger bonds with their lecturers and peers, and retain more knowledge.

Using a literature review focusing on the findings of studies from 2020 to 2024, the chapter briefly discusses practical AL techniques. These encompass peer teaching, think-pair-share, classroom environment, assessment strategies, problem-based learning, and interactive lectures through technology integration. The fundamental elements of an AL strategy in higher education entail implementing activities into the traditional lecture and promoting student engagement. Using activities as part of the learning process can be considered a strategy because it facilitates and increases students' concentration (Prince, 2004). Below, we briefly discuss each key element:

- ***Peer teaching***: This is a process in which a teacher allows students to reflect on what they have learned by writing about what they have learned or by talking to their peers in pairs. When students have finished reflecting or solving a problem, one presents the answer, and the lecturer will explain the correct answer and various options later. This technique can enhance students' social, emotional, and computational skills (Mazibuko, 2014; Vasay, 2010). Peer teaching also allows students to learn, reflect on their learning, and share their social values with their peers (Liu & Devitt, 2011). Lim (2014) conducted a study to assess the impact of peer learning, which found that most of the learners indicated that peer learning motivated them to prepare for their learning so that they could share what they have learned with their peers. He also found an increase in morale in the classroom.

For example, in a Japanese LS group where a Science lesson was observed as illustrated in Figure 10.1. During this lesson, students discussed a parallel circuit experiment and shared their understanding and findings of the experiments with their peers. In this lesson, students are encouraged to share their observations, and therefore, observers will be listening keenly to the students' comments and debates (Ishii, 2017)



Figure 10.1: Peer learning example during a Science lesson under LS observation (Ishii, 2017)

- ***Think-Pair-Share***: This strategy enables students to develop thinking skills and engage in group work. Think-pair-share entails lecturers providing students with questions and allowing them time to respond independently by writing down their ideas. After a set time, students share their responses with a partner and discuss similarities and differences in their answers. Finally, each pair provides feedback on their ideas to the class, to initiate a whole-group discussion.
- ***Classroom Environment***: A classroom cannot be considered a mere physical space; it is more than that. It is a space where learning occurs, and student well-being and support are fostered. Baepler and Walker (2014) define a learning environment as a space where social bonds are created, a space entailing mutual respect amongst learners and between the teacher and learners. This space also has a shared responsibility for learning, trust, and security.

  For example, Figure 10.2 illustrates an example of how students can sit in a classroom and AL is a teaching strategy of

choice. As seen in Figure 10.2, the teacher has a manipulative on the board, and the students are seated facing each other and in full view of what the teacher is illustrating. It is important that the students face each other so that they can discuss and share ideas when called to do so.



Figure 10.2: Classroom environment where an educator uses AL during a lesson study observation class (Ishii, 2017)

- ***Assessment Strategies***: If a teacher wants to implement a learning activity designed for learners' active learning, classroom assessment techniques can be a useful way to determine what and how learners have learnt from the learning activity and how they have learned it. These techniques are quick, low-stakes methods used to assess student understanding and knowledge (Angelo & Cross, 1993; Barkley & Major, 2016).



Figure 10.3: An example of a form assessment in active learning classroom where assessment forms part of learning during a lesson study session (Ishii, 2017)

- ***Problem-Based Learning:*** This strategy opposes the "traditional" teaching approach and cultivates critical thinking and decision-making skills. Students are given a real-world problem and should apply their knowledge and skills in a practical context. This activity is more effective when students work in groups, creating individual learning paths, as each group and student learn independently (Nilson, 2010).
- ***Interactive Lectures through Technology Integration***: These lectures incorporate short activities and allow students to engage with the materials covered in class. The benefit of this strategy is increased student engagement and learning. This strategy also makes the learning process fun and serves as a valuable tool for instant feedback (Ernst & Colthorpe, 2007; Revell & Wainwright, 2009; Miller et al., 2013; Hadie et al., 2018). Additionally, interactive lectures are preferred by most students and result in increased class attendance, compared to traditional lectures (Ernst & Colthorpe, 2007; Revell & Wainwright, 2009).



Figure 10.4: An example of a problem-solving activity that involves dissecting the eye of a fish to understand why some people need prescription glasses to see (Ishii, 2017)

Lesson Study Model

The lesson study model is an internationally recognised professional development model that is primarily used for the development of content and the pedagogical knowledge of teachers in a collaborative format (Tsui & Law, 2007; Helmbold et al., 2021). LS originated in Japan in 1870 and is referred to as *jugyou kenkyuu*, which means LS in Japanese. It has since been used by various countries in response to poor performance in international assessments. Nations such as the UK, US, France, Germany, Finland and Singapore have adopted the lesson study model as a professional development framework (Bosma & Goei, 2021). It has been widely adopted as a form of classroom action research focusing on developing teacher practice knowledge (Dudley, 2013). It encourages teachers to take on the role of researchers as the primary agents of cultural change in classrooms. LS is widely used for schoolteachers' professional development, and this chapter extends its usage to institutions of higher learning. LS is also adopted as a professional development framework for teachers by the Department of Basic Education in South Africa. LS has further been adopted by universities such as the University of Pretoria, Sol Plaatje University, and the University of the Free State, amongst others.

A study conducted by Norton (2018) investigated the use of LS in the English faculty in higher education. The study evaluated and examined the potential of LS for the professional development of lecturers in terms of strengthening content knowledge for subject specialists and the improvement of student and teacher learning. The study found that lecturers could develop professionally through participation in LS by sharing subject-specific knowledge and pedagogical content knowledge and by jointly developing teaching resources. Academics generally argue that teaching is complex because of the integration of various types of knowledge while teaching (Shulman, 1986; Smith, 2000). However, Shulman argues that teachers must have seven knowledge bases to teach successfully and effectively. The seven knowledge bases are content or subject matter knowledge; general pedagogical knowledge; curriculum knowledge; pedagogical content knowledge (which is the knowledge of learners and their

characteristics); knowledge of educational contexts; and, finally, knowledge of educational ends, purposes, and values. On the other hand, Smith (2000) proposes that teachers need to know subject matter, content knowledge, instructional strategies knowledge, and student knowledge to teach.

These scholars highlight the need for teachers to multitask to teach for success. Through LS, we bring both views into sharp focus to ensure that lecturers have an opportunity to collaborate with their peers while also sharpening their pedagogical and content knowledge and understanding of the characteristics of their students.

Lesson study is widely used in mainstream education for the professional development of primary and high school teachers and is important for teachers' learning and the improvement of teaching in a small learning community (Richardson, 2009). Belsky (2019) argues that institutions of higher learning train graduates for a global workforce that is highly competitive and in need of concrete interpersonal and external skills. Therefore, higher education needs to adapt and assess how continuous professional development officials can offer lecturers opportunities to learn how to meet the demands of the workforce. Haras et al. (2017) further argue that there is a need to provide academic staff with programmes that seek to understand the needs of learners and improve the quality of programmes that target teaching and learning. A study conducted by Walker (2009) highlights the value of continuing professional development courses administered by university libraries despite the lack of a satisfactory framework.

Lesson study is used as a collaborative education practice that entails a cyclical process where teachers collectively plan lessons, observe each other's teaching, and then reconvene to reflect on the lesson and refine their strategies for students' success. In an LS, a group of teachers share their experiences, thoughts, and ideas related to teaching and learning. According to Stigler and Hiebert (2016), an LS is a professional development practice that produces not only a good lesson plan but also a professional learning community, which can also translate to a collaborative lesson research group.

Lesson study is also a collaboration-based teacher professional development approach that encourages teachers to work together to improve their teaching skills while also gaining an understanding of their students in the context of a classroom lesson. Teachers meet to develop a lesson that they plan to teach. The learning community may comprise a small number of lecturers (3 -5) who teach the same or related subject content. Ideally, there should be an agreed teaching strategy to adapt. They should then define a problem to guide their work or understanding of their students, plan a lesson, and have one teacher teach the lesson while the others observe it. They then need to reflect on the lesson as a group, revise the lesson, teach the revised lesson, evaluate and reflect once again, and share the results. What is striking about LS is that it is based on a long-term, continuous improvement model. According to Moonasar and Underwood (2018), continuing professional development is an important tool for developing and strengthening the skills and knowledge of academic staff for student success.

The main purpose of the LS is to deepen insights into the problems that teachers identify in their classrooms and to propose and test possible solutions in light of these problems. This purpose is not about perfecting a particular lesson plan. Rather, it is about deepening practical insights into a problematic aspect of teaching. However, this is a continuous process in which the lesson plan functions as a specification of diagnostic and action hypotheses to be tested in the context of a particular research lesson. Through the LS, teachers learn about certain aspects of teaching that help them to teach more effectively and learning opportunities that need to be linked to the curriculum that they teach students. Consequently, this enables teachers to deepen their subject matter knowledge and to develop strategies for teaching the content (Richardson, 2009).

Lesson study is primarily used as a professional development framework in school settings or taught as a methodology module in the training of schoolteachers (Thobela & Sekao, 2023). In contrast, universities are for research, teaching, and other activities, which sets them apart from schools. To accommodate this difference, in Figure 10.5, Zeng (2023) proposes

an LS framework for collaborative teaching at the university level. In this chapter, the lesson study is compressed into four stages: ***pre-class, in-class, after-class and feedback***.

Pre-class phase: The LS group is formed with professional and administrative participants. The research group includes as many lecturers as possible who are associated with the academic field. The group members should be involved in research projects that support the lesson research. During this phase, lecturers select one lecturer who teaches the lesson and shares the lesson content, lesson plan, and instructions, as led by module short-term and long-term goals and outcomes. Following Zeng (2023) and Sekao (2023), this phase is divided into three recommended LS stages, namely, Learning, Diagnostic, and Lesson Planning.

Phase 1, Stage 1: Learning Phase

For this study, we propose that the Pre-class phase should include a learning phase, in which a group of interested lecturers, managers, and administrators first learn about the LS and the AL strategy as the pedagogical approaches that will frame the creation and execution of the lessons. The collaborative team will also need to discuss the goals and procedures that the group will follow to achieve their goals. The envisaged outcome will not be the writing of a research paper, although a report would be ideal with a view to conducting research. Zeng (2023: 355) recommends that the following questions should be asked as part of the pre-class meeting:

1. What prerequisites do students need for this course?
2. What kind of theory is important for students in this course?
3. How can the latest technology and its applications be included in the lesson?
4. How can learning abstract theory be made more interesting for students?
5. What can students expect to gain from this knowledge in the future?

Phase 1, Stage 2: Diagnostic Phase

As illustrated in Figure 10.6, Sekao (2023) recommends that participating members should complete a diagnostic analysis

of the students who they plan to teach as the first stage in an LS cycle. In this stage, teachers discuss common challenges experienced by students in the modules, possible knowledge gaps that may hinder success, and general areas of difficulty that students experience.

Phase 1: Pre-Class -- Stage 3: Collaborative Lesson Planning

As indicated in Figure 10.7, during this lesson planning stage Sekao (2023) recommends that team members brainstorm the different methods and strategies that can be employed to teach the identified topic. In this context, team members will discuss implementing AL strategies into their proposed lesson. The brainstorming session will be preceded by a discussion during the learning phase and selecting the relevant elements of the AL to employ in the proposed lesson. As part of the lesson plan, lecturers may also prepare questions that the selected lecturer may pose to students. In this phase, the university requires professional development or outcomes in the form of a research paper or the production of a report that will be shared with management (Zeng, 2023).

Phase 2: In-class Phase – Stage 4: Lesson presentation and Observation

Zeng (2023), as reflected in Figure 10.7, describes this stage as the teaching and observation phase. During this phase, the lesson will be conducted according to the lesson plan following the agreed teaching strategy, which will be an AL strategy in this context. The collaborative team partners will observe a lesson while the lecturer selected during phase one teaches the planned lesson. During the lesson, observing team members will complete the agreed observation sheet, which may later be used as collected data. As part of the observation, collaboration team members will observe the students' behaviour to determine whether they are engaging or participating as prescribed by the AL elements. It is also important to observe whether the teacher is engaging students and considering their various needs, as may have been discussed during the diagnostic stage. Observers are also welcome to take pictures of samples of the student's work. ***Figure 10.2*** illustrates what the classroom may look like in the presence of

observers in an AL-based classroom. The collected data will also help the team to understand how the lesson progressed and how students reacted to the lesson from a teacher's perspective. The head of the department or senior lecturer who leads the module will be a valuable contributor and observer during the lesson.

Phase 3: After Class: Stage 5: Debriefing and Reflection

During this phase, the lecturer who conducted the lesson gives their personal feedback on how they experienced the lesson. They will indicate how they implemented the chosen AL elements and how they experienced students' reactions. ***Figure 10.5*** shows an example of reflection after the class observation. It is important that the main teacher shares their own experiences before receiving feedback from the observing colleagues - the main teacher shares what contributed to or lack of achievement. The lesson study participants may also agree on the checklist as a framework or guide for AL elements to consider prior to the lesson.

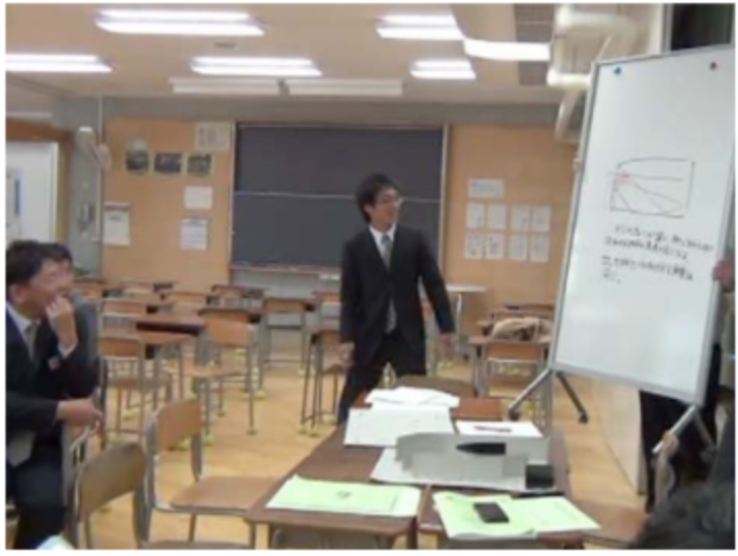


Figure 10.5: Example of a debriefing session after the class observation (Ishii, 2017)

Phase 4: Stage 6 – Feedback and Lesson Improvement

The feedback stage involves debriefing and feedback from observers on their experiences of the lesson. During this stage, the team may decide to revise the lesson, lesson plan, and/or the selected AL elements. The feedback has rich data that may analysed as part of the research. According to Zeng (2023:354), "the best lesson study considers not only the teaching methods used for a particular lesson but also teaching and learning across the entire academic course." Therefore, the collaborative team will consider all factors based on how the lesson went and decide how the lesson could be better linked to aspects of the course within the faculty. ***Figure 10.6*** depicts an example of a debriefing session. Debriefing can take various forms depending on the size of the LS group. In ***Figure 10.6,*** observers were divided into various groups and each group chose a representative to give the summary of their observation.



Figure 10.6: An example of a debriefing session (Ishii, 2017)

Thobela and Sekao (2023), as illustrated in ***Figure 10.8,*** recommends that all the ideas emanating from the post-lesson reflection be consolidated and used to improve the lesson. The lesson may be taught again by the same or a different teacher to

determine its effectiveness. The same lesson may also be taught to a different group of students.

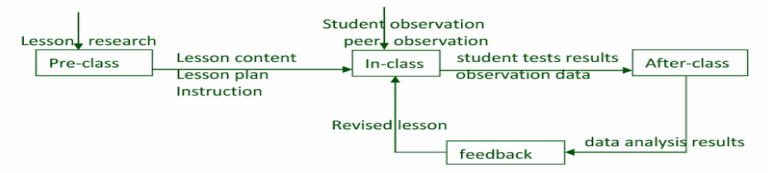


Figure 10.7: Theoretical framework of lesson study in the university (Zeng, 2023)

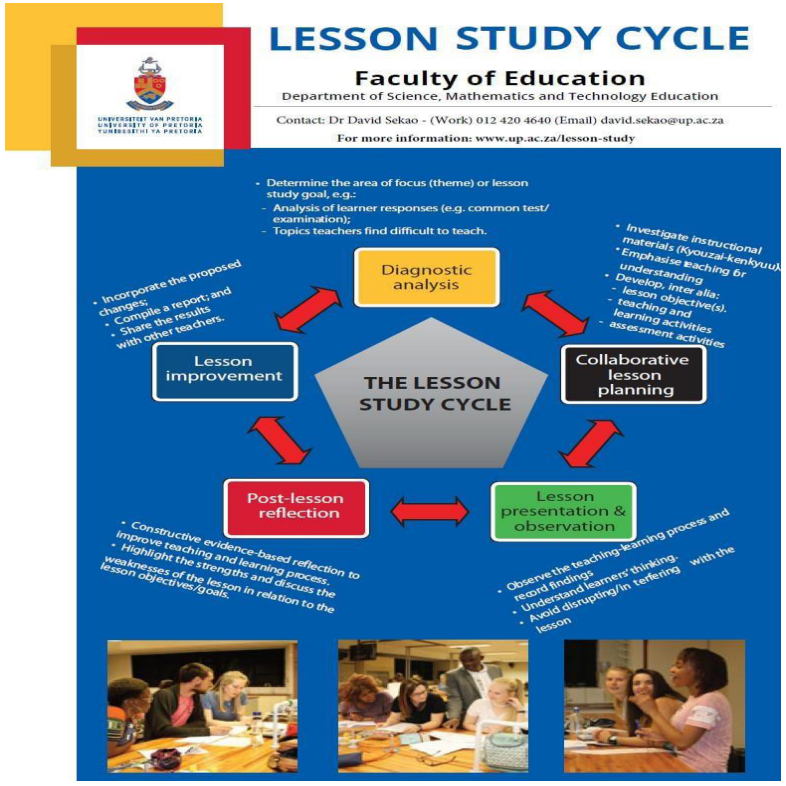


Figure 10.8: The Lesson Study Cycle (Sekao, 2023)

The Implementation of a Lesson Study Through a Selected Teaching Strategy - Active Learning Strategy

Coenders and Verhoef (2018) classify lesson study into two main components: professional development and class enactment. The professional development aspect of the LS focuses on raising awareness of various teaching strategies and enhancing pedagogical content knowledge. In the higher education context, where students face numerous challenges, AL is a relevant teaching strategy that empowers both students and lecturers. Therefore, it is essential for lecturers participating in LS to develop pedagogical knowledge of AL strategies. This enables them to integrate various AL elements into their specific subject areas.

The second component, class enactment, involves implementing the designed lesson in the classroom, using AL as the chosen pedagogical strategy. At this stage of the LS, students are observed, and the results are discussed. This leads to lesson plan revisions based on reflections and insights gained in the process.

Several key factors need to be considered when implementing LS in higher education:

Expect improvement to be continual, gradual, and incremental

Lesson study requires time; hence, lecturers should manage their expectations, understanding that not all phases will progress smoothly from the outset. Since AL consists of various elements, some may not be effective. This depends on the content covered or the background knowledge of a particular group of students.

Maintain a constant focus on student learning goals

To maintain the focus on student learning goals, lecturers should provide students with constructive feedback, help them to connect prior knowledge with new concepts, and support them in synthesising major ideas. This helps to create meaningful student learning experiences.

Focus on teaching, not teachers

The 'focus on teaching, not the teacher's principles requires lecturers to shift their mindset towards what students need to

learn. The primary goal is to ensure that effective learning occurs. Therefore, lecturers should be patient when certain AL elements do not immediately lead to the desired lesson outcomes.

The LS model can also be used as **Collaborative Lesson Research**. In this approach, lecturers collaborate to enhance student learning experiences through live lessons that address specific research questions. Collaborative Lesson Research should include the following components (Takahashi & McDougal, 2016; Lesson Study Alliance, 2020):

1. Clear research theme and purpose.
2. *Kyouza Kenkyuu* (a Japanese term for curriculum material analysis).
3. A written research proposal.
4. Live research lesson and discussion.
5. Knowledge-sharing with others.
6. Dissemination of findings.

By embracing these principles, LS fosters continuous professional development and improves teaching and learning experiences in higher education.

The Implementation of a Lesson Study Through Active Learning Strategy in a South African University Context

The National Framework for Enhancing Academics as University Teachers (DHET, 2018:2) refers:

> "Universities in South Africa play a pivotal role in giving expression to the rights and values in the country's Constitution and Bill of Rights, which include improving student access and success and developing contextually responsive curricula that promote transformative values, attitudes and actions in higher education."

Although widening access to higher education has been achieved, as reflected by increased student enrolment numbers, high dropout and low throughput rates remain challenging. Access does not translate to success and is inequitable. This situation calls for a responsive pedagogy. Universities are expected to

take transformative measures to address inequality and ensure that their teaching delivers quality education. Universities are further expected to implement activities that drive teaching in the higher education environment. Therefore, it is important to advocate for a teaching strategy that recognises students' various backgrounds. These may be hindrances to students' success. Such a responsive teaching strategy may also empower lecturers to be competent teachers in the higher education space. This chapter advocates for innovative pedagogies entailing the implementation of active learning (AL) through lesson study (LS).

The integration of LS and AL in a South African university context aligns with the National Framework for Enhancing Academics as University Teachers (DHET, 2018), which was implemented by Minister Naledi Pandor in 2018. This framework was adopted as a directive in higher education and is recognised by the CHE and the DHET. AL prioritises student-centred learning, engagement, and practical learning experiences. The AL techniques selected in this chapter include think-pair-share, classroom environment, assessment strategies, problem-based learning, and interactive lectures through technology. These AL techniques are designed to enhance student learning and, consequently, student success.

Below are the outlined principles of the National Framework for Enhancing Academics as University Teachers (DHET, 2018, 5-6):

- Good teaching is a vital contributor to student learning and success: good teaching needs to build on students' existing knowledge and experiences. It encourages respect between the students themselves and between the lecturer and the students. Lecturers need to encourage active participation in the classroom and the alignment of students' needs. This helps to enhance students' critical thinking, subject-specific skills, and overall understanding of the subject matter.
- Universities that place students at the centre of their work are characterised by a pedagogy of care and are supported by a strong social justice agenda; hence, universities need to understand their students' profiles, which change yearly. This will enable universities to comprehend the challenges that

have demanded resilience from students and, thus, strive to create welcoming rather than alienating environments.

- The work of an academic involves being a teacher and a researcher. Teaching and research are equally important and interdependent. They must be developed because teaching must be research-informed. Moreover, there is a great need to perceive rewards and incentives in terms of motivation rather than competition.
- Professional development activities for university teachers and other professionals who support teaching development must be available across the career continuum; hence, a career-long learning approach to teaching development needs to be adopted.
- The teaching role is often more fully embodied in a team than in an individual. An important enabler of good teaching involves teaching development activities that foster collegiality and openness to peer review.
- Time needs to be allocated to professional development activities. These should be considered as part of the workload.

Lesson Study as a Collaborative Professional Development Framework

Lesson study is a collaborative and research-driven framework requiring academics to work together to plan, observe, and refine lessons. It is widely used in countries such as Japan and the USA to foster the development of teachers and enhance research within universities. The implementation of LS within a South African university context, using the principles of the National Framework for Enhancing Academics as University Teachers (DHET, 2018), is outlined as follows:

- LS encourages research-informed teaching, ensuring that lesson planning is evidence-based. Lecturers can use LS to investigate the impact of the chosen pedagogical strategies and seek an understanding of students' attitudes towards the content and how they communicate their understanding of the content.
- LS promotes collaborative teaching development that fosters collegiality and peer review. Lecturers from the same faculties

or even different faculties can come together to plan a lesson that addresses common challenges. For example, at the beginning of the year, lecturers who teach Mathematics to first-year students can work together on an LS project. The LS group can choose to administer a diagnostic test to all first-year students who will be taking Mathematics. The LS group will then use the findings of the diagnostic tests to plan a lesson. The planned lesson will seek to address the knowledge gap identified during the diagnostic test. This would be a great opportunity for lecturers from the same faculty and those across faculties to collaborate and devise ways of teaching challenging concepts by applying the AL principles.

- LS provides structured professional development opportunities, addressing career-long learning needs. To be a lecturer in South Africa, one needs to be a knowledge expert in the field and have studied up to PhD level, ideally. This means that an average lecturer in a South African university does not do methodology and has therefore not been exposed to methodology, classroom management, and education psychology. Therefore, LS, as a Professional Development Framework, seeks to bridge this knowledge gap and give lecturers an opportunity to learn – from their peers – about the art of teaching.
- LS enhances student engagement and accessibility by ensuring that lesson designs are student-centred and inclusive. Therefore, they encourage resilience amongst students.

Active Learning Strategies in a South African University Context

- Think-Pair-Share: This strategy encourages students to engage and interact with one another through structured discussions. This is congruent with the framework's emphasis on the need to acknowledge and respect students' prior knowledge and life experiences in the learning space. It also creates a supportive environment to ensure that all student voices are heard and valued. Students are encouraged

to articulate their ideas and refine them through peer discussions, which fosters discipline-specific thinking.

- Classroom Environment: Creating an inclusive classroom environment will ensure that all student voices are heard. This can involve designing flexible and accessible learning spaces that can cater to students' diverse needs. Fostering collaboration amongst students can create enhanced peer learning. This can assist students in not feeling isolated during the learning process. Using technology can also create a blended learning environment, improving student engagement.
- Assessment Strategies: Teachers must create formative and summative assessments. This can provide students with opportunities to reflect on their work and grow. When designing assessments, teachers can include continuous assessments and offer timely feedback to students. It is also important for teachers to align assessments with real-world scenarios. This will ensure that students develop discipline-related skills.
- Problem-Based Learning (PBL): This strategy fosters critical thinking and problem-solving skills through real-life scenarios. In the university context, it can involve collaborative learning, where students work in teams to devise solutions. The learning process can have research elements that will ensure that it is evidence-based.
- Interactive Lectures Through Technology: Using different technologies in classrooms can enhance student participation in the learning process. This can include using learning management systems for discussions and quizzes and flipping the classroom by facilitating discussions during the lessons. This would ensure that students engage with the content before the lesson.

Institutional Support and Professional Development

For the above-mentioned strategies to be effectively implemented, universities must allocate time and resources. This would enable academics to engage in professional development, offer incentives, and reward teaching excellence and innovation.

This would also give lecturers a reason to take an interest in exploring a variety of pedagogical strategies and adopt LS as a preferred professional development framework. South African universities must also provide structured support for collaborative teaching efforts and peer reviews supported by LS. In return, these innovative pedagogies will foster a culture of teaching and research integration that ensures quality teaching and student success. Finally, adopting LS and AL strategies in South African universities ensures equity in higher education. This promotes inclusivity and pedagogical innovation that aim to address student dropout and thus ensure student success. Aligning LS - as a professional development approach - and AL - as a pedagogical strategy - with the National Framework for Enhancing Academics as University Teachers (DHET, 2018) ensures that teaching is student-centred, research-informed, and, most importantly, professionally rewarding. Through collaborative efforts, institutional support, and continuous development, these strategies can transform the South African higher learning environment.

Conclusion

The numerous changes in higher education have engendered an increasing need for both students and lecturers to develop resilience. This is to ensure both student success and the overall accomplishment of the university. In this chapter, we propose the implementation of lesson study by adopting active learning as the teaching strategy of choice. We encourage lecturers, faculty leaders, and support staff to form communities of practice.

Continuing Professional Development (CPD) is a crucial tool for maintaining staff expertise and skills, particularly when student success directly impacts both the future of students and the financial stability of the university. Lesson study is the chosen professional development framework. This is because it has been successfully implemented in leading education systems worldwide. In higher education, LS fosters a culture of collaboration between researchers and lecturers. The university environment can sometimes make lecturers feel isolated. Thus, LS provides a professional development model that

promotes collaboration and creates a supportive and engaging learning environment.

This chapter introduced AL as a strategy aimed at identifying students' needs and fostering an interactive, student-centred approach to education. The chapter also discussed the LS cycle, drawing from the frameworks of Zeng (2023) and Sekao (2023), to outline an LS model relevant to higher education. Integrating AL into LS would equip lecturers with adaptable knowledge and skills aligned with the needs of students at any given time. Various AL elements can be used interchangeably and adjusted based on agreements made in the lesson-planning phase.

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Chapter 11

Universal Access and UDL as a Framework for a Resilient University System Inclusive of Students with Disabilities

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Introduction

Resilience theories have been shaped by various disciplines with key contributions from psychology. Resilience is often theorised from an individual lens and framed as the capacity of an individual to overcome barriers and excel in the face of adversity (Den Hartigh & Hill, 2022). In the context of universities, the resilience of a student is called upon to protect or insulate a student's ongoing well-being status from stressors within the environment (Price, 2022). However, resilience is not only a personality trait but a fundamental influence shaping individuals and systems attributable to their ability to shape outcomes and guide responses. Universities have a key role to play in the interplay of the resilience of its systems and dismantling systematic barriers as a crucial factor in improving the well-being of students with disabilities. In reviewing institutional disability policies, universities seemingly rely on the presence of a Disability Unit to support students with disabilities. This approach overlooks the resilience of the broader university system, as a crucial element

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in creating a more inclusive and accessible environment for all students.

This is also evidenced by research student experiences, in that the Disability Unit serves a central role in dismantling all barriers and is the primary entity responsible for fostering inclusion (Naidoo et al., 2024; Mbuvha, 2019). It can be assumed that the services for these Units are reliant upon resources made available by institutions to support students with disabilities. The Department of Higher Education and Training (DHET)'s (2018) Strategic Policy Framework on Disability for the Post-School Education and Training System, which is aligned with the United Nations (UN) International Convention on the Rights of Persons with Disabilities (UNCRPD) (UN, 2006) and the 2030 Sustainable Development Goals (SDGs) (UN, 2015) on disability, mandates institutions to enhance the full inclusion of students with disabilities. Research indicates that despite policy provisions and the availability of Disability Units to create an inclusive and accessible environment, students with disabilities remain systematically disadvantaged. For instance, it remains difficult for students with disabilities to gain access to higher education institutions, participate in teaching and learning activities, as well as in student life activities when compared to students without disabilities (Fuller et al., 2004; Brewer et al., 2023; Ntombela, 2021; Prinsloo & Uleanya, 2022). By no means is this a reflection on the ineffectiveness of these Units but rather an indicator that this focus on the Disability Unit alone overlooks the need to review the resilience of the system to contribute to the inclusion of students with disabilities and that a whole university approach is required.

This chapter proposes universal access and Universal Design for Learning (UDL) as a key element in building a resilient university environment that fosters the full and equitable inclusion of students with disabilities. A resilience perspective aligned to universal access and design shifts the focus from merely identifying and assessing risks or vulnerabilities of institutions to emphasising proactive efforts to enhance the capabilities of our institutions to be resilient environments. This approach moves beyond a deficit-based framework, encouraging strategies that

empower individuals and systems to adapt and thrive in the face of challenges. By prioritising the strengths and potential of the university system, a resilience lens fosters a more holistic and sustainable path towards growth and well-being.

In this chapter, the focus falls on a conceptual bridge between resilience and UDL, aiming to connect the two concepts in a way that highlights their complementary roles in fostering a resilient university system inclusive of students with disabilities. This chapter adopts a conceptual methodology grounded in a critical interpretivist lens that seeks to synthesise existing concepts on resilience, disability and UDL, to develop new insights into fostering a resilient university system inclusive of students with disabilities (Gilson & Goldberg, 2015; Cropanzano, 2009). This method allows for synthesising these concepts in a way that highlights the lived experience of students with disabilities in the South African higher education context and proposes an integrated framework for actionable change to dismantle these systemic barriers and enhance systemic resilience and inclusivity.

Disability in Higher Education

The diversity of South African education society should find expression within institutions of higher education (Cross, 2004). Whilst the DHET emphasises the importance of the inclusion of students with disabilities, they remain underrepresented within higher education institutions (StatsSA, 2022a). Per DHET requirements, universities collect data on students who self-disclose as having a disability broadly within sensory (sight and hearing), physical, psychiatric, neurodevelopmental, neurological, medical, communication and unspecified. An analysis of progression ratios for students with disabilities revealed significant inequalities in the transition from secondary education to completing a bachelor's degree (StatsSA, 2022a). Students with disabilities had the lowest proportions of individuals completing an undergraduate qualification. Efforts to address these disparities and promote equitable access to education for students with disabilities across all population groups are crucial for achieving inclusive and sustainable development. Persons with disabilities aged 15 and older stand

at 22.4% of South Africa's population, yet fewer than 5% of all students with disabilities are enrolled at South African higher education institutions (DHET, 2018; Ndlovu 2024). Comparable to global trends, students with disabilities constitute one of the most excluded groups within the South African higher education milieu. It is likely because South African law does not safeguard the right to higher education.

A rights-based approach to accessing higher education establishes universities as duty bearers responsible for upholding these rights and removing barriers to ensure equitable access to education for all students. The UNCRPD (UN, 2006) is an internal legal framework that upholds the rights of persons with disabilities, with Article 24 specifically addressing the right to education and the progressive right to higher education. This aligns directly with the United Nations (UN) (2015) Sustainable Development Goals (SDGs) 4 and 10, which aim to ensure inclusive and equitable quality education for all and empower marginalised groups, including students with disabilities. South Africa's ratification of the UNCRPD and adoption of SDGs reinforces our commitment to the full inclusion of students with disabilities and to address systemic barriers faced by students with disabilities. A significant challenge for students with disabilities in accessing and participating in higher education is often not the impairment itself but rather a combination of social, cultural, and attitudinal barriers deeply entrenched within this system. Ntombela (2022) asserts that students with disabilities remain marginalised, as the interventions addressing their needs are treated as separate initiatives rather than being integrated into the institution's broader inclusion priorities.

South Africa's higher education system inherited deeply entrenched historical inequalities, resulting in disparities in access to quality education and opportunities. These inequalities persist, impacting curriculum responsiveness, as students from marginalised populations often encounter limited resources, outdated curricula, and insufficient support (Duma et al., 2023). Gore (2021) also addresses the persistent inequality that exists in South African higher education, particularly in the context of students with disabilities. Lecturers often encounter significant

challenges when it comes to supporting students with disabilities, which are shaped by internal and external factors (Karisa et al., 2024). Internally, many lecturers may present with implicit biases about the capabilities of students with disabilities. Additionally, lecturers may lack the necessary knowledge and/or skills to support students with disabilities in their courses. They may struggle to design accessible academic material suitable for all categories of disabilities to participate in academic practice (Ndlovu, 2022) actively. For many students, the challenges with formative and summative assessments are social and environmental, including assessment design (Tai et al., 2022). Externally, lecturers' ability to support students with disabilities can extend beyond policy and can include inadequate resources or exclusionary university administration processes such as registration, student finance and other processes.

Another way in which students with disabilities are excluded is through student life activities that are predominantly ableist in nature, ranging from student accommodation facilities, sport and other extracurricular activities. Many students in South African universities, including students with disabilities, are disadvantaged through the intersectionality of factors, including inadequate financial aid for education, gender inequality, and unconducive housing (Gore, 2021; Gore & Botha, 2022) and racial discrimination.

This implies that students with disabilities, who are constrained by the structural inequalities affecting all other students, are further marginalised. This is often referred to as the triple burden of disability. This further suggests that students with disabilities, who are constrained by the structural disadvantages, are further disadvantaged through the intersectionality of factors including physical barriers, inadequately resourced disability units, teaching and learning barriers, and paternalistic forms of provision. The exclusion of students with disabilities will continue to be reinforced or even increased unless higher education institutions dismantle these systemic barriers, revealing a lack of resilience and inclusivity.

Resilience Theory

Basic definitions of resilience emphasise the capacity of an individual to successfully return to their original state in the face of disruption or change (Quintana et al., 2021). Within the context of this chapter, resilience is not merely defined as an individual's responsiveness, but the development of strategies to foster resilience within systems and institutional contexts. Within disability studies, there have been calls for adopting innovative and transformative approaches towards including students with disabilities in higher education institutions (Makwembere, 2002; Fernández-Batanero et al., 2022). This presents a valuable opportunity to reframe our approach, explore innovative methods, and critically examine the frameworks and practices that shape our understanding and support of students with disabilities. By integrating resilience theory with universal access principles, this chapter seeks to create a conceptual bridge between a holistic framework that outlines equitable support for students with disabilities and the systemic resilience of the university. This approach focuses on creating adaptable, sustainable structures that enable the entire institution to effectively support diverse student needs, ensuring long-term well-being and success for all.

Resilience theory is distinguished for its scalability and integrative purposes can be applied to individuals, systems and processes. Resilience theory, when applied to systems, refers to the capacity of a dynamic system to adapt successfully through multisystem processes to challenges that threaten system function, survival, or development (Masten et al., 2021). It is important to note that definitions and models of resilience emphasise a growing need to integrate knowledge about resilience to address multisystem threats; in this instance, institutionalised ableism as experienced by students with disabilities. Masten et al. (2021) argue that resilience theory has applicability across disciplines. Resilience is dynamic and constantly in flux because the systems, processes and contexts constantly change through many interactions. The full inclusion of students with disabilities is threatened by varying factors presented, which are multisystemic in nature and are deeply rooted in institutionalised ableism. As a result, our institutions fail to provide resilient

environments that adequately support students with disabilities. This demands mobilisation and coordination of multiple adaptive systems for an adequate response. Integrating resilience theory and universal access and design may be critical to overcoming multisystemic challenges and fostering resilient institutions.

Panter-Brick and Leckman (2013) argue that a resilient environment shifts the focus from asking limited questions about the functional deficits of an individual to asking more complex questions regarding well-being and the provision of adequate resources. When applied to the higher education environment, a resilience perspective moves the focus away from individual deficits, which are often associated with the medical model of disability. Instead, it emphasises sustainable resource allocation that supports the well-being of all students. Moreover, this shift aligns with the principles of universal access and UDL, which prioritise inclusive strategies and flexible learning environments that accommodate the diverse needs of all students, ensuring equitable access to education and promoting resilience across the entire student body.

Ungar (2018) highlights the critical role of promoting connectivity, encouraging experimentation and learning, and fostering diversity through inclusivity in ensuring a resilient system. These principles highlight the importance of creating adaptive, flexible environments that support all individuals, including students with disabilities. When considered in the education setting, these principles align closely with UDL, which advocates for accessible, inclusive, and adaptable learning environments that can respond to the diverse needs of all students. Therefore, it is not enough to guarantee access, but rather it is necessary to establish policies and plans to ensure that all students, including those with disabilities, remain and succeed in university.

Universal Access and UDL as an Approach to Building a Resilient University

Universal access refers to a university that is accessible to, usable for, and inclusive of everyone by employing principles of universal design (Burgstahler, 2022). The concept of universal access,

connected with UDL, provides a framework for creating equitable, resilient universities. Universal access and UDL in higher education are rooted in the belief that education is a fundamental human right and should be accessible to all, regardless of ability. Higher education institutions have many opportunities and responsibilities to promote a universally accessible system without the need to adapt (Ramaahlo, 2021). Universities that adopt principles to ensure universal access not only promote equity and inclusion but also enhance institutional resilience by fostering adaptability, diversity, and long-term sustainability in the face of societal and educational challenges.

When reviewing institutional disability policies, many universities continue to approach the inclusion of students with disabilities with a medical lens. A medical understanding of disability places a burden on a student to disclose a disability by submitting medical and/or psychological documentation and thereafter receiving reasonable accommodations. This approach perpetuates inequalities and fails to address institutionalised ableism. UDL offers a proactive solution to the challenges of institutionalised ableism. The Center for Applied Special Technology (CAST) defines UDL as an educational design approach incorporating flexibility in teaching methodologies, learning, assessment, action and expression (CAST, 2018). UDL provides an engaging, accessible, and expressive learning environment (Evmenova, 2018), thereby reducing systematic barriers and promoting a resilient university.

With universities increasingly offering online and blended learning courses, Ndeya-Ndereya (2013) proposes that the implementation of UDL and embedding student support in online course design humanises the online learning environment. Gilson and Goldberg (2015) state that a resilient university system can anticipate and respond to the needs of its students and staff, ensuring equity in education.

The implementation of UDL is governed by three principles and supported by a set of nine guidelines and three checkpoints (CAST, 2024). The first principle of UDL, engagement, asserts that students differ in how they perceive and understand the information presented to them. This principle optimises

embedding authentic choices for all students that align with curriculum goals; in doing so, it increases a student's connection to their learning and promotes agency. Key to the principle of engagement is addressing potential biases, threats, and distractions in the learning environment, both overt and subtle. This is essential to dismantling internal and external factors, such as internal biases and systemic discrimination, that continue to perpetuate the exclusion of students with disabilities. An accessible university environment requires a resilient system that addresses biases, which can be detrimental to the academic environment for all students.

Within the psycho-social environment of a university, for instance, student counselling services, library services, and student administration, universities can enhance the UDL principle of engagement by creating culturally responsive environments and offering multiple forms of engagement, such as hybrid services. Integrating the principle and checkpoints of engagement shifts these services from reactive to proactive, empowering students in their university journey and minimising stressors that can hinder their well-being. Understanding the perspectives of others and integrating this approach into teaching and learning activities and support services is at the core of a resilient university system.

The second principle of UDL, representation, recognises that multiple means of representation will be optimal for all students and that providing options for representation is essential (CAST, 2024). Implementation of representation recognises that there is not one means of representation that will be optimal for every student within the university. Therefore, this principle encourages opportunities to customise information display by utilising accessible materials with adjustable settings. This ensures that students can modify content based on their preferences, allowing for greater comprehension and engagement. The principle of representation addresses biases in language and symbols and ensures that diverse linguistic backgrounds are respected. This is key to South African universities, which are multilingual in nature. The South African Constitution (RSA, 1997) recognises 12 official languages, including South African Sign

Language (SASL). Many universities, through their institutional language policies, aim to accommodate, pursue and provide for a functional, free and fair multilingual environment across all the components of the university (Balfour, 2007). However, English continues to dominate regardless of its equal official status with other languages (Mabasa & Ngcobo, 2024). To prevent language policies from being symbolic in their implementation in teaching and learning programmes, the implementation of principal representation allows universities to celebrate the multilingual needs and linguistic diversity of the student body, thereby fostering pride and respect amongst peers. Furthermore, a resilient university would offer support services and co-curricular activities that are informed by varying historical perspectives and cultural practices from various linguistic backgrounds. Authentic representation of diverse perspectives and identities further enriches the university experience by fostering inclusivity and critical thinking.

A recent study on financial aid for students with disabilities within the South African higher education system found that while a specific funding model for disability was available, it was inadequate and resulted in continued indebtedness and exclusion from the system (Ndlovu & Woldegiorgis, 2023). To overcome these systematic barriers of financial exclusion, students might rely on accessing student loans to cover tuition and student accommodation fees. The UDL principle of representation in student financial services, for instance, would place responsibility on the university to ensure that complex financial terms and symbols are clarified and explained, particularly for first-generation students, to understand their financial responsibilities without confusion. Multilingual resources and varying visual representations of funding options can make financial literacy more accessible for all students.

The principle of representation**,** combined with the guideline of maximising transfer and generalisation (CAST, 2024), is crucial in strengthening university systems and fostering resilience amongst students, staff, and institutional structures. Maximising transfer and generalisation enable all students to apply their learning across different and new contexts.

This implies that universities promote interdisciplinary learning, work-integrated learning and community engagement initiatives that link theory and practice. A resilient university system equips graduates with transferable skills that would prepare them for the demands of the evolving world of work.

The third UDL principle, action and expression, emphasises the importance of providing diverse ways for students to demonstrate their knowledge and skills (CAST, 2024). In a higher education context, this principle recognises that students have varying abilities, and thereby, the university system is intentionally designed to provide a seamless interface with common assistive and accessible technologies through which any student, including students with disabilities, can navigate and express what they have learnt. Providing students with diverse ways to demonstrate their knowledge ultimately empowers online students to be self-directed in their learning. While engaging in the learning process is critical, ensuring that formative and summative assessment methods are inclusive and accessible should occur using multiple means of action expression and choice when possible (Novak, 2016). The principle of action and expression, combined with the guidelines of challenging exclusionary practices, seeks to dismantle deep-seated biases and systems of discrimination that have led to the exclusion of historically marginalised students. Through the guiding principle of action and expression, UDL encourages designing a resilient university system that can accommodate the increasing diversity in its registration and orientation process.

The university application and registration process can be exclusionary, especially for students with disabilities. Applying the principles of action and expression implies that universities should offer multiple ways to complete the registration process and through varying accessible platforms (e.g. assisted registration online and in-person). Similarly, the university orientation process for first-time undergraduate and postgraduate students can offer interactive or gamified sessions, peer-led discussions, and virtual tours. Providing multiple means of action and expression into essential university systems, such as orientation, dismantles systemic barriers embedded in these

processes. Consequently, students are provided with culturally responsive resources, thereby adequately equipping them for university. This approach not only improves student success and retention but also fosters inclusive, equitable, and sustainable university processes.

This chapter offers a conceptual contribution by synthesising interrelated concepts on resilience, disability and UDL within the context of South African higher education. The integration of UDL shifts the narrative of student resilience to institutional resilience. In doing so, this chapter moves beyond the traditional deficit narratives that locate the problem within the individual and reframe resilience as a systemic and collective capacity. Resilience universities are those that recognise student diversity and proactively reduce structural barriers to ensure universal access. UDL's three principles of representation, action, and expression challenge exclusionary practices in these environments and position universal access as a cornerstone of systemic resilience. This chapter emphasises that students with disabilities are not inherently less resilient. Rather, the inflexibility of university systems, ranging from inaccessible pedagogy to limited psychosocial support and inadequate financial aid structures, often impedes a student's ability to succeed academically and psychosocially. In this way, the resilience of students is deeply tied to the resilience of the institution itself. By re-designing academic and support environments (including campus life) that ensure equitable access and participation, students are more likely to succeed even in the face of adversity.

As a way forward, it seems clear that new approaches to institutional resilience are necessary. By re-designing academic and support environments (including campus life) that ensure equitable access and participation, students are more likely to succeed even in the face of adversity. Recommendations for fostering institutional resilience across academic and support services at the level of policy and praxis for actionable change:

- Universities should adopt an intersectional lens when developing new policies or reviewing existing policies. This approach necessitates the inclusion of policy provisions that recognise the diverse lived experiences of students, especially

those at the intersections of disability, race and gender. Furthermore, policies and the implementation thereof should reframe resilience as systemic. By shifting the focus on a student's ability to "cope", to creating enabling environments whereby inclusion is built into the structure of academic and support environments from the outset.

- Institutionalise UDL across academic and support services by embedding the UDL principles in curriculum design, professional support services, and campus life to ensure that all students can equitably participate and succeed.

All staff should be capacitated to implement UDL principles within their respective domains, which will ultimately affirm the capacity of every student to succeed. More importantly, this process should ensure representation of the student voice in the decision-making process.

Conclusion

The resilience of universities entails the consideration of disability at all levels (access, participation and throughput) of the creation of innovative products and services for all students. It is imperative to create structures that learn from students' lived experiences to bring to light exclusionary practices – as well as to address them. By implementing these UDL strategies, universities can create more equitable academic environments that accommodate diverse student needs. Implementing universal access and design as an approach towards building a resilient university system can potentially transform South African universities.

This chapter sought to establish the conceptual case for treating university systems, rather than only individual students, as the proper unit of resilience-building in relation to disability. That said, further research could usefully strengthen this argument in three ways: through dedicated South African empirical work, surveys, interviews, or institutional case studies, that tests the claims made here directly rather than by theoretical extension; through closer engagement with the most recent scholarship on inclusive higher education, particularly work published since 2023; and through a more explicit theorisation

of how accessibility, inclusion, and resilience relate to one another, for instance, distinguishing accessibility as the removal of structural barriers to participation, inclusion as the ongoing institutional practice of ensuring meaningful engagement once access is achieved, and resilience as the adaptive capacity these first two conditions make possible rather than guarantee outright.

The interplay of resilience-building and dismantling systematic barriers is a crucial factor in improving the well-being of students with disabilities. By applying the principles of engagement, representation, and action and expression, universities can remove barriers, promote equity, and foster adaptability, diversity, and social cohesion. As higher education continues to evolve, UDL will play a critical role in ensuring that all students, including those with disabilities, have the opportunity to succeed and contribute to a more resilient society.

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Chapter 12

A Three-Peat in Practice: Lessons in Academic Resilience, SoTL, and Quality from Lecturers, Students, and Support Staff in Engineering Education

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Setting the Scene: Academic Resilience, SoTL, and Quality in South African Engineering Education

South African higher education, particularly within demanding fields like engineering, operates within a complex landscape marked by systemic challenges and historical inequities (Mapaling, 2023; Pitso, 2013). Successfully navigating this environment requires students to possess significant academic resilience - commonly understood as overcoming adversity, managing stress, and persisting towards educational goals (Martin & Marsh, 2006). Resilience is increasingly recognised not just as a personal trait but as a crucial learning disposition and desirable graduate attribute for engineers, linked to academic persistence, coping with challenges (Wint & Direito, 2024, 2026), and future professional success (Gesun et al., 2021; Harvey et al., 1994). It involves factors like self-efficacy, a sense of belonging (Buckley et al., 2023), and effective self-regulation

(Concannon et al., 2019), which enable students to adapt and succeed despite potential setbacks (Anthony et al., 2016). This chapter delves into the critical issue of academic resilience within a specific South African Bachelor of Engineering Technology (BEng Tech) programme at one comprehensive South African university, adopting a Scholarship of Teaching and Learning (SoTL) perspective (Boyer, 1990) combined with a lens focused on quality assurance (QA), and monitoring and evaluation (M&E) (Kayyali, 2024). It posits that understanding and effectively fostering resilience necessitates insights drawn from multiple key stakeholders within the educational ecosystem.

The chapter employs a "three-peat" analogy to frame this multi-perspective approach. In sports, a "three-peat" signifies the remarkable achievement of winning three consecutive championships, demanding sustained excellence and coordinated contributions from diverse team members. Similarly, achieving a comprehensive and actionable understanding of academic resilience within this educational context requires gaining insights from *three* essential stakeholder groups - our metaphorical "championship team": the engineering lecturers who design and deliver the curriculum (Winkens & Leicht-Scholten, 2023), the undergraduate engineering students who navigate its challenges (Huerta et al., 2021; Hunsu et al., 2021), and the diverse support staff who provide crucial academic, psychosocial, and administrative assistance. Therefore, this chapter presents a "three-peat in practice" by analysing and integrating the distinct yet interconnected lessons learned from these vital sample groups.

The rationale for this approach stems from the understanding that fostering resilience is not solely the responsibility of one party but emerges from the interplay between pedagogical practices, institutional support structures (often requiring a holistic approach, Mapaling, 2024b), quality processes guided by relevant standards (CHE, 2014a; Kapp & van Wyk, 2018), and students' agency and experiences. Addressing students' obstacles requires a holistic view informed by those directly involved. Therefore, the primary objective is to explore how teaching strategies, support systems (recognised as

critical in mitigating stress and enhancing success), and quality improvement processes within this specific South African engineering education context can be synergistically aligned to cultivate student resilience, guided by the principles of SoTL. By weaving together the "three-peat" of stakeholder perspectives, this chapter aims to bridge the gap between resilience research, practical educational strategies informed by SoTL, and quality enhancement practices, contributing to the broader discourse on educational equity and success, particularly pertinent in the South African context where student dropout remains a concern.

Drawing upon the rich, interwoven narratives and lessons gleaned from engineering lecturers, students, and support staff regarding student preparedness, pedagogical adaptations, holistic support needs, motivation, coping strategies, and systemic challenges, this chapter seeks to address the following central research question:

> How can the distinct yet complementary insights from engineering lecturers, students, and support staff inform the enhancement of teaching practices, support structures, and quality processes through an SoTL lens to more effectively foster academic resilience within the South African engineering education context?

Conceptualising Academic Resilience in Engineering Education

Academic resilience refers to the capacity of students to navigate and overcome educational challenges while maintaining or achieving academic success, even in the face of adversity (Martin & Marsh, 2006; Morales, 2008). Within the context of engineering education, this concept assumes particular urgency because of persistently high dropout rates, which signal the need for pedagogical and institutional interventions tailored to the unique demands of the discipline. Mapaling (2023) argues that understanding academic resilience in this field is essential, particularly within South Africa, where socio-historical legacies and cultural dynamics profoundly shape resilience.

Multiple theoretical frameworks have contributed to the understanding of academic resilience. Rutter (1979) emphasises the role of protective factors in mitigating the adverse effects of risk on developmental outcomes. Similarly, Werner and Smith (1982) identify individual attributes and environmental supports as foundational to resilient functioning. Garmezy (1991) emphasises core protective elements such as self-esteem and social networks, while Luthar and Cicchetti (2000) highlight the interplay between competence, confidence, and relational connectedness. Masten's (2001) notion of resilience as "ordinary magic" highlights the significance of everyday adaptive systems and routine environmental supports in fostering resilience. Expanding on these perspectives, Ungar (2011) introduces a social-ecological framework that conceptualises resilience as the product of dynamic interactions between individuals and their surrounding social and cultural contexts.

Of particular relevance to the South African higher education landscape is Ebersöhn's Flocking Theory (Ebersöhn, 2019), which provides a culturally responsive lens for interpreting resilience (Mapaling, 2023). Grounded in indigenous psychological principles, this theory emphasises collective resilience, wherein students, educators (lecturers), and communities collaboratively mobilise resources and strategies to navigate systemic adversity (Ebersöhn, 2019). Rather than viewing resilience as an individualised psychological trait, Flocking Theory posits that resilience is co-constructed through social relationships, institutional frameworks, and culturally embedded practices (Mapaling, 2023).

These theoretical perspectives offer a robust foundation for exploring how resilience may be cultivated through intentional pedagogical strategies and institution-wide support mechanisms. In particular, they emphasise the importance of designing educational environments responsive to students' lived realities, attentive to the broader social conditions shaping learning, and capable of sustaining long-term academic engagement and success. With the SoTL, these insights are invaluable for developing resilience-informed teaching practices and embedding them with ongoing quality assurance processes.

Quality Assurance, Monitoring, and Evaluation in Engineering Education

Quality assurance and systematic monitoring and evaluation are fundamental to promoting effective teaching and learning in higher education (Harvey, 2024). In South Africa, these processes aim to uphold academic standards and are central to advancing transformation and equity. The Council on Higher Education (CHE) has developed comprehensive quality assurance frameworks that respond to the historical and structural inequalities embedded in the higher education system (CHE, 2014a; Grayson, 2014). The CHE's Quality Enhancement Project (QEP) is central to these efforts, which promote continuous institutional improvement through reflective practice, data-driven decision-making, and inclusive stakeholder engagement (CHE, 2014b). Such mechanisms are particularly critical in addressing persistent challenges such as resource constraints, high student dropout, and unequal access to educational opportunities.

With engineering education specifically, the Engineering Council of South Africa (ECSA) plays a key role in ensuring academic and professional quality. As the statutory body responsible for regulating the engineering profession, ECSA sets educational standards aligned with global benchmarks for professional competency (ECSA, 2025). It accredits engineering programmes offered by higher education institutions, ensuring that they meet the academic requirements for professional registration (ECSA, 2025; Ngoma, 2024). The accreditation process is comprehensive, encompassing evaluations of programme design, alignment with graduate attributes, pedagogical quality, resource provision, and long-term sustainability (ECSA, 2025). Through this framework, ECSA ensures that graduates are academically qualified and professionally prepared to contribute meaningfully to the engineering sector (Sibisi et al., 2025).

Complementing these efforts is the South African Qualifications Authority (SAQA), which oversees developing and implementing the National Qualifications Framework (NQF). The NQF provides a structured framework for recognising learning achievements across various levels and types of education

and training (Matope et al., 2024; RSA, 2008; SAQA, 2025). A significant recent development guided by this framework, particularly impacting the engineering education landscape discussed in this study, was the national transition from the older National Diploma (NDip) qualifications to the new BEng Tech degree around 2017, aligned with the Higher Education Qualifications Sub-Framework (HEQSF) (CHE, 2022). This strategic shift, initiated by the Department of Higher Education and Training (DHET), required adaptation by regulatory bodies like ECSA and institutions offering engineering programmes. Within this context, SAQA's role remains crucial in ensuring that qualifications such as the BEng Tech are credible, relevant, aligned with national development priorities, and reinforcing the broader QA ecosystem within which engineering education operates (SAQA, 2025).

The South African Society for Engineering Education (SASEE) further enriches this landscape by focusing on pedagogical innovation and responsiveness within engineering disciplines (SASEE, 2025). SASEE advocates for inclusive and adaptive teaching practices that address the diverse needs of the student population, particularly in contexts marked by systemic inequality (SASEE, 2025). By collaborating with bodies such as ECSA and SAQA, SASEE facilitates the translation of formal quality assurance mechanisms into practical teaching strategies, thereby enhancing the pedagogical effectiveness of engineering programmes.

Crucially, integrating QA mechanisms with resilience-building initiatives is vital for improving student outcomes, particularly in disciplines as demanding as engineering (Sibisi et al., 2025). Monitoring systems that assess the effectiveness of teaching strategies in promoting student success generate critical insights for ongoing enhancement. For example, targeted interventions such as structured academic support modules address foundational gaps in knowledge and skills and contribute to the development of students' academic resilience. In this way, quality assurance processes can be harnessed as regulatory instruments and catalysts for cultivating adaptive, equitable, and student-centred learning environments.

Challenges and Interventions in Engineering Education: Implications for Academic Resilience

Engineering education in South Africa is characterised by a range of structural and pedagogical challenges that significantly impact student success and the development of academic resilience (Case, 2006; Deters et al., 2024; Mapaling, 2023; Mapaling et al., 2024a; Khumalo et al., 2024). A critical issue is the persistently high dropout rate amongst engineering students, which is often linked to inadequate academic preparation at the secondary school level, particularly in mathematics and science (CHE, 2013; Mapaling et al., 2024a). Many students entering engineering programmes have attended under-resourced schools with limited access to advanced STEM (Science, Technology, Engineering, and Mathematics) coursework and qualified teachers (Fredricks et al., 2024; Ntsanwisi, 2024). This results in substantial knowledge gaps that undermine students' ability to engage with the rigorous conceptual and technical demands of engineering curricula.

Another pressing concern is the misalignment between traditional engineering curricula and students' diverse academic and socio-cultural backgrounds. Pedagogical approaches remain rooted in Eurocentric paradigms that do not adequately consider the varied levels of academic preparedness or the lived realities of South African students (Mapaling et al., 2024b; Selelo & Manamela, 2024). Furthermore, Mapaling et al. (2024a) contend that addressing this disconnect requires adopting inclusive teaching practices responsive to the country's socioeconomic and educational inequalities. Tailoring pedagogical strategies to students' contexts improves academic outcomes and contributes to building resilience by fostering a sense of belonging and academic self-efficacy (Mapaling, 2023; Selelo & Manamela, 2024).

Resource constraints further exacerbate these challenges. Many institutions of higher learning lack sufficient infrastructure, including access to up-to-date laboratory facilities, tutorial support systems, and ongoing professional development opportunities for academic staff (Sonn et al., 2021). These limitations hinder the implementation of innovative and supportive teaching practices and perpetuate systemic inequalities

that disproportionately affect historically marginalised students (Rana, 2024). The absence of robust support mechanisms impedes efforts to cultivate the adaptive capacities supporting academic resilience.

Nevertheless, there have been promising interventions aimed at mitigating these challenges and fostering resilience amongst engineering students. One such initiative is the Student Success Reflection (SSR) Module, introduced at selected South African universities (Versfeld, 2024; Versfeld et al., 2024). This programme combines academic skills development - such as calculus support - with psychosocial interventions that help students to manage academic stress and build confidence (Versfeld, 2024; Versfeld et al., 2024). The SSR Module exemplifies how structured, contextually grounded support systems can enhance both academic performance and students' ability to persist through adversity (Versfeld et al., 2024). These targeted interventions highlight the importance of integrating pedagogical support with resilience-building strategies to improve retention and success in engineering education (Versfeld & Mapaling, 2024; Versfeld et al., 2024).

SoTL as a Framework for Pedagogical Innovation and Quality Enhancement

SoTL offers a robust framework for integrating research-informed, reflective, and contextually responsive pedagogical practices into higher education (Illingworth, 2025). SoTL promotes a systematic inquiry into teaching and learning processes at its core, encouraging educators to reflect critically and base their instructional strategies on empirical evidence (Illingworth, 2025; Vorster, 2020). In the South African context, marked by profound socio-economic disparities and historical inequities, SoTL serves as a particularly relevant approach for reimagining teaching practices that are both inclusive and transformative (Vorster, 2020).

Central to SoTL is the commitment to inclusive pedagogy. This entails the creation of learning environments that recognise and respond to students' cultural, linguistic, and educational diversity (Makinde, 2025). Inclusive teaching practices emphasise

the importance of acknowledging students' prior knowledge, lived experiences, and learning needs (Makinde, 2025). For instance, incorporating indigenous knowledge systems into engineering curricula enhances epistemic diversity and fosters student engagement by making disciplinary content more accessible and culturally meaningful (CHE, 2014a). Such pedagogical inclusivity is essential for improving student retention and promoting academic resilience, particularly amongst those from historically disadvantaged backgrounds (Makinde, 2025; Mapaling, 2023).

In addition to its pedagogical dimensions, SoTL aligns closely with institutional QA frameworks. It promotes a culture of continuous improvement through systematically monitoring and evaluating teaching practices (CHE, 2014a). By linking pedagogical innovation with QA processes, SoTL ensures that teaching strategies are theoretically sound and subject to evidence-based scrutiny and iterative refinement (CHE, 2014a; Makinde, 2025). This alignment strengthens the sustainability and scalability of educational interventions, thereby enhancing their long-term impact on student success.

Moreover, SoTL emphasises the importance of ongoing professional development for academic staff. Professional learning initiatives grounded in SoTL principles equip educators with the skills and tools to support diverse students effectively (Makinde, 2025). Such programmes are instrumental in fostering pedagogical agility, enabling lecturers to respond proactively to the evolving needs of their students and the broader educational landscape.

Lastly, SoTL provides a critical nexus between teaching excellence, equity-oriented pedagogy, and institutional accountability. Its application within engineering education in South Africa offers a pathway towards more resilient, adaptive, and student-centred learning environments.

Where Three Pillars Collide: The Intersection of Academic Resilience, SoTL, and Quality Enhancement

The convergence of academic resilience, SoTL, and QA frameworks offers a powerful, multidimensional approach to

enhancing student success in South African higher education. While each element serves a distinct function, their integration creates a synergistic effect that supports students' academic and personal development, particularly in contexts marked by systemic inequality and educational disadvantage.

Resilience theory, articulated in Ungar's socio-ecological model (2011), emphasises the dynamic interaction between individuals and their environments in overcoming adversity. In the context of higher education, this perspective highlights the importance of institutional structures, such as supportive teaching practices, mentoring systems, and peer networks, in enabling students to persist and succeed despite socio-economic and academic barriers. Many engineering students enter university with foundational gaps and limited access to resources, and they particularly benefit from resilience-building initiatives that enhance their coping mechanisms, self-efficacy, and engagement.

SoTL provides the pedagogical framework through which these insights can be operationalised. As a research-informed and reflective practice, SoTL encourages educators to design, implement, and evaluate teaching strategies that respond to students' diverse needs and promote inclusive learning (Mapaling & Plaatjes, 2019). Through SoTL, resilience becomes more than a psychological trait; it is embedded within the curriculum, teaching methods, and learning environments. For example, integrating collaborative learning, contextualised content, and culturally relevant pedagogies within engineering programmes can enhance students' sense of belonging and academic confidence.

Quality assurance mechanisms, in turn, ensure that these resilience-informed pedagogical innovations are rigorously monitored, evaluated, and aligned with institutional and national educational goals. QA processes such as curriculum review, programme accreditation, and the use of performance indicators provide structured opportunities to assess the impact of teaching interventions. For example, monitoring the effectiveness of structured modules to address foundational gaps in mathematics or calculus allows institutions to make data-driven improvements. Likewise, QA-driven professional development

initiatives can equip educators with the necessary tools to support student resilience, adapt teaching strategies, and engage in ongoing reflective practice.

Importantly, this integrated model addresses student success in a narrow academic sense and promotes broader educational transformation. By embedding resilience within pedagogical practice and institutional processes, higher education institutions can move towards more equitable and inclusive models of teaching and learning. This approach is particularly urgent in the South African context, where historical legacies of exclusion continue to shape educational outcomes.

Integrating academic resilience, SoTL principles, and QA frameworks offer a holistic strategy for cultivating adaptive, student-centred learning environments. It enables institutions to respond meaningfully to complex challenges while fostering both excellence and equity in engineering education and beyond.

Methodological Considerations

This chapter draws on a larger mixed-methods case study in engineering education (Mapaling, 2023), previously disseminated in various scholarly outputs (Mapaling, 2024a; 2024b; Mapaling et al., 2021, 2022, 2024a, 2024b; Mapaling & Wint, 2024). However, the lessons explored here, focused on academic resilience, SoTL, and QA, have not been included in earlier publications. Using SoTL and QA as conceptual frameworks also marks a novel contribution.

A total of 13 engineering students, six lecturers, and six support staff were interviewed in the qualitative component of the broader study. For this chapter, six participants from each sample group were purposively selected based on thematic richness and alignment with the chapter's aims. The engineering lecturers selected were experienced academics who had taught within the previous NDip and the current BEng Tech programmes, providing valuable comparative insights into curriculum changes and student cohorts. The support staff participants represented diverse roles crucial to the student experience, including academic advising, learning and academic development, student counselling, disability unit services, and financial and administrative support within the faculty and broader

university context, offering multifaceted perspectives on student needs and institutional responses. The engineering students selected represented various entry pathways and demographic backgrounds within the BEng Tech cohort, drawn from industrial, civil, electrical, marine, and mechanical engineering disciplines. Given the intersecting roles and overlapping lessons across sample groups, pseudonyms were used to maintain anonymity while reflecting each group's conceptual contribution: names starting with "A" (academic resilience) for students, "S" (SoTL) for lecturers, and "Q" (quality assurance) for support staff. Names were drawn to maintain contextual authenticity within South Africa's diverse linguistic and cultural communities.

Ethical clearance for the study was obtained from the faculty and institutional ethics committees at Nelson Mandela University (ethics reference number: H20-EDU-ERE-026) before commencement. Relevant gatekeepers approved access, and all participants provided electronic informed consent. Participants were also informed of the availability of psychological support should interviews evoke emotional distress. To uphold ethical standards, confidentiality was strictly maintained, and identifying details were anonymised.

Thematic analysis, guided by Braun and Clarke's (2006, 2020) six-phase framework, generated themes across the dataset. An independent co-coder, a research psychologist registered with the Health Professions Council of South Africa (HPCSA), was involved to enhance trustworthiness. Intercoder discussions helped refine emergent themes. Additional strategies to support credibility included member checking, a clear audit trail, and ongoing reflexivity to address researcher bias. Together, these practices supported the trustworthiness criteria of credibility, dependability, transferability, and confirmability (Braun & Clarke, 2021; Nowell et al., 2017).

A Three-Peat Analysis: Lessons from Three Key Stakeholders

This section presents and discusses the core findings (peats) derived from the thematic analysis of semi-structured interviews conducted with three key stakeholder (sample) groups within

a South African BEng Tech programme: engineering lecturers, undergraduate engineering students, and diverse support staff. By integrating these distinct yet interconnected perspectives, the following discussion explores the crucial lessons learned regarding cultivating academic resilience, practical implications for pedagogical approaches within a SoTL framework, and salient QA, monitoring, and evaluation considerations. Each finding delves into the unique experiences and insights offered by one stakeholder group, collectively contributing to a richer understanding of the factors enabling student success amidst the complex realities of South African engineering education.

Peat 1: Navigating the Shift – Perceived Changes in Student Preparedness, Engagement, and Learning Approaches

A consistent lesson emerging from the interviews with engineering lecturers concerns their perceptions of the shifting student profile and associated academic preparedness challenges, particularly when comparing BEng Tech students to previous NDip cohorts or earlier intakes. This perceived shift is often discussed in relation to the transition between qualifications, changes in admission criteria, evolving schooling backgrounds, and the disruptive impact of the coronavirus disease 2019 (COVID-19) pandemic (Phiriepa et al., 2023). While the BEng Tech implemented higher admission requirements, a quality assurance measure intended to attract academically stronger students, lecturers reported complex and mixed observations regarding the outcome. These included noting diversity in student capabilities, challenges in adaptation speed and independent thinking, significant variations in practical skills often linked to socio-economic backgrounds, and concerns about the impact of curriculum changes such as removing mandatory work integrated learning (WIL). Beyond these general observations on calibre and practical skills, lecturers consistently highlighted specific challenges regarding students' fundamental academic skills and approaches to learning, which directly impact their ability to cope and demonstrate resilience in the demanding engineering curriculum.

Key lessons learned by lecturers include:

Difficulties with reading comprehension and following instructions

This was a dominant sub-theme across interviews. Susan expressed frustration: "*we definitely find that students don't read, and they can't follow simple instructions… getting simple questions like… is this a group project… but it's in the study guide*." Solomon shared this experience: "*reading is not a thing that students do. They don't, they just don't read*." Sibongile added a pedagogical implication: "*I have to read out instructions to them. I cannot just post it because they don't know how*." This basic skill deficit necessitates extensive repetition by lecturers and raises quality concerns about students' ability to engage with course materials independently.

Lack of independent thinking, problem-solving, and connecting concepts

Lecturers perceived a deficit in higher-order thinking skills needed for the BEng Tech level. Susan observed students needing explicit direction: "*It's like they can't think further. They can't think for themselves*." Sean noted that diploma students often struggled significantly when assessment "*scaffolds*" (detailed steps and guidance) were removed, indicating a difficulty in applying knowledge independently even after structured learning and practice. Sibongile described students being taught "*like little robots*" and noted, "*they're not connecting the subjects*." Sandile highlighted the struggle for students to grasp the overall programme structure: "*they don't necessarily understand the bigger picture yet*." This inability to synthesise information and think critically is a significant barrier to resilience and meeting the BEng Tech's outcomes. Siyanda also observed that students are often "*demanding in the sense they need more attention*", reflecting uncertainty and perhaps a lack of confidence in proceeding independently.

Surface learning approaches and academic integrity concerns

Lecturers expressed concern that many students prioritise passing assessments over genuine understanding, leading to problematic behaviours. Susan encountered students who were upset about losing marks for plagiarism: "*They lost a whole lot of*

marks because they cut and paste… What did you learn…? You learned absolutely nothing… It is like they are not here to get knowledge… They just here to pause [pass] something." Sean noted that while cheating might be "*less and more refined*" in BEng Tech essays compared to diploma work, it still occurs, with plagiarism being the most significant form. Solomon described cheating as "*rife*" in the online environment: "*students just blindly copy students. They do not care whether the student they are copying is right or wrong… You are taught as an engineer to think for yourself.*" This focus on superficial attainment and academic dishonesty undermines learning and poses a major challenge to quality assurance and evaluation.

Hesitancy in engagement and help-seeking

Despite the lecturer's efforts to be accessible, students often fail to engage proactively. Sibongile observed, "*students do not want to speak out… They will not necessarily ask*", with only a minority utilising available support channels well. Siyanda, reflecting on changes prompted by online teaching, realised that improved communication channels (WhatsApp, Microsoft Teams) made students "*more willing to ask questions and engage*", suggesting previous methods might have inadvertently discouraged interaction. He noted a "*fear sometimes… an uncertainty*" amongst students. Susan also mentioned students finding it "*so much easier to ask the lecturer than try and figure it out for yourself*", but this seems limited to simple queries. This passive approach prevents timely intervention and support, hindering the development of resilience.

Motivation and the impact of curricular changes

Solomon and Sandile both identified the removal of the mandatory in-service training year from the BEng Tech as a significant loss, impacting student motivation and practical grounding. Solomon felt the practical year was "*certainly a motivation*" for diploma students. Sean noted that engineering was not their first choice for many diploma students but was pursued because of bursary availability, meaning that they started "*on the back foot*" without an inherent "*feel for electricity or electrical engineering*", requiring extra effort to find motivation. Lecturers now consciously try to link the curriculum to industry relevance and career prospects

(Sibongile) or create engaging, hands-on project environments (Siyanda) to foster motivation and a sense of belonging and achievement.

These findings, derived from the lived experiences and reflections of engineering lecturers, offer critical lessons directly relevant to fostering academic resilience within a SoTL and quality assurance framework. The perceived gaps in students' foundational academic skills, such as critical reading, comprehension, independent thinking, and self-directed learning, present a fundamental challenge to their capacity to navigate the rigours of the BEng Tech programme. This reported lack of preparedness, often described as an articulation gap between secondary and tertiary education demands, inherently undermines academic resilience, making students more vulnerable to setbacks (Kift et al., 2010; Tinto, 1993). Within the South African context, systemic educational inequalities exacerbate this challenge, leading to diverse levels of readiness amongst entering students (Vincent & Hlatshwayo, 2018).

The prevalence of surface learning approaches, where students prioritise task completion and passing assessments over deep conceptual understanding (as evidenced by lecturer concerns about *"cut and paste"* or focusing only on what is explicitly tested), further inhibits the development of resilience and genuine competence (Entwistle, 2007). Coupled with significant concerns around academic integrity (*"rife"* cheating, copying incorrect answers), this indicates a potential misalignment between the programme's goals of developing knowledgeable and ethical engineers and the learning strategies employed by some students (Direito et al., 2025). Such integrity issues, often amplified in online learning environments, compromise the validity of assessments and the very foundation of academic development (Bretag et al., 2019; Eaton, 2021).

From an SoTL perspective, these lessons necessitate critical reflection on prevailing pedagogical practices and assumptions. While lecturers demonstrate considerable adaptation, providing detailed guidance, diversifying assessments, linking theory to practice, and increasing accessibility, the persistence of these challenges emphasises that such measures alone may

be insufficient. This situation calls for systematic pedagogical inquiry, characteristic of SoTL (Hutchings et al., 2013), focused on questions such as: How can engineering pedagogy explicitly cultivate critical reading, analytical thinking, and problem-solving skills alongside technical content? What assessment designs can promote deep learning and authentic demonstration of competence while mitigating academic dishonesty? How can educators effectively foster intrinsic motivation, productive help-seeking behaviours, and a sense of connection to the *"bigger picture"* of the engineering profession, particularly relating to graduate attributes (GAs)? Sharing insights and evidence-based practices addressing these questions (Mapaling & Plaatjes, 2019) is vital for enhancing teaching effectiveness and student resilience.

From a quality assurance, monitoring, and evaluation standpoint, the lecturers' observations raise significant concerns that align with broader debates in higher education quality management (Ryan, 2015). The mixed results regarding the impact of increased admission requirements suggest that input-based quality measures (e.g., entry scores) are inadequate sole predictors of student success or resilience, highlighting the need for more holistic monitoring that includes engagement behaviours, learning approaches, and utilisation of support resources (Kuh et al., 2007). The pervasive academic integrity issues directly threaten the quality and credibility of the evaluation process itself, demanding robust institutional policies, detection methods, and assessment strategies focused on authenticity. Furthermore, students' difficulties connecting concepts or understanding the significance of GAs signal potential weaknesses in curriculum coherence and communication, necessitating focused programme-level evaluation and continuous quality improvement. The educators' experiences strongly advocate for a feedback loop where insights into student preparedness and learning challenges actively inform ongoing pedagogical refinements and curricular adjustments.

Peat 2: Student Voices on Resilience – Navigating Workload, Motivation, and the Power of Connection

The lived experiences of engineering students themselves offer profound lessons about navigating the demands of their programme and cultivating resilience. Synthesising insights from students who entered via different pathways (direct from school, post-diploma, post-work experience) reveals common threads alongside unique perspectives. A central finding is that student resilience is intricately linked to intrinsic motivation and clear goals, effective (though often personally developed) strategies for managing intense workload and academic challenges, and the crucial role of supportive relationships, particularly with peers and accessible lecturers.

Key lessons learned from students include:

The crucial role of intrinsic motivation, clear goals, and maturity

Students frequently attributed their ability to persist, especially through difficult periods, to having a clear personal reason for being in engineering and a focused goal. Aadil, having switched from a successful but unfulfilling logistics career, emphasised passion: "*You must really want it for yourself… interest is a big big part.*" He contrasted this with peers potentially there because of external pressures, suggesting that they were at higher risk. Akhile, returning after a previous unsuccessful university attempt and work experience, highlighted focus and maturity: "*find something that you like? and then focus on that one thing… that really helped me, you know, find like a goal.*" Anathi, driven by a childhood dream and parental encouragement, saw engineering as achieving a significant personal and community goal, providing powerful motivation ("*I really wanted to do this… it was my dream.*") Aobakwe linked perseverance to setting ambitious goals like aiming for *cum laude* initially, providing drive. Alwande, despite finding the online transition difficult (Tau et al., 2024), maintained focus on the endpoint: "*my main focus now it is just to get done.*" This intrinsic drive appears fundamental to navigating setbacks.

Acknowledging and adapting to an intense workload and pace

The sheer volume of work and the demanding pace were universally acknowledged challenges. Akhile stated, *"Definitely the workload… sometimes it gets overwhelming, honestly, and you are like, do not know where? What must I do?"* Aobakwe described an escalating intensity: *"as it goes up it only gets more difficult… the workload increases and so does the difficulty… adjusting your mindset to, you know, put in that extra effort."* Aadil vividly recalled the shock of the pace intensifying: *"Second semester, out of the blue things just kicked up like, whoa, 3 levels… back to back we had assignments back to back we had tests… that really set the tone."* Students developed coping strategies, often related to time management and planning, though sometimes imperfectly. Aadil stressed planning: *"Definitely the planning… is definitely key… prioritise."* Akhile admitted poor time management skills but employed deep focus: *"I am gonna do this thing and I am gonna do it finish."* Success often involved accepting the need for intense effort and developing personal systems to manage it.

Peer support as a vital lifeline

Collaboration and mutual support amongst classmates emerged as a critical protective factor, especially during high-pressure periods like final year projects or navigating online learning. Akhile emphasised, *"support really from other engineering students that really helped a lot from people in my class… we really tried to work together to get through that."* Aadil described a *"winning formula"* within his group: *"everyone plays a key role… we definitely work well together."* Aobakwe highlighted his close group: *"We basically helped each other out through the whole degree… if one of us did not understand something, one of the others might… that definitely helped."* Anathi found solace and practical help in her WhatsApp group, especially during the isolating pandemic: *"We created a WhatsApp group… we are asking each other questions… That helped a lot."* Atlegang also relied heavily on peers: *"My friends… helped me understand the work… We do study together."* This peer network provided academic assistance, emotional support, and a shared understanding of challenges.

Lecturer accessibility and approachability matter

While experiences varied, accessible and supportive lecturers were frequently cited as enabling factors. Akhile valued lecturers who were available for questions and provided feedback, noting the loss of interaction during online learning ("*Just asking questions… having the lecture answer your questions… it is like, oh, a light bulb goes on.*") He specifically appreciated lecturers reachable via WhatsApp during the pandemic. Aadil highlighted lecturers like the mathematics lecturer and the head of department who offered crucial early encouragement and advice, boosting his confidence. Aobakwe found "*most of the lecturers were quite approachable.*" Anathi appreciated lecturers who explained things clearly and used platforms like WhatsApp for quick queries. Conversely, less approachable or less clear lecturers could be significant barriers, as implied by Aadil's critique of teaching styles lacking passion or clarity. The perceived willingness of lecturers to grant extensions, especially during the pandemic, was also seen as vital support (Akhile).

Utilising prior experience and developing self-awareness

Students entering with prior work or study experience often felt that it provided an advantage in maturity, focus, and work ethic. Akhile explicitly linked his age and previous experiences (working while studying) to his drive: "*That really helped me… establish a working, determination focus.*" Aadil felt that his logistics career, though disliked, built confidence and perspective. This maturity often translated into a stronger sense of purpose and better coping strategies. Students also demonstrated developing self-awareness, recognising their strengths (e.g., focus, perseverance) and weaknesses (e.g., time management, shyness) and attempting to manage them. Akhile's strategy of "*not taking no for an answer*" from himself, and Aadil's use of a failed test as motivation ("*put that test on my wall… staring me in the face*") exemplify this resilience-building self-reflection.

Navigating personal and systemic challenges

Beyond academics, students navigated personal challenges (family issues, financial stress hinted at by NSFAS (National Student Financial Aid Scheme) mentions, mental health struggles

implicitly through coping discussions) and systemic issues (transition difficulties, online learning adaptation, practical skills gaps). Anathi spoke movingly about balancing family responsibilities and grief with intense study demands. Atlegang highlighted the specific difficulty of online learning without consistent interaction. The lack of practical exposure because of curriculum changes or the COVID-19 pandemic was a concern for Akhile regarding industry readiness. Resilience involves managing these intersecting pressures, often relying heavily on personal drive and support networks (family, peers).

The students' narratives powerfully illustrate key theoretical concepts of academic resilience and student success, offering valuable insights for SoTL and quality assurance. The emphasis on intrinsic motivation, clear goals, and personal interest aligns strongly with Self-Determination Theory, which posits that autonomy, competence, and relatedness foster motivation and well-being (Deci & Ryan, 2000). Students like Aadil and Akhile, who returned to study with clear intrinsic goals after exploring other paths, exemplify how purpose fuels persistence through difficulty. This suggests that interventions fostering self-discovery and goal clarity early on could significantly enhance resilience.

The universal struggle with workload and pace highlights the critical importance of transition support and effective time management and study skills development, which are central tenets of transition pedagogy (Kift et al., 2010). While students developed personal coping strategies, their varied success highlights the need for structured support in these areas, as acknowledged by Akhile regarding early mentoring sessions. The profound reliance on peer support networks aligns strongly with Tinto's (1993) model of student integration, where social integration is crucial for persistence. Peer groups provided both academic and social support, mitigating feelings of isolation and providing practical help, particularly vital during the disruptive shift to online learning (Parmar et al., 2025).

From an SoTL perspective, student voices provide direct feedback on pedagogical effectiveness. The appreciation for accessible, responsive lecturers who provide clear explanations

and timely feedback aligns with established principles of good teaching practice (Crews & Wilkinson, 2015). Students' varied experiences suggest inconsistent teaching approaches, highlighting an area for institutional reflection and professional development. The desire for practical application and clear links between modules (*"the bigger picture"*) echoes calls within SoTL for authentic learning experiences (Hutchings et al., 2013). Student difficulties with online engagement and assessment integrity reinforce the need for ongoing SoTL inquiry into effective online and blended pedagogies.

These student accounts are invaluable from a QA, monitoring, and evaluation perspective. They confirm the high-pressure nature of the engineering programme and identify specific stress points (e.g., second-semester transition, final-year projects, online assessments). Monitoring student well-being and engagement, beyond academic scores, is crucial. Evaluating the effectiveness and accessibility of support services (mentoring, tutoring, counselling - though notably underutilised by this cohort) and the consistency of teaching quality across modules is essential. The feedback loop is critical: student experiences with workload, pedagogical approaches, support access, and perceived preparedness for industry (as questioned by Akhile regarding practical skills) should directly inform continuous quality improvement efforts in curriculum design, teaching practices, assessment strategies, and support provision, ensuring that the programme effectively fosters both competence and resilience.

Peat 3: The Imperative for Holistic, Accessible, and Responsive Support Systems Grounded in Care and Collaboration

A third critical finding, synthesising lessons from experienced support staff across various units (academic advising, learning development, student counselling, disability services, financial and administrative support), highlights the necessity of comprehensive, easily accessible, collaborative, and adaptable support systems within engineering education. This support must extend significantly beyond the purely academic to address students' holistic needs, encompassing basic necessities,

finances, and particularly mental health, and be intentionally grounded in a philosophy of care, responsiveness, collaboration, and empowerment. Staff across different roles consistently highlighted the unique intensity of the engineering programme, the profound impact of external factors (for instance, socio-economic background, the COVID-19 pandemic) and internal challenges (for example, mental health, adjustment difficulties) on students' ability to persist, and the crucial role of a networked approach involving lecturers, support services, and peers.

Key lessons learned from support staff include:

Recognising the unique intensity and support needs of engineering students

Support staff consistently identified engineering students as facing exceptional pressures requiring distinct and intensive support. Qhama described them emphatically as the university's *"medical school"* equivalent in terms of demands: *"engineering students need as much like there is no… like you cannot go overboard with engineering students… because of the nature of… what they go through, and the fact that they go through so much mentally."* Quracia attributed this need to the curriculum's intensity and compressed timelines, necessitating support that begins even before university ("*pre-uni engagement*") and is integrated throughout. Qaqamba suggested engineering's structure might necessitate *"more intimate interaction"* or smaller group support. Qaqamba and Qiniseka, from academic advising and student counselling services, confirmed seeing a high volume of engineering students, often presenting with difficulties adjusting to the demanding workload and academic pace.

Holistic approach – Addressing the whole student

The support described consistently transcends academic tutoring, embracing a holistic view crucial for resilience. Qhama found her role during the intense COVID-19 pandemic period shifting significantly towards "*moral support*", acting as a "*middleman*" to connect students with resources for basic needs (like food parcels via the student health services, though uptake varied), financial aid issues (including but not restricted to the NSFAS), accommodation problems, and mental health services.

Qaqamba detailed similar roles encompassing academic advice, navigating funding, and referrals. Quracia powerfully emphasised a foundational philosophy rooted in "*humanising pedagogy*", "*Ubuntu*", and creating a "*culture of care*", addressing the "*Maslow point of view, that first student need*" before focusing purely on academics. Qiniseka described an intentional shift from purely remedial work to a proactive, developmental approach using the holistic Learning Enhancement Checklist (an online academic risk self-assessment). Qaqamba and Qiniseka similarly stressed understanding the "*holistic being*", acknowledging the interplay between academic struggles, personal relationships, family background, and mental well-being.

Mental health as a central and complex concern

Mental health emerged as a dominant and multifaceted theme across support roles, critical to academic resilience. Qhama estimated that while the curriculum pressure "*brought that out or exposed that*", a high percentage (around "80%") of students "*came with it and it was underlining*", with the university environment acting as a potential "*triggering*" factor for pre-existing traumas or conditions. Qaqamba and Qiniseka corroborated this, noting that students often present with pre-existing issues (such as anxiety, depression, trauma) amplified by academic stress and adjustment difficulties. They further highlighted the significant barrier of stigma ("*students basically do not use counseling a lot… because of the stigmatisation*"), particularly for male students ("*toxic masculinity*"), often leading students to seek help only at a crisis point ("*students come when they are burning*"). Quracia discussed the critical but challenging role of student declaration through the disability unit for enabling structured, collaborative support involving academics and services, stressing the sensitivity required, sometimes needing "*moment to moment*" support and understanding the impact of mental health on academic engagement. Qinile (academic advisor) also pointed to the pandemic contributing to poor coping mechanisms like procrastination. Surprisingly, despite the aforementioned stigma, the student counselling service was identified by Qhama as the most readily accepted referral in this study: "*That is the one thing that they took with open arms.*"

Navigating a collaborative referral ecosystem and boundaries

Support staff operate as vital connectors within a complex network, heavily relying on collaboration and referrals. The ecosystem includes student counselling, financial aid services, accommodation and residence offices, campus health clinic, tutoring and supplemental instruction, disability unit, academic advisors and success coaches, lecturers, heads of departments, and administrative support (Versfeld & Mapaling, 2024). Quracia emphasised the importance of "*turnaround time*" and collaborative follow-up in referrals, sometimes initiating contact herself depending on the student's state. Qiniseka stressed that successful support evolved through building relationships and gaining "*buy-in*" from faculty, often requiring counsellors to meet staff "*in their offices*" and "*corridors*". Qaqamba and Qiniseka highlighted the need for better communication between units, noting "*isolated*" support can be less effective. Quinn noted how her established relationships allowed her to "*get information quicker than the student can*", demonstrating the power of informal networks. Simultaneously, maintaining professional boundaries was essential for sustainability. Because of overwhelming electronic communication, Qhama found learning boundaries crucial during the COVID-19 pandemic: "*This is the year where I literally had to learn boundaries… for your sanity also.*" Quracia framed boundaries through respecting student autonomy while maintaining a supportive relationship, while Qiniseka spoke about managing caseloads.

Accessibility, student agency, responsibility, and overcoming barriers

A recurring lesson involved balancing the availability of support with students' willingness and ability to access it, alongside the need for student responsibility and agency. Barriers identified included "*ego, or insecurity or fear*" (Qhama), negative past experiences, stigma (Qiniseka), lack of awareness, and practical constraints like engineering's demanding timetables (Qiniseka). Qaqamba urged students to take initiative ("*Make your lecturer your best friend.*") Quracia strongly framed asking for help as a "*right*" for students, emphasising the need for a culture where they feel empowered to ask for help proactively. Quinn strongly advised students to "*take responsibility*", know their course details,

understand their finances, ask questions, and realise *"nobody is going to baby you."* Similarly, Qiniseka emphasised empowering students to take ownership (*"CEO of your life"*) and learn from failure. Peer support was also seen as valuable by Qaqamba (*"create a community within yourselves"*) and Quinn (*"better to be in a group of people who are clueless with you."*)

Philosophical grounding, systemic considerations, and institutional culture

Effective, resilience-building support requires intentionality, philosophical grounding, and systemic embedding. Quracia consistently linked effective support back to its underlying philosophy (*"humanising pedagogy"*, *"care"*, *"Ubuntu"*), expressing profound concern that as support models evolve, the institution must not *"lose sight of the vow in the classroom, which is the student"* and the intentionality required. Qiniseka similarly highlighted the power of an institutional welcome, shared values (*Ubuntu*), believing in student potential irrespective of current performance, and the role of faith as foundational. Conversely, Qaqamba pointed out how an "*alienating*" institutional culture, where students feel like "*visitors*", can hinder engagement and risk-taking. Quinn noted the systemic issue of students being "*sent from pillar to post*" and the lack of focus on essential "*life skills*" beyond academics. Qhama observed that universities often *"do the bare minimum"* regarding enabling resilience, highlighting specific offices as exceptions providing necessary support. Resource limitations (e.g., shortages of student counsellor staffing mentioned by Qaqamba) also point to systemic challenges needing attention.

These compelling lessons from diverse support staff offer crucial insights for enhancing academic resilience, informing SoTL practice, and strengthening QA within engineering education. The consensus on the need for holistic support, extending beyond academics to encompass basic needs, finances, and particularly mental health, strongly aligns with retention literature emphasising the significant impact of non-academic factors on student persistence and well-being (Cotton et al., 2017; Tinto, 1975). As detailed by advising, counselling, learning development, and financial support staff, addressing these

multifaceted needs is fundamental to enabling students to engage academically and cultivate resilience (Baik et al., 2019). The stark highlighting of mental health challenges, often pre-existing vulnerabilities amplified by the high-pressure university environment, coupled with significant access barriers like stigma, highlights the critical need for proactive, integrated, and destigmatised mental health services as a core component of the student support ecosystem (Priestley et al., 2022).

From an SoTL perspective, the collective experiences of support staff provide rich data for institutional self-study and pedagogical reflection (Wilson-Mah et al., 2022). Key questions emerge: How effective is the inter-unit collaboration and referral network in practice, and how can it be made more seamless and visible, addressing the pillar-to-post issue and communication gaps? What pedagogical and systemic factors contribute to the high stress levels reported, and how can teaching practices be adapted to maintain rigour and build student confidence and self-efficacy? How can the culture of care and humanising pedagogy be intentionally fostered, embedded within the curriculum, and assessed (Mapaling & Hoelson, 2022)? Evaluating the impact of different support models and interventions on student resilience, belonging, and help-seeking behaviour (especially considering barriers like stigma) is vital for SoTL enquiry focused on enhancing the student experience (Hutchings et al., 2013). Furthermore, the call for incorporating basic life skills warrants SoTL investigation into how such competencies might be integrated effectively.

Regarding quality assurance, monitoring, and evaluation, these findings reinforce the need for frameworks that assess the quality, accessibility, responsiveness, integration, and philosophical coherence of student support services, moving beyond mere existence. Monitoring must encompass usage patterns, student satisfaction, perceived impact, accessibility barriers (including stigma and practical issues), and the effectiveness of referral pathways. Evaluating the level of collaboration between academic departments and various support units is essential for ensuring a truly integrated and effective support network, preventing students from falling through the cracks (Kuh et al., 2007). Quracia's profound concern about

maintaining the philosophical core (*"the vow"*) amidst structural changes directly addresses the quality and integrity of support provision. A continuous quality improvement cycle should actively incorporate feedback from support staff across different units and students to refine services, address systemic resource constraints, dismantle accessibility barriers, promote student responsibility, and ensure that support systems proactively contribute to student well-being and academic resilience.

Concluding the Three-Peat: Towards a More Resilient, Scholarly, and Quality-Driven Future

This chapter explored academic resilience within a South African BEng Tech programme, uniquely framed through the lens of a "three-peat" - integrating the crucial perspectives of engineering lecturers, their students, and the support staff who assist them. Just as a sports championship (the "win") is seldom achieved without the coordinated excellence of diverse players (Mapaling et al., 2024a) executing their roles effectively, this analysis confirms that fostering genuine student success and academic resilience requires more than isolated efforts (Mapaling, 2024b). It necessitates understanding and synergising the distinct challenges, adaptations, needs, and strategies that these three vital stakeholder groups articulated.

The lessons learned from this "three-peat" analysis are compelling. Lecturers provided critical insights into pedagogical challenges, student preparedness issues, and the ongoing need to adapt teaching and assessment, particularly concerning critical thinking and academic integrity. Support staff powerfully emphasised the imperative for holistic, accessible, collaborative, and philosophically grounded support systems, highlighting the centrality of mental health and the complexities of navigating referrals and boundaries. Crucially, the students themselves illuminated the internal drivers (motivation, goal-setting, agency) and external facilitators (peer support networks, approachable lecturers) that enable them to navigate the intense demands and diverse challenges inherent in their engineering journey.

Achieving the "championship" of enhanced student resilience and success hinges on moving beyond siloed viewpoints.

It requires institutions to actively listen to, value, and integrate these multifaceted lessons. The insights from lecturers must inform pedagogical development pursued through a scholarly SoTL approach, focusing on evidence-based practices that address identified learning gaps. The experiences of support staff must shape the design and delivery of integrated, accessible, and responsive support ecosystems, evaluated for their effectiveness and impact. Student voices must directly influence both teaching practices and support provision, ensuring alignment with their lived realities and needs.

The three-peat framework developed here also serves as a lens through which the volume's other chapters can be read together. The lecturer perspective foregrounded in this chapter echoes the designer resilience discussed in relation to curriculum renewal and backward design (Chapters 2 and 7), the socio-ecological and assessment-based approaches to student vulnerability (Chapters 1, 8, and 9), and the collegial, isolation-reducing structures proposed through Lesson Study (Chapter 10). The student perspective connects directly to the socio-ecological and mentoring literature explored earlier in the volume (Chapters 4 and 9), as well as to the inclusion-focused work on Indigenous Knowledge Systems and disability access (Chapters 5 and 11). The support staff perspective, arguably the least visible in the higher education resilience literature more broadly, extends the volume's recurring argument that staff resilience, whether among tutors, mentors, curriculum designers, or support personnel, is not incidental to student resilience but constitutive of it (Chapters 3, 4, 6, and 9). Read this way, the three-peat is not only a model for engineering education specifically, but a synthesis in miniature of the volume's central claim: that resilience in South African higher education is produced through the coordinated, mutually dependent resilience of students, staff, and the systems that connect them.

Ultimately, concluding this "three-peat" analysis points towards a future where academic resilience is intentionally cultivated through a consciously integrated, *scholarly*, and *quality-driven* approach. By embracing the principles of SoTL to investigate and improve teaching and support, and by embedding

the lessons learned from all three key stakeholders into robust QA and M&E cycles, institutions can move closer to creating an educational environment where engineering students are not only academically competent but are also demonstrably resilient - truly equipped to "win" both within their studies and beyond. This collaborative, multi-perspective pathway is essential for achieving meaningful improvements in student success and educational equity within the demanding context of South African engineering education.

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Conclusion

Resilient Students, Resilient Staff: Bringing the Volume Together

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Resilience in South African higher education warrants a dedicated edited collection because the country's institutions face a combination of historical, material, and political pressures, the legacy of apartheid-era exclusion, an unsettled funding and access landscape, and persistent infrastructural instability, that generic, internationally-derived resilience literature does not adequately capture, and that cannot be addressed through any single chapter, discipline, or intervention alone. The unique scholarly contribution of this volume is to ground resilience theory in that specific context empirically, through twelve chapters spanning curriculum design, assessment, mentoring, tutoring, Indigenous Knowledge Systems, disability inclusion, and engineering education, that collectively examine resilience as it is practised within South African institutions rather than only as it is theorised elsewhere.

Although each chapter can be read independently, they build cumulatively across the volume: the opening chapters establish conceptual and empirical groundwork, the middle chapters examine specific pedagogical and curricular interventions, and the later chapters turn to the relational and institutional structures, mentoring, inclusive pedagogy, disability access, and cross-stakeholder synthesis, that sustain resilience beyond

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any single course or programme. Across this arc, resilience has been conceptualised not as a fixed trait held by individual students or exceptional lecturers, but as a capacity co-produced across students, staff, and institutional systems, one that can be intentionally designed for rather than left to emerge by chance. The central argument that emerges from the volume as a whole, and that this concluding chapter now draws together, is that resilient students are, in the main, the product of resilient staff working within resilient systems, and that building that resilience is properly an institutional responsibility rather than an individual burden placed on students or staff alone.

The contributions in this book collectively advance the central argument that resilience in higher education is not a singular attribute of individual students or exceptional lecturers, but rather a multi-layered quality of systems, relationships, and designs that can be intentionally cultivated. Through case studies and conceptual chapters, we show how institutional structures, curriculum frameworks, pedagogical choices, and sociocultural contexts intersect to either constrain or enable resilient responses to adversity. The work presented here, from systemic models of communicative functions to the implementation of blended and web-based courses, demonstrates that resilient practice depends as much on deliberate design as on improvisation in response to immediate challenges.

A recurring insight in this volume is the importance of intentional course and curriculum design as a foundation for resilience. Approaches such as backward design, which begins with desired learning outcomes, constructive alignment, which ensures coherence among activities, outcomes, and assessments, and resilient design for learning, which structures courses to accommodate disruptions, provide academics with tools to clarify outcomes, align assessments and activities, and incorporate extensibility so that courses can adapt without losing coherence. The Curriculum Renewal Programme shows that when academics are supported to reconsider their modules through these frameworks, they are better prepared to navigate disruptions, whether technological, social, or political, while maintaining a focus on meaningful student learning. Similarly, universal

design for learning, which prioritises accessibility and flexibility, and inclusive assessment practices offer pathways toward curricula that can adapt to changing circumstances and diverse student needs.

These chapters underscore that design, while necessary, is not sufficient; context, equity, and relationships are equally significant. South African case studies reveal how unequal resources, historical exclusion, and emotional strain during crises shape both the possibilities and limitations of resilient pedagogy. Initiatives to localise materials, strengthen student-lecturer relationships, and foster collaboration nurture resilience by enabling students to recognise themselves and their futures within the curriculum. Research in quantitative skills, drama, and community education demonstrates that resilience develops when pedagogy and assessment support students in making sense of experiences, addressing problems, and co-constructing learning.

The concept of 'designer resilience' foregrounds educators' agency and reflective practice. Academics in these chapters respond to institutional mergers, remote teaching, and policy changes by experimenting with new models, engaging in the scholarship of teaching, and forming cross-disciplinary communities of practice. Their experiences indicate that resilience at course and programme levels is sustained when academics are provided with support, time, and recognition for iterative design and problem-solving. Investment in such capacity-building is essential for fostering enduring resilience. Looking forward, this book identifies several directions for future work, consistent with its central argument that resilience, defined as the capacity of students, educators, and institutions to recover from, adapt to, and grow through challenges without normalising adversity or shifting institutional responsibility, should be foregrounded as a design principle throughout higher education.

Read across the volume, this designer resilience is one of at least four distinct forms of staff resilience that the chapters collectively identify, each implying a different kind of institutional support. Alongside designer resilience, evident in the Curriculum Renewal Programme's use of backward design (Chapter 7), the chapters describe a relational form, seen in the tutoring and

mentoring programmes (Chapters 4 and 9), where staff must hold a boundary between support and dependency, affirming students without becoming indispensable to them. A collegial form emerges through structures such as Lesson Study (Chapter 10) and the communities of practice referenced in several chapters, addressing the isolation that can otherwise undermine sustained academic practice. And a developmental form runs through nearly every chapter's account of professional development: staff capacity is built through sustained, supported practice rather than assumed as an innate disposition. Naming these forms separately matters because each responds to a different institutional lever, workload recognition for designer resilience, structural boundaries for relational resilience, scheduled collegial contact for collegial resilience, and protected time for developmental resilience.

These forms of staff resilience matter, ultimately, because they are not staff-level outcomes running alongside student success, but the mechanism that produces it. A tutor supported well enough to describe their own growing confidence as something that 'spills over' into how they support others (Chapter 4) brings a steadier presence into every session than one working in isolation. A lecturer given the time and recognition to redesign a course (Chapter 7) produces a curriculum that can absorb disruption without the strain falling onto students. A mentor operating within clear boundaries (Chapter 9) builds independence in students rather than dependency. Chapter 12's three-peat framework makes this interdependence explicit at programme level: student resilience and success cannot be achieved by improving lecturers, students, or support staff in isolation from one another. The relationship also runs in the other direction. Chapter 5's account of Indigenous Knowledge Systems and Chapter 6's design principles for disadvantaged-student integration both show that where staff are not adequately equipped, through training, policy support, or institutional resourcing, the resilience burden falls back onto the students least equipped to carry it. Under-resourced staff do not merely fail to build student resilience; they can inadvertently transfer institutional strain onto the very students the institution exists to serve.

Read together, these chapters support the articulation of something more specific than a general endorsement of resilience thinking: a distinctly South African framework for understanding resilience in higher education. This framework holds that resilience operates simultaneously at three interlocking levels, individual, the coping and adaptive capacity of students and staff; relational, the tutoring, mentoring, and collegial structures that carry weight individuals cannot carry alone; and systemic, the curriculum design, institutional policy, and historical redress within which the first two levels are either enabled or constrained, with staff positioned as the connective tissue between all three. Unlike resilience frameworks developed primarily in better-resourced systems, this account is built from, and explicitly accountable to, South Africa's particular conditions: the legacy of apartheid-era exclusion, the ongoing effects of #FeesMustFall and #RhodesMustFall, the tension between Western epistemic norms and Indigenous Knowledge Systems, and the daily material realities of load-shedding, NSFAS disbursement delays, and rural under-resourcing that recur across several of the preceding chapters. This is the conceptual contribution we would ask readers to take from this volume: not simply that resilience matters in South African higher education, but a specific, context-accountable account of how it is produced, and by whom.

There is a clear need for ongoing research into how systemic models and resilient design principles, understood as structured approaches that embed adaptability and responsiveness across curricula, operations, and cultures, can be applied across disciplines, institutional types, and student populations, particularly in the Global South. Further investigation of student resilience as a relational and sociocultural construct, shaped by interactions among individuals, groups, and institutions in specific contexts, can deepen understanding of how to design learning environments that support practices such as "bouncing back," "adapting without significant loss of function," and "developing thicker skins" without normalising hardship or shifting responsibility away from institutions. Additionally, integrating resilience thinking, the strategic incorporation of resilience principles into decision-making and planning, into policy, quality assurance, and strategic planning, remains an area

for development, ensuring that institutional frameworks actively support, rather than impede, resilient pedagogies and curricula.

To support researchers, we propose the following specific research questions: What institutional and pedagogical factors most effectively support the development and sustainability of designer resilience among academic staff in diverse higher education settings? How can systemic models of resilient curriculum design be adapted and implemented to meet the needs of students with varying backgrounds and resources? In what ways do student-faculty relationships and community networks contribute to or limit the cultivation of resilience, particularly in contexts marked by historical inequalities or resource constraints? Pursuing answers to these questions will help clarify how resilience can be more intentionally designed and supported within higher education.

Beyond these questions, we would highlight four further directions warranting dedicated attention from postgraduate researchers and future scholarship. First, the field currently lacks validated instruments for measuring staff resilience specifically, comparable to the academic resilience scales already being developed for students. Second, most interventions described in this volume, the Curriculum Renewal Programme, the SAEF mentoring model, the Lesson Study cycle, were developed and tested within a single institution or campus, and further research is needed into how, and how well, these models transfer across South Africa's highly differentiated institutional landscape, from well-resourced metropolitan universities to rural and historically disadvantaged campuses. Third, several interventions in this book emerged as responses to acute crisis, the pandemic, protest action, and further work should examine whether the resilience these crises produced can be sustained and institutionalised once the acute pressure recedes, or whether it fades without deliberate reinforcement. Finally, we would welcome longitudinal, mixed-methods research that follows staff and students together over time, testing directly whether interventions that strengthen staff resilience produce measurable downstream improvements in student retention, throughput, and wellbeing, a causal chain this volume argues for but which the sector has not yet tested at scale. The chapters point towards the value of coordinated,

cross-institutional professional development, particularly for under-resourced and rural campuses, where isolation compounds an already constrained resource base. At the institutional level, we would encourage strategic plans and quality assurance frameworks to treat staff resilience as a measurable enabler of student success rather than a soft, unmeasured good; indicators such as staff access to structured professional development, workload allocated to collegial and design work, and the presence of boundaried relational support structures could usefully sit alongside existing throughput and retention metrics in institutional quality assurance and student success reporting. In sum, this concluding chapter has argued that resilience in South African higher education is systemic rather than individual, that staff resilience takes at least four distinct forms, designer, relational, collegial, and developmental, each requiring a different kind of institutional support, and that these forms of staff resilience are not merely correlated with student success but are the mechanism that produces it, running in both directions: well-supported staff extend their capacity into the learning environment, while under-resourced staff can inadvertently transfer institutional strain onto the students they are meant to serve. Taken together, these points reposition staff resilience from a background condition of good teaching into a central, measurable, and fundable object of institutional policy, one that South African higher education can no longer treat as incidental to the project of strengthening student success.

As editors, we conclude this volume with measured optimism. The crises that have prompted many of the innovations discussed here have been both challenging and costly, particularly for the most vulnerable students and staff. Nonetheless, the ingenuity, care, and critical insight reflected in these chapters suggest that higher education can learn from disruption in ways that advance more just, flexible, and responsive systems. It is our hope that the ideas, practices, and models presented in these pages will continue to evolve in response to new challenges and opportunities, contributing to a higher education sector that is not only resilient in the face of shocks but also capable of transforming itself to promote equitable and meaningful learning for all.

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Resilience in Higher Education: The South African Experience offers a timely, thoughtful, and necessary scholarly response to these realities. The volume acknowledges that the pressures facing South African Higher Education institutions (HEIs), such as student poverty and food insecurity, mental health challenges, level of preparedness, and funding instability, cannot be addressed solely through individual effort. Instead, the book positions resilience as a collective, systemic undertaking that must be deliberately cultivated through teaching and learning practices, institutional structures, and supportive academic cultures.

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