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# Empowering 21st-century skilled teachers

## A holistic approach


Edited by
Elize Küng, Magda Kloppers
& Rhelda Krügel

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AOSIS

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## Peer-review declaration

The publisher (AOSIS) endorses the South African 'National Scholarly Book Publishers Forum Best Practice for Peer-Review of Scholarly Books'. The book proposal form was evaluated by our Social Sciences, Humanities, Education and Business Management editorial board. The manuscript underwent an evaluation to compare the level of originality with other published works and was subjected to rigorous two-step peer-review before publication by two technical expert reviewers who did not include the volume editors and were independent of the volume editors, with the identities of the reviewers not revealed to the editors or authors. The reviewers were independent of the publisher, editors and authors. The publisher shared feedback on the similarity report and the reviewers' inputs with the manuscript's editors and authors to improve the manuscript. Where the reviewers recommended revision and improvements, the editors and authors responded adequately to such recommendations. The reviewers commented positively on the scholarly merits of the manuscript and recommended that the book be published.

## Research justification

This book presents original research conducted by scholars of the Faculty of Education at North-West University, focusing on the holistic empowerment of 21st-century skilled teachers. Scholarly discourse within education spheres calls for exploration of the preparedness of both novice and experienced in-service teachers to transfer 21st-century skills to their students in preparation for a future characterised by uncertainty. Fast-paced developments, particularly technological advancements, in the 21st century, have greatly impacted modern society at all levels, especially in education. The book focuses on scholarship in pre-service teacher education and contributes to the discussion on the critical need for beginner teachers to enter the field prepared to teach 21st-century learners. It addresses the preparedness of in-service teachers to meet the demands of the 21st-century classroom, the challenges faced by these teachers in diverse South African classrooms and the necessity of developing 21st-century skills for all South African learners, regardless of the varied contexts in which teachers operate. This scholarly book makes a diverse contribution to the scholarly discourse on empowering teachers for the 21st-century classroom. It begins by emphasising the importance of an ethic of care and the legal conduct required in schools before transitioning to classroom practices. The research focuses on 21st-century skills, such as self-directed learning, and explores teaching approaches and strategies in Language, Mathematics, History, Foundation Phase and Accounting classes, contributing to the scholarly discourse within the South African context. All authors are or have been involved in the training of pre-service teachers, making them acutely aware of the current challenges faced in the education sector regarding the preparedness of beginner teachers.

The methodologies and approaches employed by the scholars include mixed methods, both sequential exploratory and experimental, as well as qualitative studies such as case studies, content analyses, systematic reviews and educational design research, participatory action learning and action research (PALAR). This book is written by scholars for scholars, targeting an audience of those specialising in the initial training of teachers, along with researchers in the fields of ethics, education law, self-directed learning, reflective practices, problem/play-based learning and various other emerging pedagogies.

The following two chapters are based on a PhD thesis, with acknowledgements provided within each chapter: Chapter 7, ‘Renewable game-based open educational resources as a tool for 21st-century History teachers’, by Byron J Bunt and Gideon P van Tonder and Chapter 12, ‘Exploring factors influencing classroom environments for successful learning in Accounting’ by Viné Petzer. Additionally, one chapter is partially based on published material, with the necessary acknowledgements included: Chapter 5, ‘Empowering pre-service teachers: Enhancing self-directed learning with reflective Thinking Maps’, by Gideon P van Tonder, Byron J Bunt, Viné Petzer, Nicolaas van Deventer, Hermann D Bosch, Lizelle van Schadewijk and Erika Fourie. In accordance with the requirements of the Department of Higher Education and Training, the book contains original content that has not been published before, and no part has been plagiarised from previously published work. All ethical guidelines were followed during the research.

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# Dedication

'To the educators who dare to adapt, innovate, and ignite inquiring minds: your work shapes the world of tomorrow.

'For the learners of today, the leaders of tomorrow: may you be equipped with the skills and mindset to create a sustainable and thriving future.'

# Epigraph

‘The illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn and relearn.’

– Alvin Toffler

# Contents

# Abbreviations and acronyms, figures and tables appearing in the text and notes

## List of abbreviations and acronyms

| | |
|---|---|
| 4IR | Fourth Industrial Revolution |
| AI | artificial intelligence |
| ALS | Action Learning Set |
| AMTE | Association of Mathematics Teacher Educators |
| ATP | annual teaching plan |
| BA | Bachelor of Arts |
| BCom | Bachelor of Commerce |
| BEd | Bachelor of Education |
| BSc | Bachelor of Science |
| CANRAD | Centre for the Advancement of Non-Racialism and Democracy |
| CAPS | Curriculum and Assessment Policy Statement |
| CASEL | Collaborative for Academic, Social, and Emotional Learning |
| CAT | Computer Applications Technology |
| CC | Creative Commons |
| CFA | confirmatory factor analysis |
| CFI | comparative fit index |
| CMIN/DF | Chi-squared test statistic divided by the degrees of freedom |
| COMBER | Community-Based Educational Research |
| COVID-19 | coronavirus disease 2019 |
| CRC | Convention on the Rights of the Child |
| DBE | Department of Basic Education |
| ECDE | early childhood development and education |
| EDR | educational design research |
| EHL | English Home Language |
| EMS | Economic and Management Sciences |
| ESD | education for sustainable development |

| | |
|---|---|
| FET | Further Education and Training |
| GBL | game-based learning |
| HEIs | higher education institutions |
| HODs | Heads of Departments |
| IC | interpersonal communication |
| ICT | information and communication technology |
| IoT | Internet of Things |
| LGBTQ+ | lesbian, gay, bisexual, transgender and queer or questioning |
| LGBTQI | lesbian, gay, bisexual, transgender, queer or questioning and intersex |
| LGBTQIA+ | lesbian, gay, bisexual, transgender, queer or questioning, intersex, asexual and more |
| LM | learning motivation |
| MA | Master of Arts |
| MCom | Master of Commerce |
| MEd | Master of Education |
| MKT | Mathematical Knowledge for Teaching |
| NATO | North Atlantic Treaty Organization |
| NCTM | National Council of Teachers of Mathematics |
| NRC | National Research Council |
| NWU | North-West University |
| OCL | Online Collaborative Learning |
| OECD | Organisation for Economic Co-operation and Development |
| OERs | open education resources |
| PALAR | participatory action learning and action research |
| PGCE | Postgraduate Certificate in Education |
| PhD | Doctor of Philosophy |
| PI | planning and implementing |
| PIRLS | Progress in International Reading Literacy Study |
| RAU | Rand Afrikaans University |
| RMSEA | root mean square error approximation |
| RTMRC | reflective teaching model for reading comprehension |
| SAHRC | South African Human Rights Commission |
| SCSSE | School of Commerce and Social Studies in Education |
| SDL | self-directed learning |
| SDLI | self-directed learning instrument |
| SDT | self-determination theory |
| SEM | structural equation modelling |

| | |
|---|---|
| SLA | second language acquisition |
| SM | self-monitoring |
| SOR | science of reading |
| SRSSDL | self-rating scale of self-directed learning |
| STOMP(I) | Subject, Verb 1, Time, Object, Manner, Place, Verb 2 and Infinitive |
| UFS | University of the Free State |
| UK | United Kingdom |
| UNESCO | United Nations Educational, Scientific and Cultural Organization |
| UNICEF | United Nations Children's Fund |
| Unisa | University of South Africa |
| USA | United States of America |
| VUCA | volatile, uncertain, complex and ambiguous |
| WIL | work-integrated learning |
| ZPD | zone of proximal development |

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# Encapsulating quotes

**Emphasising teacher growth:**
The mediocre teacher tells. The good teacher explains. The superior teacher demonstrates. The great teacher inspires.

William Arthur Ward (Motivational writer)

**Highlighting holistic education:**
Education is not the filling of a pail, but the lighting of a fire.

William Butler Yeats (Poet)

**Focusing on teacher empowerment:**
The best way to improve education is to empower teachers.

Randi Weingarten (President, American Federation of Teachers)

**Combining empowerment and skills:**
The key is not to keep learning things, but to keep learning how to learn.

Carl Rogers (Psychologist)

# Foreword

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Modern-day society is facing continued technological advances, embracing growing and ever-changing economies, and encompassing not only a national reach and influence but also a global one. To successfully operate in this changed milieu, the South African and international educational systems need to better prepare teachers and learners to adapt and operate optimally. This must be fundamental to the teaching and learning environment, ensuring that learners are better prepared and equipped to function in the 21st century. New ways of teaching and learning, as well as new ways of thinking and reasoning, must become central to teaching practices.

Gone are the days of traditional *talk-and-chalk* teaching practices. The educational landscape must adapt to the 21st century, requiring learners who can successfully navigate complex, dynamic, multicultural and unpredictable environments both in the classroom and beyond.

The authors of this publication aimed to examine both the South African and international landscape for current shortfalls, trends, new developments and best practices. It explored the essential skills learners need to excel in today's society. These skills include but are not limited to critical thinking, successful collaboration, creativity in problem-solving, engagement as responsible and ethically inclined citizens, and effective communication in a global, technologically enhanced environment.

This book not only presents current findings but also elaborates on strategies to equip beginner teachers with the skills needed to develop future leaders in the 21st century. It emphasises that these strategies should be cultivated in beginner teachers while also being adopted by seasoned educators. The book highlights the need for further research and ongoing development within the educational landscape.

The authors motivate teachers and educational leaders to realign their classrooms and teaching strategies not only to meet the demands of the

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community in which they operate with the resources at hand but also to be innovative in how they expand the reach of their learning environments and teaching practices. Teachers are no longer just transmitters of information; they must adapt their teaching strategies to facilitate inquiring minds. They must guide learners to question more, analyse and have a deeper understanding of acquired knowledge, and guide them on how to not only apply the knowledge but also to be innovative and future-focused with it.

This book provides guidelines for teachers on cultivating 21st-century skills in their classrooms and serves as a call to action. For teachers to develop these skills in their learners, they must first practice and cultivate the skills themselves. The ideas presented in this book will inspire teachers to shape their classrooms and teaching practices to be meaningful, relevant and future-focused. The book addresses strategies that can be implemented during early childhood development, covering topics from language acquisition and numerical literacy to more specialised subject matter in higher grades.

Success in education is not just about helping learners pass a grade or preparing them for current career opportunities; it is about equipping them with a lifelong learning mindset and the skills to navigate a future we cannot yet predict. This book will inspire and support teachers to become not only great educators but also catalysts for positive change in educational offerings, the futures of their learners and the development of sustainable societies. This is a must-read for all novice teachers, experienced educators and school management teams. Teachers can be game changers!

Chapter 1

# The 21st-century teacher: Setting the scene

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## Abstract

Twenty-first-century skills are tools that can be applied by all to enhance the way we think, learn and live in the modern, fast-changing world. Equipping learners with 21st-century skills provides the foundation for success in the real world. These skills include, among others, critical and creative thinking, problem-solving, metacognition, the ability to communicate and collaborate with others, and global citizenship. In preparing young people for the Fourth Industrial Revolution (4IR) and equipping them with 21st-century skills, teachers need to ensure that by the time learners leave school, they are flexible, can adapt to a constantly changing work environment, can work cross-culturally and are able to take on positions of leadership.

For teachers to meet the needs of 21st-century learners, they must, in a holistic fashion, be adaptors, lifelong learners, technology-savvy collaborators, visionaries and leaders. No longer can a teacher rely on chalk and talk to convey knowledge. Even in the most rural schools, teachers must move beyond the physical classroom to prepare their learners for a fast-changing world. This introductory chapter aims to contextualise the 21st-century teacher and learner within the complex South African education landscape.


## Introduction

Discussions on the development of 21st-century skills and the incorporation thereof into teaching and learning have been prominent over the last 10–15 years. The question is – what are these particular skills?

There have been various documents listing the skills, and while we will refer to these documents, the explanation by Buckle (2024) was found to be apt and encompassing. She considers 21st-century skills to refer to the knowledge, habits, traits, and career and life skills critical to a young person's success in entering adult life. Astuti et al. (2019) postulate that the demands of the 21st century require teachers to focus on four learning characteristics (4Cs):

- Creativity and innovation
- Critical thinking and problem-solving
- Communication
- Collaboration.

The four characteristics listed by Astuti et al. (2019) mirror the skills listed under learning and innovation skills in the Partnership for 21st-century Skills (P21) Framework, developed by the P21 Network, but the P21 Framework identifies many more skills which teachers must embed into the 21st-century classroom. Apart from the learning and innovation skills highlighted by Astuti et al., the P21 Framework includes information, media and information communication technology literacy as well as life and career skills, such as flexibility, adaptability, initiative, self-direction, social and cross-cultural skills, productivity, accountability, responsibility and leadership skills as integral for 21st-century learners to acquire. The P21 Framework further considers the following interdisciplinary themes as important to embed into the curriculum: Global awareness, financial literacy, civic literacy, environmental literacy and health literacy.

Buckle (2024) is of the opinion that when one carefully thinks about it, many of the skills considered vital to 21st-century living are not new skills. Skills such as collaboration, critical thinking, creativity, problem-solving and many more have been taught in classrooms for ages. What has changed is the greater emphasis placed on developing these skills and the environment in which these skills are to be taught.

Gone are the days of training learners for their future in a simple, static, linear and predictable world. Education in the 21st century is aimed at preparing the youth for an unpredictable, dynamic world, requiring the fostering of creative thinking and allowing learners the freedom to explore their unique, individual strengths to develop innovative skills (Astuti et al. 2019). In fact, the world of today is referred to as a volatile, uncertain, complex and ambiguous (VUCA) world. The acronym VUCA, coined by the U.S. Army War College (USAWC) in the 1980s, encompasses the four defining characteristics of the modern world: volatility, uncertainty, complexity, and ambiguity. This dynamic and ever-changing landscape presents significant challenges for individuals and organisations alike (Bennett & Lemoine 2014), but especially for the education sector. The learners living in the VUCA world are also very different from the 20th-century learners. They are more critical, more broadminded and more up-to-date about the topics they learn about, as they often can get to the information faster than the teacher can (Norahmi 2017, pp. 80–81), and they are multitaskers, ingrained in multimedia (Astuti 2019).

To effectively teach in a VUCA world, educators – whether pre-service, beginners or experienced – must be digitally savvy, agile thinkers and possess strong communication and interpersonal skills. They must also be adaptable to a shrinking world that requires acceptance of cultural and lingual differences (Astuti 2019). The participants in Norahmi's study (2017, p. 91) required 21st-century teachers to be 'competent, professional, up-to-date, technology-based', able to use the Internet, smartphones and other tools, as well as social media, as tools to ensure learners are engaged. Furthermore, according to the participants, teachers should have good personalities and display proper social conduct as they are role models, both in and outside the classroom. Another requirement mentioned by the authors is the need to be a good manager of the classroom while ensuring that classes are challenging, joyful, enjoyable and interesting.

Seeing as the generations of the 21st century can, in some cases, be characterised as multitaskers, individuals ingrained in multimedia, well-equipped with searching for information online, there is a need for teachers who can inspire learners in the classroom to want to learn (Astuti 2019). However, the same need for inspirational teachers exists in the less affluent parts of the world, where access to technology and the digital landscape is less common. In these areas, learners who are not technologically savvy must be prepared to enter the same world as their multitasking, technologically savvy counterparts from more affluent backgrounds. Thus, current teachers must demonstrate pedagogical mobility, while pre-service teachers must be trained to adapt to whichever classroom they may find themselves in.

The focus of the chapters that follow is on the views of education specialists regarding the empowerment of beginner teachers with 21st-century skills, enabling these teachers to prepare their learners for the world awaiting them. The pedagogical tools, soft skills and creative aids used in the classroom to foster and encourage the required skills are highlighted in the chapters to follow. However, ethics of care should be at the centre of all ethical and educational liberations and should be practised while alerting to cultural differences within the confines of the law. Before moving forward, it is imperative to consider the South African education context in the 21st century.

## ■ Moving closer to home – the current South African context

Despite significant progress in South Africa's education system since the end of apartheid, several challenges persist. A key concern is the unequal distribution of resources and opportunities, with schools in disadvantaged communities often lacking adequate infrastructure, qualified teachers and learning materials (Spaull 2012). In fact, while some learners find themselves in first-world classrooms, others remain in a third-world environment. This contributes to persistent disparities in educational outcomes, with learners from affluent backgrounds significantly outperforming their peers in marginalised communities (Department of Basic Education [DBE] 2021). Additionally, the curriculum is criticised for being overloaded and rigid, leaving little room for individualised learning and creativity (Msila 2022).

Learners of today are immersed in a world vastly different from the one their parents and grandparents inhabited. However, traditional classrooms, with their rows of desks and focus on teacher-led instruction, remain the dominant learning environment. While these settings can provide structure and discipline, they often struggle to foster the dynamic and collaborative learning necessary for 21st-century skills. As noted by Darling-Hammond (2010), '[*t*]he traditional classroom structure is not well-suited to the needs of 21st-century learners. It is too hierarchical, too passive, and too focused on rote memorization'. Furthermore, the emphasis on rote memorisation and standardised testing often discourages critical thinking and problem-solving skills, hindering learners' ability to adapt to the demands of the 21st century (Dlamini 2020).

Addressing these critical areas will be crucial for creating a truly equitable and effective education system that empowers all South African learners to reach their full potential. South Africa needs beginner teachers who are adaptable practitioners, capable of meeting the diverse needs of their learners and responding effectively to the contexts in which they teach, whether in high-income or low- and middle-income settings. Thus, pedagogically mobile teachers can identify the techniques, strategies and methodologies that best suit the context in which they are teaching (Du Plessis, Küng & Du Plessis 2024).

## ■ Twentieth-century teaching will not work for 21st-century classrooms: This is why

The pace of technological advancement and globalisation has accelerated significantly since the 20th century. Skills that were once valuable may quickly become obsolete, requiring a focus on adaptability and lifelong learning (United Nations Educational, Scientific and Cultural Organization [UNESCO] 2021). The traditional 'banking' model of education, where knowledge is passively transferred, no longer prepares students for a world where information is readily available and constantly evolving. Technology plays an increasingly important role in education, providing access to information and resources, facilitating collaboration and communication, and offering new tools for teaching and learning.

While technology integration offers immense potential, it is crucial to ensure equitable access and responsible use, avoiding the pitfalls of digital divides, distractions (UNESCO 2021) and abuse of technology. Herein lies one of the challenges beginner teachers face in classrooms daily – a lack of responsibility and accountability for actions as the youth immerse themselves in digital and social media.

While skills such as responsibility and accountability have been taught in classes over the ages, ensuring the enculturation of these skills has never been more important in the diverse world of the modern day. Kok

(Chapter 2) points to the duty of teachers to guide learners to develop as moral, well-mannered future citizens, who take responsibility and accountability for their actions. Küng and Serfontein (Chapter 3) report on the lack of respect parents and learners alike show teachers, the modern-day tendency of parents to blame teachers, instead of holding their children accountable and responsible for poor performance, the expectation of society for teachers to take responsibility for the development of moral, social and civic values in learners. The authors proceed to illustrate the moral decay, disrespect for authority and defiance of rules displayed by the youth as they become more immersed in digital and social media. A good example used by the authors is how easily cyberbullies, learners and adults distance themselves from the devastating effects the bullying has on their victims, not taking responsibility for their actions, or considering their accountability.

In the described environment, how do beginner teachers take responsibility and hold themselves accountable to guide their learners in becoming socially conscious and responsible citizens? Kok calls for care to be placed at the centre of all ‘ethical and educational deliberations’. He argues that an ethics of care places a moral duty of care and concerns for learners on teachers and proposes that such care should move beyond an act to become a ‘way of being’. We are of the opinion that this level of ethic of care is only possible if beginner teachers fully comprehend their *in loco parentis* role, and have an excellent comprehension of human rights and legal principles relevant to their role as teachers.

Equipping themselves with an ethics of care, as advocated by Kok, is particularly important for beginner teachers navigating the complexities of diverse classrooms. By prioritising the well-being and potential of each learner, teachers can move beyond standardised approaches and create a foundation for personalised learning that fosters responsible citizenship in all learners by recognising diverse needs and learning styles.

The 21st-century classroom is increasingly diverse, with students representing various backgrounds, abilities and learning styles. Traditional standardised approaches often fail to cater to these individual needs, resulting in disengagement and underachievement. A personalised learning approach using technology and differentiated instruction is crucial to meet the needs of all learners (Brusco 2018).

The traditional one-size-fits-all approach to education is no longer effective in meeting the diverse needs and learning styles of 21st-century learners. Personalised learning, which tailors instruction and support to individual needs and interests, is gaining prominence. This approach allows learners to learn at their own pace and in ways that are most effective for them, fostering greater engagement and deeper understanding

(McGrath 2024). Thus, equipping teachers with a strong foundation in care ethics (Kok, Chapter 2) is particularly important in today's diverse classrooms, where personalised learning approaches must be coupled with a deep understanding of each learner's needs and background to foster responsible citizenship.

Du Plessis et al. (2024), as Küng and Serfontein (Chapter 3) refer to the multitude of changes society experiences as new frontiers are explored, driven by evolving needs and technological advances. Often, the words *teachers are preparing learners to enter careers not yet in existence* point to a constantly changing skills landscape and the need for teachers to display pedagogical mobility as they adapt to changes. A good example is the sudden explosion of development in artificial intelligence (AI) over the last two years and the effect it has had, and still has, on education.

Traditional curricula, which often emphasise rote memorisation and standardised testing, do not adequately cultivate the 21st-century skills learners must master. A key focus of 21st-century education is the development of 21st-century skills, which encompass critical thinking, problem-solving, collaboration, communication, creativity and digital literacy. These skills are essential for navigating the complexities of the modern world and adapting to the ever-changing demands of the workforce. The P21 Framework outlines these skills as crucial for learners to succeed in the globalised economy and become responsible and engaged citizens (P21 2019).

By equipping learners with 21st-century skills like critical thinking and collaboration, teachers can prepare learners to master many of the 21st-century skills responsibly, among which is to navigate the interconnected world and become responsible global citizens.

Today's learners face global challenges that necessitate a deep understanding of diverse perspectives and an ability to work collaboratively across borders. The traditional focus on national history and culture no longer suffices. In an increasingly interconnected world, it is essential for learners to develop a strong sense of global citizenship. This involves understanding and appreciating different cultures, perspectives and values, and recognising the shared challenges we face as a global community. The Organisation for Economic Co-operation and Development (OECD) emphasises the importance of global competence in the 21st century, encouraging learners to develop critical thinking skills, intercultural understanding and civic responsibility (OECD 2020). However, fostering a strong sense of global citizenship requires more than just knowledge; it necessitates a foundation in social-emotional well-being, allowing learners to navigate diverse perspectives and collaborate effectively across borders.

However, the real image of the social-emotional well-being and mental health of youth does not paint a pretty picture. Duraiappah (2022, p. 7) paints a disturbing picture of the current state of mental well-being in the world as he refers to the findings of a recent survey pointing to the global youth being anxious, frustrated and depressed at the state the world finds itself in and the uncertainties climate change holds for humanity. Winde (2022, p. 10) refers to a World Health Organization fact sheet wherein they they reported that approximately one in seven adolescents (around 14%) experience a mental health condition, though prevalence may vary across studies, age groups and regions. This dire situation has been exacerbated by the coronavirus disease 2019 (COVID-19), across the world, but especially in South Africa. South Africa showed the highest increase in depression and anxiety disorders, with a rise of more than 36.4% of cases reported. In 2020, 72% of South Africa's youth between the ages of 18 and 35 displayed signs of depressive symptoms, placing them at risk of developing depression. In a similar study conducted in 2017, the number was 12%.

Traditional education often neglects the social-emotional well-being of learners, focusing solely on academic achievement. This can lead to anxiety, stress and depression, hindering learning and personal growth. Twenty-first-century education must prioritise holistic development, integrating social-emotional learning programmes to promote self-awareness, self-regulation and positive relationships (Collaborative for Academic, Social, and Emotional Learning [CASEL] 2020). Martinus et al. (2022, p. 13) propose that young people should be equipped with skills, attitudes and mindsets by fostering the growth of social, emotional and cognitive competencies in positive learning environments focused on establishing positive and supportive relationships in order to enable learners to regulate and manage themselves. Teachers can develop social-emotional well-being by:

- creating enabling environments in which learners are encouraged to make responsible decisions and deal with challenging situations
- developing learners' competencies to recognise and control their emotions
- promoting empathy, prosocial motivation and positive social norms.

The world we live in is changing rapidly, and the way we educate our children needs to change too. Earlier, we referred to the need for 21st-century classrooms to encourage problem-solving, critical thinking and self-directedness, while also referring to learners asking for classes that are engaging, challenging and enjoyable. It is clear we can no longer rely on the same methods that were used in the past.

While Kok (Chapter 2) and Küng and Serfontein (Chapter 3) address the issue of the good role model, Fourie et al (Chapter 4) set the scene for chapters to come in their discussion on self-directed learning (SDL) as a required soft skill for 21st-century learners.

The study reported on by Bunt and Van Tonder (Chapter 7) highlights the potential of game-based learning (GBL), a technology-driven approach, to cultivate essential 21st-century skills. By creating and playing these open education resources (OER) games, learners not only deepen their historical knowledge but also develop SDL, collaboration and critical thinking – all hallmarks of successful learners in today's technology-rich world. By embracing new technologies (Bunt & Van Tonder, Chapter 7), tailoring instruction to individual needs, and fostering essential skills like critical thinking and collaboration (Van Tonder et al., Chapter 5), beginner teachers can prepare learners for success in the 21st century. Van Tonder et al. (Chapter 5) claim that by encouraging learners to visualise their thinking processes with Thinking Maps, teachers can gain valuable insights into individual learning styles and tailor instruction accordingly. This visualisation strategy not only promotes SDL and critical thinking but also fosters a deeper understanding of how learners connect ideas and concepts.

The 21st century presents a dynamic and challenging landscape for learning. While traditional classrooms remain dominant, adaptive expertise by teachers within technology-rich settings in the 21st century is important. The need for pedagogical mobility requires teachers to be innovative and think creatively in their approach to teaching. Not only technology but also resources, like LEGO® bricks, combined with play-based learning, can be powerful tools for developing adaptive expertise, as highlighted by Coertzen et al. (Chapter 9). By engaging with innovative teaching strategies, pre-service teachers learn to adapt their instruction to different situations and resources, a vital skill for navigating the ever-changing needs of a 21st-century classroom. While LEGO® bricks offer a hands-on approach to play-based learning, social media platforms, as elaborated on by Monyakane (Chapter 8), provide a similar sense of exploration and active participation. Both encourage learners to experiment with different communication styles and collaborate with others, fostering the 21st-century skills needed for success.

Teacher training programmes can benefit from blended models that incorporate Thinking Maps and soft skills development. By offering a combination of classroom instruction, online resources and opportunities for practice in informal spaces, these programmes can prepare pre-service teachers with the critical thinking, SDL and interpersonal skills needed to navigate the complexities of the 21st-century classroom. Blended models, informal spaces, innovative pedagogies and access to virtual communities offer exciting possibilities for developing the skills and knowledge essential for success in the modern world.

The key to holistic development lies in creating environments that are not only engaging and motivating but also foster critical thinking, collaboration, creativity and digital literacy. The passage by Fourie et al. (Chapter 4) emphasises SDL as a crucial skill for learners in the 21st century. The authors highlight the characteristics of autonomy, motivation, self-efficacy and reflection as essential for deep lifelong learning (a key competency in the 21st century). By implementing approaches like creating OERs as discussed by Kloppers et al. (Chapter 6) as well as Bunt and Van Tonder (Chapter 7), teachers can encourage learners to take ownership of their learning and develop SDL skills. Embracing new approaches and maximising the potential of emerging technologies can empower learners to develop SDL skills. By fostering autonomy, motivation and critical thinking, these strategies can prepare learners to navigate the complexities and opportunities of the 21st century. Equipping teachers with the skills to embrace new approaches and emerging technologies is crucial for creating successful 21st-century learning environments. As highlighted in the research on Accounting by Petzer (Chapter 12) and English language teachers as researched by Kruger and Kaiser (Chapter 10), effective training empowers teachers to navigate the complexities of the modern classroom and maximise their potential to prepare students for the opportunities of the 21st century.

By embracing new approaches (Fourie et al., Chapter 4; Kloppers et al., Chapter 6; Bunt & Van Tonder, Chapter 7; Kruger & Kaiser, Chapter 10; Petzer, Chapter 12) and maximising the potential of emerging technologies, beginner teachers can ensure that learners are well-equipped to navigate the complexities and opportunities of the 21st century.

However, the question remains – are the learning environments provided adequately equipping our students for this new reality? The answer may lie in the ability of teachers to reflect on their practice. Pedro et al. (Chapter 11) report on a study focusing on reading instruction, but their findings offer valuable advice to beginner teachers. The authors emphasise how crucial reflective practices are for professional growth, improvement of teaching and inspiring teachers to be more adaptable, effective and responsible. According to the authors, reflective practices involve the continual evaluation of teaching approaches and methods with the aim of bridging the gap between the abilities of a student and the required outcomes by working out what works best for a particular learner within the VUCA world that the current youth find themselves in.

## The VUCA world: Navigating uncertainty and complexity

The acronym VUCA, coined by USAWC in the 1980s, encompasses the four defining characteristics of the modern world: volatility, uncertainty, complexity and ambiguity. This dynamic and ever-changing landscape presents significant challenges for individuals and organisations alike (Bennett & Lemoine 2014).

*Volatility* refers to the rapid and unpredictable nature of change. Events unfold quickly and unexpectedly, making it difficult to anticipate future trends and plan for contingencies (Yaccob, Yunus & John 2023). This characteristic is evident in the frequent economic fluctuations, technological advancements and political upheavals that occur across the globe.

*Uncertainty* arises from a lack of clear information and understanding of the factors influencing our circumstances (Cuban 2013). The interconnectedness of global systems makes it challenging to predict how local events might ripple outwards and impact broader contexts. In an uncertain world, individuals and organisations must operate with limited knowledge and adapt to evolving situations on an ongoing basis.

*Complexity* describes the intricate web of relationships and interconnectedness that defines the VUCA world (Darling-Hammond 2010). Events are rarely isolated, and seemingly simple situations often involve a multitude of interrelated factors. This complexity necessitates a holistic approach to problem-solving and decision-making, taking into account various perspectives and potential consequences.

*Ambiguity* stems from unclear or incomplete information, making it difficult to draw definitive conclusions and formulate accurate assessments (Bennett & Lemoine 2014). In a world filled with misinformation and conflicting viewpoints, individuals must be able to critically evaluate information and navigate ambiguity with a discerning eye.

The VUCA world presents significant challenges for traditional approaches to leadership, management and decision-making. Rigid structures and hierarchical systems struggle to adapt to the rapid pace of change and the unpredictable nature of this environment (Schulze & Pinkow 2020). To thrive in the VUCA world, organisations, such as schools, need to be flexible, adaptable and willing to embrace innovation and experimentation.

## Navigating the pitfalls of the VUCA world

The VUCA world, characterised by volatility, uncertainty, complexity and ambiguity, presents both opportunities and challenges. While it fosters innovation and rapid change, it also harbours pitfalls that can hinder the progress and well-being of learners.

## Decision paralysis

The ever-present need to adapt and react to changing circumstances can lead to analysis paralysis. Inundated with information and unsure of future outcomes, individuals and organisations may struggle to make timely decisions, ultimately hindering their ability to capitalise on opportunities and effectively respond to emerging threats (Fragouli & Tourlaki 2020).

## Short-termism

The pressure to demonstrate immediate results and adapt to rapid changes can lead to a focus on short-term gains and quick fixes, neglecting long-term planning and strategic thinking. This short-term approach can jeopardise sustainability and hinder an organisation's ability to achieve its long-term goals (Erasmus 2015).

## Information overload

The digital age offers an abundance of information, often overwhelming individuals and organisations. The inability to filter out irrelevant information and prioritise leads to information overload, hindering sound decision-making and effective action (Okolo 2021, p. 1).

## Loss of control

The unpredictable nature of the VUCA world can create feelings of helplessness and loss of control, particularly for those who thrive on structure and predictability. This can lead to anxiety, stress and decreased motivation (Bennett & Lemoine 2014).

## Erosion of trust

Ambiguity and uncertainty can erode trust in institutions and leaders. Conflicting information and competing interests foster cynicism and scepticism, further exacerbating existing societal challenges (Taylor, Zarb & Jeschke 2021).

## Increased inequality

Rapid technological advancements and change can exacerbate existing inequalities. Those lacking access to resources and education may struggle to adapt, potentially widening the gap between the privileged and underprivileged (Baraka 2024, p. 34).

### Loss of meaning and purpose

Constant change and uncertainty can make it challenging to find meaning and purpose in life. This lack of direction can lead to feelings of isolation, existential anxiety and a sense of powerlessness (Binder, Woodfin & Hjeltnes 2023).

While these pitfalls are inherent to the VUCA world, they are not inevitable. By fostering critical thinking, adaptability, collaboration and resilience, individuals and organisations can navigate the complexities of this environment and emerge stronger. Focusing on long-term goals, building trust, fostering a sense of purpose and promoting equitable access to opportunities can help mitigate the negative impacts of the VUCA world and build a more resilient and sustainable future.

## The importance of holistic development in education

Holistic development in education focuses on fostering the growth of students beyond just academics, encompassing their physical, emotional, social and intellectual well-being. This approach is crucial for preparing well-rounded individuals who can thrive in the 21st century.

### Improved academic performance

- *Enhanced learning*: Studies suggest that elementary school learners who experience holistic development exhibit greater engagement and motivation in learning, leading to improved academic performance (Yu et al. 2022).
- *Reduced stress*: Through holistic approaches that incorporate stress management and mindfulness practices, teachers can better attend to the interpersonal and instructional complexities of teaching and learning (Roeser et al. 2012).
- *Development of critical skills*: Holistic education fosters skills like critical thinking, problem-solving and communication, which are essential for academic success across various disciplines (OECD 2020).

The CASEL reports that socioemotional learning programmes can boost academic achievement by 11 percentile points (CASEL 2020). This is because students equipped with social-emotional skills like self-regulation, goal-setting and collaboration are better able to focus, learn effectively and navigate academic challenges.

## Enhanced well-being and mental health

- *Reduced anxiety and depression*: Holistic approaches that prioritise social-emotional learning and provide mental health support can significantly reduce anxiety and depression rates among students (Durlak et al. 2011).
- *Increased resilience*: By developing coping mechanisms and building self-esteem, holistic education can better equip students to handle challenges and setbacks, promoting resilience and mental well-being (American Psychological Association 2022).
- *Positive social development*: Fostering positive relationships and social skills through holistic education contributes to improved social-emotional well-being and reduces the risk of social isolation and bullying (UNESCO 2021).

Holistic development fosters resilience by helping students develop strong coping mechanisms to manage stress, anxiety and depression. A study published in the *Journal of School Psychology* found that programmes focusing on character development and social-emotional learning can reduce anxiety and depression symptoms (Jones, Brown & Aber 2017).

## Preparation for 21st-century challenges

- *Adaptability and lifelong learning*: The rapidly changing world requires individuals to be adaptable and proactive learners. Holistic education equips students with the skills and mindset to continuously learn and adapt to new circumstances (OECD 2020).
- *Global citizenship and intercultural competency*: A holistic approach fosters awareness and appreciation of diverse perspectives. Students develop critical thinking and intercultural competency, enabling them to navigate a globalised world and address complex issues (UNESCO 2021).
- *Social responsibility and ethical leadership*: Holistic education emphasises ethical decision-making, empathy and social responsibility, preparing students to become impactful citizens and responsible leaders in their communities (American Academy of Arts and Sciences 2019).

## Promoting personal growth and fulfilment

Holistic development goes beyond preparing learners for future careers; it aims to foster their overall well-being and happiness. By exploring their interests, talents and passions beyond academics, learners and students alike gain a strong sense of self-awareness, purpose and direction in life.

A study in the *Journal of Positive Psychology* found that learners and students who participated in holistic development programmes reported increased self-esteem, self-efficacy and life satisfaction (Waters, Sutton & Jones 2012). By fostering academic success, emotional well-being, social responsibility and personal growth, we empower those we teach to lead fulfilling lives and contribute positively to a changing world.

## The link between VUCA and holistic development

The VUCA world, characterised by its volatility, uncertainty, complexity and ambiguity (Johansen & Euchner 2013), poses significant challenges to traditional models of education. These models often emphasise rote learning and standardised testing, leaving students ill-equipped to navigate the dynamic and unpredictable environment of the 21st century. As Mynett (2015) emphasises 'the VUCA world requires individuals who are not only knowledgeable, but also adaptable, creative, and resilient'.

Holistic development in education offers a promising solution to this challenge. This approach focuses on cultivating a diverse range of skills and competencies beyond academic knowledge, including:

- *Critical thinking*: The ability to analyse information, identify biases and form independent judgements (Fielding 2008).
- *Creativity*: The capacity to generate original ideas and solutions to complex problems (Lucas & Anderson 2015, p. 2).
- *Problem-solving*: The skill of identifying problems, developing effective strategies and implementing solutions (Firda, Suryadi & Dhalan 2023, p. 274).
- *Collaboration*: The ability to work together effectively with others to achieve common goals (Andersen & Rustad 2022).
- *Adaptability*: The capacity to adjust to changing circumstances and learn from experience (OECD 2024).
- *Emotional intelligence*: The ability to understand and manage one's own emotions and those of others (Mulyana et al. 2022).

These skills are essential for navigating the uncertainties of the VUCA world. They empower individuals to become:

- *Resilient*: Able to bounce back from setbacks and challenges (BW Education 2023).
- *Independent learners*: Capable of taking responsibility for their own learning and adapting to new situations (World Economic Forum [WEF] 2020).

- *Effective communicators*: Able to express their ideas clearly and persuasively (OECD 2019).
- *Ethical and responsible citizens*: Committed to making a positive impact on their communities and the world (UNESCO 2017).

Several academic sources explicitly connect the need for holistic education in the context of the VUCA world:

- Vidal (2023) argues that 'systems thinking in education' is crucial for developing the adaptability and resilience needed in the VUCA world. Once again, a community of care will be required to procure, build and provide the necessary tools and infrastructure to succeed. A concerted effort for curriculum development in favour of the Fourth Industrial Revolution will be a must. For this to come to flourish, the education communities will have to care about their learners' future (Kok, Chapter 2).
- BW Education (2023) highlights the importance of K-12 education in imparting 'entrepreneurship education' to foster 'creativity, critical thinking, and problem-solving skills' needed in the VUCA world.
- Harishree and Mekala (2020) emphasise the need for 21st-century teachers to be learners themselves and role models for their students in exhibiting skills such as collaboration, communication, critical thinking and problem-solving. Reflective practices (Pedro et al., Chapter 11) ideally allow teachers to evaluate the effectiveness of current practices, and adapt and model critical thinking, effective communication, problem-solving and collaborative skills for their learners to witness.

In conclusion, the VUCA world demands a new paradigm in education. Holistic development, with its emphasis on a broad range of skills and competencies, offers a powerful approach to preparing individuals for the challenges and opportunities of the 21st century. By fostering resilience, adaptability and critical thinking, holistic education empowers individuals to become effective learners, creative problem-solvers and responsible citizens capable of thriving in a rapidly evolving world.

## ■ Conclusion

Beginner teachers entering practice are faced with a unique set of challenges. The VUCA world we live in requires a changed mindset in terms of teaching learners. Gone are the days of the teacher as a fountain of knowledge taking control of learning. Teaching in a world where knowledge creation is the order of the day, to learners who have access to knowledge at their fingertips, requires beginner teachers to display an array of soft skills to survive the 21st-century classroom. At the same time, teachers have to nurture and develop the same skill set in their learners with an ethic of care for the well-being of their learners, who are trying to adapt to a world filled with obstacles and pitfalls.

In this chapter, the authors elucidated the skills required for 21st-century education, considering the particular South African context, before providing an in-depth discussion on why 20th-century teaching will not succeed in the 21st-century classroom. The focus then shifts to the good, the bad and the ugly of the modern-day VUCA world in order to emphasise the need for holistic education to prepare learners not only for future careers but future living.

Chapter 2

# Ethics of care for 21st-century South African educators

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## Abstract

For educators who are concerned with the holistic development of their learners, knowledge construction is one of the multiple dimensions for the development of well-rounded individuals. In addition to their educator responsibilities, they have a duty to assist learners to develop as well-mannered and moral individuals and future citizens who are responsible. In addition, especially in the South African context, there is a myriad of ethical concerns that educators and the education system are confronted with that require serious moral deliberation. These issues range from systemic problems such as inadequate pit latrine infrastructure leading to the unnecessary deaths of children to the suicide of learners ascribed to alleged discriminatory treatment and bullying.

An ethics of care, as the name suggests, places 'care' at the centre of our ethical and educational deliberations. As a formal theory of ethics, it has had and continues to have considerable influence in the fields of

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medicine and education. This approach not only guides us in how to engage with life and one another but also informs the structuring of our institutions and communities. Thus, it is a moral theory of significant importance to education in the 21st century and beyond. An ethics of care would require educators to actually 'care' for their learners, take an interest in their well-being, as well as their development and participation in their education. Furthermore, it would require 'care' from educators for their field, consequently also addressing the practice of education. By making use of Noddings' critique of care in education (Noddings 2005), it can be shown how a moral education for 21st-century South African educators is possible through an ethics of care by means of modelling care, promoting dialogue-framed education, practising care and confirming learners.

## Introduction

A key concern for education and educators is the development of well-mannered and moral learners, as well as educators' duties towards them.[1] 'The philosophical field concerned with what is considered morally good and morally bad is called "ethics"' (Singer 2023). It is the field that investigates the questions regarding what is considered right and wrong behaviour in the world, our duties towards each other in terms of these rights and wrongs and how we can go about determining those rights, wrongs and duties. 'If part of our, the [*educator's,*] task is to develop morally upright and responsible citizens' (Sayed & Vellanki 2013, p. 301), it follows that we should be concerned with ethics as well. If we are to determine what is the 'right' manner to be or to do something, including the 'right' way to teach, it is then upon the educator to invest time into considering ethics and ethical teaching practices.

## Forms of ethics and critique

Gilligan identifies two philosophical traditions that had considerable influence on education (Kurian 2023, p. 1574): deontological ethics and consequentialist ethics.[2] A third form of ethics revitalised in the context of education in the late 1990s by the work of Nussbaum, although considered by her as a problematic category but applicable in its distinctiveness from deontological and consequentialist ethics (Brady 2018), is virtue ethics. 'Deontological ethics, or normative ethics, [*considers*] rules and duties as the foundations of ethics'

1. Parts of this section are based on the following published course material: Kok, JE 2020, 'Ethics of care', World views and ethics (UTEW 221), Lecture notes, North-West University.

2. Parts of this section are based on the following published course material: Kok, JE 2020, 'Ethics of care', World views and ethics (UTEW 221), Lecture notes, North-West University.

(Hursthouse & Pettigrove 2022). It can be argued that ethical behaviour can be described as those choices and behaviours that are based on rationally determined pre-established rules and duties. Consequentialist ethics consider the moral path as the one that leads to the greatest happiness or 'good' (Hursthouse & Pettigrove 2022). As the name suggests, consequentialism focuses on 'consequences'. In this case, what is right is what leads to the greater good. Virtue ethics takes a different route to rules and consequences and 'focuses on what could be considered as moral character and virtues for humanity' (Hursthouse & Pettigrove 2022).

As examples of how these may be applied in the classroom environment, we can consider the following:

1. 'My classroom rules tell my learners what is right and what is expected in my classroom.'

This is an example of deontological ethics. We determine right and wrong behaviour based on the rules and duties that are established for us.

2. 'The department declared that English will be the primary LOLT [language of learning and teaching], so we can ensure equal opportunity learning for the majority of our learners.'

In the above statement, the 'right approach' to teaching and learning is determined on the basis of which events or choices are leading to the greater good – that the majority of learners will have fair access to learning if the department and schools approach education in a particular way.

3. 'Cindy[,] do not lie! Only bad people lie!'

As a very simple example, the final statement portrays virtue ethics – as it implies what is required to be a person of good moral character. In this case, being honest and truthful are considered virtues and characteristics that moral people should strive for. In this sense, it also depicts the difference between virtue ethics and the other two forms of ethics – while the first two focus on external rules and effects, virtue ethics looks towards the self. In other words, it focuses on guiding decisions based on one's being and character (Hursthouse & Pettigrove 2022).

It does not take much effort to see how these strands of ethics depart from each other or lead to very different outcomes in terms of what 'ought to' be done. For example, what if a rule leads to the exclusion of a lot of learners? Should we follow the rule? (Consequentialist critique of deontology.)

Or, what if our assessment policy focused on the highest possible pass rate leads to the exclusion or even harm of a few students? Do we not have a duty towards all? (Deontological or virtue critique of consequentialism.)

Or should we always tell the truth? Are we good people if we tell people they are not as proficient or pretty or skilled as others? Is it not better if we only remain honest most of the time? Not even asking how we come to determine what the virtues we should be pursuing are and in which contexts they apply. (Consequentialist critique of virtue ethics.)

It is evident from contesting arguments on the same ethical conundrums that finding firm, unquestionable answers regarding ethics is challenging. The complexity increases when we consider systems and institutions, such as schools, that will have long-term effects on people's well-being. The distinguished 21st-century French ethicist and philosopher, Paul Ricoeur made a proposal that the route forward for moral philosophy in the context of our contemporary world and its influential institutions is to bring together independent positions of discernment (i.e. external principles) with moral characters that promote compassion (i.e. moral personality traits) (Leget 2011, p. 106). This position seems to be the one held by proponents of an ethics of care. A central tenet held by key proponents of the ethics of care, such as Noddings (2005, p. xiv), Gillian (Joorst 2021, pp. 5–6) and Tronto (Grypdonck 2011, p. 89), is that our very being requires compassion and care for survival and therefore should require compassion and care as a duty from us and that a caring community would work towards principles and systems that endorse a caring practice.

## ■ An ethics of care: A basic proposition

An ethics of care, as the name suggests, places 'care' at the centre of our ethical deliberations. As a formal ethics, it has had and continues to have considerable influence and a growing body of scholarship in the fields of medicine and education (Bozalek & Winberg 2018, p. 1; Conradi & Heier 2014, pp. 29–33). It is an ethics that endeavours not only to guide us as to how we should approach life and each other but also how we should set up our institutions and communities (Bozalek 2011, p. 58; Conradi & Heier 2014, pp. 30–33).

Some of the key terms used in the formulation of an ethics of care that will be reflected on to make sense of the theory are: '(inter)relationships', 'vulnerability' and 'compassion'. Proponents of an ethics of care represent Paul Ricoeur's consideration that our natural condition as 'social beings' is not one of autonomy but rather 'mutual dependence' (Baart & Vosman 2011, pp. 201–205). What this means is that a state of self-dependence and reliance is not a natural position for us as human beings and should be reflected in our institutions, including our ethics and physical institutions. This has interesting consequences, as the focus for ethical decisions and moral character needs to address, if not be built upon, our relationships with one another and our world.

Noddings typically uses the mother-child relationship to elucidate the necessity for care as an ethical principle (Brugere 2014, p. 77). The premise is that all human beings start their lives in a condition of vulnerability and a social relationship of dependence (Vanlaere & Gastmans 2011, pp. 16–17). Without a caregiver, the child cannot survive let alone thrive. We all start our existence as vulnerable beings entirely dependent on the social relationships around us (Bozalek 2011, p. 58). The relationship, however, is not seen as one-directional and meaning is drawn for the caregiver in providing care. Here, ethicist and political theorist Tronto expands on Noddings' reference to care and defines care as follows:

> We suggest that caring be viewed as a species activity that includes everything that we do to maintain, continue, and repair our 'world' so that we can live in it as well as possible. That world includes our bodies, ourselves, and our environment, all of which we seek to interweave in a complex, life-sustaining web. (Tronto as cited by Brugere 2014, p. 77)

Tronto therefore expands on the metaphor and social construct of the mother-and-child relationship to clearly emphasise the focus on the interrelationship of people and the world as being at the heart of the ethics of care (Brugere 2014, p. 77; Sykes & Gachago 2018, p. 85). Similar to virtue ethics, an ethics of care is an everyday practice of behaviour – something we do every day for ourselves and others (Sykes & Gachago 2018, p. 86). It is not only us and our bodies in need of care, but our entire environment – both social and physical. As with birth, our demise is also an example of a requirement for care. As we grow older and even pass away, we require others to care for our physical bodies as well as our memory (Woods 2014, pp. 93–95). We are vulnerable, mutually dependent on one another and our environment for survival and growth, and therefore should care for others seeing as 'I require care'. This also ties in with the African philosophical ethical maxim of Ubuntu, '*Umuntu ngumuntu ngabantu*' – I am because we are. I can only be because of others, and therefore have a duty towards others. In ethics of care, the duty is care.

Aside from our interrelationships and vulnerability that form the foundation for the justification for an ethics of care, it requires compassion as a principle for its implementation. Many theorists criticise the applicability of ethics of care on the basis of relationships of vulnerability and dependence being asymmetrical in nature and therefore harmful on some level to individual interest (Bozalek 2014, pp. 51–72). To clarify this in simpler terms, we can look at the teacher–student relationship. While the learner is completely dependent on the teacher for guidance and quality learning, the teacher is not dependent on the learner for the same. Not in the same way, at least, according to ethics of care proponents. The issue for the opposition to ethics of care is that the two parties are not equal in the relationship of vulnerability. The exchange is a one-sided one – the learner is vulnerable and in need of tremendous care, and the teacher has to provide such care. What then of personal interest and 'care'?

The error in judgement among proponents of the ethics of care lies in their neglect of mutual dependence, which can be addressed through a principle of compassion. For these proponents, the issue of asymmetry is fundamentally flawed; they argue that the asymmetry-relational perspective is rooted in a 'cost-benefit' view of the world that prioritises human selfishness as central to the human experience (De Arriba Rivas & Ibáñez Ruiz del Portal 2023, p. 3). For them, it may be true that relationships may be asymmetrical on multiple grounds, such as along the lines of power or information and so forth in the case of the teacher compared to the learner. However, the asymmetrical-dependence view neglects the basic proposition that we are all 'interwoven' and interdependent (Brugere 2014, pp. 73–77). To see such relationships only in terms of 'cost-benefit' exchanges neglects the fact that gains are made on other levels, such as meaning and social welfare. Here is where compassion enters into the discussion.

Theorists in support of ethics of care have argued that compassion is the means by which we ensure 'care' is exercised as a duty towards other human beings and our environment (Leget 2011, pp. 101–103). Within the framework of an ethics of care, compassion is not only a 'feeling' for or 'empathy' towards others, but it includes it (Smit & Scherman 2016, p. 3). Compassion is also a recognition of one's own vulnerability and that one instinctively cares for, such as family members and peers. Compassion within an ethics of care envelopes Nussbaum's thoughts on compassionate imagining – where compassion entails the recognition of one another's vulnerabilities and struggles (Shanyanana & Waghid 2018, p. 1390). Compassion is also the recognition that the 'other' is 'you', a vulnerable and mutually dependent being, and to act caringly towards them is to act caringly towards me. Compassion for others is compassion for the self – as it is a communal and long-term investment for maintaining, developing and repairing our world (Brugere 2014, p. 77). To 'care' is to act in a way that, if applied as a 'rule' by others, would ensure care is returned to yourself and your community. It is also the opportunity to extend yourself, your meaningful being, by being part of the growth and protection of the 'other' (Joorst 2021, pp. 6–7). In terms of teaching, then, caring for your learners means also having the 'opportunity to care' and extending your being to be part of their potential growth as caring persons. In the words of Tronto (2001):

> While perfection is impossible, improvement is not. Through good caring, people are better able to live well in this world. (p. 65)

## Ethics of care and education

There are many consequences following the establishment of an ethics of care for education. Two worth mentioning are the welcoming of diversity and concern for individual development in education.

An ethics of care would require educators to actually 'care' for their learners, and take an interest in their well-being, development and participation in their education (Noddings 2005, pp. 26–27). Tronto divides the practice of care into four phases (Bozalek 2011, p. 58):

1. Caring about, or the moral attentiveness to the needs of others.
2. Caring for, or the moral responsibility to meet out care.
3. Caregiving or taking care of, the competence of effectively responding to needs and judicious procurement and deployment of resources to meet needs.
4. Care receiving, which involves responsiveness to care.

Responsiveness is problematic in terms of the asymmetrical view of care relations, as immediate reciprocation is not guaranteed. Noddings admits to the reality that 'care' may not be reciprocated by the learner(s) (2005, p. 25), but holds firm that care can only follow if learners are cared for. If educators 'care', the school 'cares and the community 'cares', then the learner is empowered to 'care' for themselves and others (Shanyanana & Waghid 2018, p. 1389). This entails that educators should be welcoming towards diversity and promote discussion and participation from all learners in diverse forms.

For authors such as Noddings (2005, pp. 63–66), we are too diverse as individuals in our needs and interests to expect that our established and generalised approaches to education could ever serve to properly assist our learners to grow. Standardised testing, rigid curriculums and classrooms without learner input are indicative of a lack of care. Worse still, those generalised approaches mean systems that lead us, the educators and education institutions, astray. For her (Noddings 2005, pp. 28–33), these approaches shifted our focus to marks and other administrative ends, and the manipulation thereof, instead of the dire need to develop our learners and prepare them properly for their role(s) in society.

For an individual to develop effectively and even holistically, there has to be care shown for their participation and their place in the classroom. For Noddings (2005, pp. 19–25), this also means that a caring educator would assist a learner to develop according to their skill and develop learning opportunities to develop those skills. To care as a teacher is not to focus on an external end to be met, but focus on the development of the learner on an individual level. To accept that certain abilities and skills will not be obtained by learners, but that they can adopt specific aspects of a subject field that can benefit them in their personal development towards being effective participants in society. As an example, it may be futile to expect all learners to develop skills in doing complex, abstract mathematics. However, they can be taught mathematics to a level that assists the development of their personal abilities. For Noddings (2005, p. 19), the only way to ascertain what a learner's individual ability and needs are and to react responsibly through tuition, one first needs to care for their abilities and potential for growth.

## Moral education

All the philosophical justification aside, what does this mean for us as educators?

Noddings summarises moral education in the context of an ethics of care as entailing four major components (2005, pp. 21–27): Modelling, dialogue, practice and confirmation.

Modelling requires the educator to present themselves as a caring educator (Noddings 2005, pp. 21–23). As with the existing expectation of educators to be examples to their learners, modelling requires educators to apply care in their interactions with their learners and also in their field. Within a framework of care, it is doubly important that the learner experiences 'care' in order to develop a caring character (Noddings 2005, p. 23). Presenting a character of care is therefore not sufficient, and the educator must approach the learner on an individual level with 'care'. In terms of their field, the educator must also express a genuine interest in their subject and teaching practices – the need to demonstrate care for their subject as well as their learners. Learners pick up quickly when a teacher does not care for a subject and will then be equally doubtful of the care directed to them (Noddings 2005, p. 23).

When referring to dialogue, it does not simply mean the conversational sense with the allowance of questions here and there (Noddings 2005, pp. 23–24). Noddings invokes Paulo Freire when referring to dialogue, meaning dialogue as a genuine approach of openness to people, events and the world (2005, p. 24). Dialogue in the context of moral education involves permission and opportunity for all involved to try and show themselves and their trepidations, educational or otherwise. It is a sincere openness to establishing relationships that welcomes individual diversity and a mental inquisitiveness that endeavours first to explore events and people fairly, rather than judge immediately from an existing personal narrative or established framework. It involves allowing the other to also bring their experience and knowledge to the table and through discourse determine its applicability, rather than immediately rejecting personal experiences as part of learning for not fitting the established mould (e.g. It does not fit the textbook description neatly) (Noddings 2005, p. 24).

When referring to practice, Noddings (2005, pp. 24–25) suggests that practices of care have to become a norm in the classroom and the school environment. It extends beyond modelling and requires subject groups, classrooms and the school to be involved in 'care' events. The idea is not only that learners experience events where other carers practice the act of caring but be involved in events and occurrences where there is a need for care so learners can come to experience and understand the need (Noddings 2005, pp. 24–25). It therefore moves beyond the act of caring and requires opportunity for learners to experience the interdependent nature of our world and their ability to contribute.

Finally, there is confirmation. Through care, a person receives confirmation that they are worthy (Noddings 2005, pp. 25–27). In the school environment, confirmation is key not only to stress learners that they are worthy but also able. Able to participate and even contribute to their world. Through confirmation, we inspire to affirm and promote the best in others (Noddings 2005, pp. 25–27). This also brings us to a very important point regarding the ethics of care: it may come across that caring through dialogue and confirmation may motivate morally dubious or bad behaviour to be understood and accepted. This, however, is false. We require open dialogue with ourselves and our world not to *not judge at all*, but to be clear where our judgements emanate from and where they may need to be adjusted. In terms of confirmation, it means to also affirm when behaviour is wrong.

However, a caring educator would attempt to ascertain the reasons behind bad behaviour and decisions, so as to confirm why it is judged negatively. Noddings shares a few examples in her book *The challenge to care in schools* (2005, p. 26), where she expresses the relief when a learner is shown to be understood as to where their behaviour went wrong and that a 'caring' educator would provide disparagement of bad behaviour without admonishing the character of the child. For example: Martha is caught by Ms Dlavane bullying another child, even hitting the child in front of her friends and peers. There is no doubt that the behaviour is unacceptable and straightforwardly wrong. As an educator, Ms Dlavane has two options – immediate punishment for bad behaviour and addressing Martha's bad character. Or Ms Dlavane can try to come to understand Martha's reasoning and then guide her as to why those actions are misguided. It may be out of petty jealousy, a friendship lost or social isolation; whatever the reason, the learner can be guided as to where they went wrong and how to become a better version of themselves. This does not mean punishment is removed, but rather caringly applied. Typically, if a learner is shown to be understood, even when their actions are misguided and immoral, there is a sign of relief (Noddings 2005, pp. 26–27). When engaging in dialogue rather than outright judgement, and when there is confirmation made that better judgement and moral character are possible, the learner benefits from a caring teacher. They get to think: ‘Here is the significant and percipient other who sees through the smallness or meanness of my present behaviour a self that is better and a real possibility’ (Noddings 2005, p. 25).

## Twenty-first-century South African education

The 21st-century South African education system and environment are in no small need of care when considering the myriad issues plaguing it. Five of the nine provinces in the country are implicated in litigation addressing unsanitary pit latrines that have cost the lives of children (McCain 2021). Bullying is a commonplace event that is leading to violence and suicide (Seleka 2023; Smit & Scherman 2016, pp. 1–2; Tshikalange 2021). Insensitive remarks are creating unwelcome school environments for lesbian, gay, bisexual, transgender, queer or questioning and intersex individuals, which has led to cases of suicide (Khumalo 2022a). The list goes on. It is also no secret that the effects of the dysfunctional schooling system of the apartheid government have not disappeared with the new dispensation (Grant, Jasson & Lawrence 2010, p. 82). Even higher education is not spared from difficulties that may require a renewed ethical approach for resolution, being described as in a state of ‘turmoil’ facing challenges ‘in terms of access, available funding, casualisation of labour, demands to decolonise the curriculum’ and so forth (Bozalek & Winberg 2018, p. 1).

Tronto advocates for clear decision to be made with respect to the position that educators, in particular curricula developers, would take with regard to an ethics of care stance – would they slot into the status quo positions of practitioners in an unjust world order, or would they grapple with difficulties plaguing education and work towards transforming education and the inequalities that beset it (Bozalek & Winberg 2018, p. 2). In line with an ethics of care, a community or education system of care can only follow if the participants and leaders thereof ascribe to an ethics of care. As with Ricour’s proposition for moral philosophy going forward, moral character endorsing compassion as well as guidelines for moral discernment is paramount (Leget 2011, p. 106). On the one hand, an ethics of care should be instilled within and by the participants and organisers of education; while on the other hand, the systemic structure, principles and policies guiding education should reflect an ethics of care stance. It could therefore be counterproductive, even vacuous, to endorse a culture of care between teachers and learners without the schools and departments of education adopting their policy guidelines, principles and organisational structure to endorse the same. A thoroughly democratic ethic of care is considered pivotal by scholars on ethics of care for furthering social justice ends and for enhancement of learner and educator well-being and academic development (Bozalek & Winberg 2018, p. 2; De Arriba Rivas & Ibáñez Ruiz del Portal 2023, p. 4; Shanyanana & Waghid 2018, pp. 1382–1390).

However, as Freire argued in *Pedagogy of the oppressed* (1993, pp. 55–62), true systemic change in education only follows from the disruption of the status quo by educators and the empowerment of learners. It follows then that an ethics of care endorsement and practice could justifiably precede and more effectively inspire change in more formal systemic structures. For success in its application in education, ethics of care proposing a deeply personal adjustment of moral practice and development of moral character may require personal and interpersonal grappling with its moral proposal and role for education – rather than an institutional top-down rule enforcement strategy. A valid starting point for its support may be future teacher education programmes that formally explore ethics of care within the education environment and that make it clear that its success and influence are deeply dependent on teacher endorsement.

In an effort to give credence to the role ethics of care could play for 21st-century South African educators, and as potential topics for discourse in teacher education programmes in the context of ethics of care, four of the aforementioned issues affecting South African education will be discussed as case studies in the context of Noddings' (2005) components of moral education: (1) Bullying in South African schools; (2) pit latrines and their hazard to health and dignity; (3) the hazard of uncaring interaction with learners; (4) and the Fourth Industrial Revolution (4IR) and education.

Creswell (2014, p. 241) describes case studies as qualitative research designs that endeavour to explore 'a program, event, activity, process, or one or more individuals' in depth. Case studies can be descriptive, explanatory or exploratory (Priya 2021, p. 96). Case studies are generally in-depth studies that allow for methods of data collection that suit the researcher's purpose of study (Priya 2021, p. 96). Exploratory case studies endeavour to generate hypotheses from the case study for further research (Priya 2021, p. 96). In this case, case studies were considered ideal for hypothesis application. Four separate case studies, based on research on various articles on the events of interest, are explored in the context of an ethics of care as an explanatory and resolutory hypothesis.

## Case study 1: Bullying in South African schools

While bullying was historically disregarded as harmless, it has become a worldwide issue that appears to be a systemic problem (Smit & Scherman 2016, p. 2). Although therefore not a uniquely South African issue, reports on bullying leading to death by suicide and homicide of multiple South African learners in the early 2020s are deeply disconcerting (Seleka 2023; Tshikalange 2021). Although some of these events are indicative of more deeply rooted community-related issues (Seleka 2023), multiple accounts indicate persistent and long-term bullying that goes unaddressed (Tshikalange 2021). Smit and Scherman (2016) make a case for relational leadership and ethics of care as a proposed strategy to address the phenomenon. Like Noddings (2005, pp. 9–14), they hold that what is lacking is a relationship-orientated approach to leadership and education practice (Smit & Scherman 2016, pp. 1–6). In short, a deep-seated sense of care and being cared for is not apparent in those environments.

Smit and Scherman's relational leadership (2016, pp. 1–6) is an example of modelling care. Relational leadership promotes quality relationships between school leadership and learners, teachers and parents (Smit & Scherman 2016, pp. 1–3). By establishing quality relationships that foster dialogue and confirmation, leadership exemplifies caring. They create a community of care by demonstrating to all involved parties that they are worthy of time and consideration. This level of involvement serves as a reminder that the community of education belongs to them, and they have a vested interest in fostering care for everyone, which includes caring for the individual.

In Noddings' account of modelling (2005, pp. 21–23), educators should be aware that their own interactions and actions present what is considered acceptable. By inspiring enmity towards individuals, even bullies, it inculcates oppositional fronts that further entrench ideas that care may be restricted or withheld. Especially in terms of counteracting bullying, an ethic of care teaching practice will involve assisting learners to understand how groupings and individual interests can fuel enmity and rivalry and through that process, teachers can model how it is possible to be on both parties' sides (Noddings 2005, p. 175).

It follows then that a community of care is pivotal in addressing bullying at school. If left unchecked, as cases in South Africa clearly demonstrate, a lack of intervention in bullying could lead to loss of life through suicide (Tshikalange 2021) or escalating violence towards victims of bullying (Seleka 2023). In a case in Gauteng, where a Grade 10 learner was stabbed to death by peers, the family of the victim directly implicated the community for also not addressing bullying in their environment (Seleka 2023). While the victims of bullying require and deserve outright protection, it falls on the broader education community to instil an ethics of care that addresses the relationships of their community members. The collective has to demonstrate to both parties that they are worthy of consideration and that they care enough to address behaviour that transgresses against the stability of a caring community.

## Case study 2: Pit latrines and their hazard to health and dignity

Cases of learners dying from drowning in pit latrines in South Africa are staggering. Children as young as four and five years old have succumbed to this horrible fate (Ellis & Sqgolana 2023; Saba, Macupe & Pather 2018). As far back as 2014, these events have been brought to national attention with the death of Michael Komape, a five-year-old boy from Chibeng village near Seshego in the Limpopo province (Saba et al. 2018). At the time a civil lawsuit followed, and the Department of Basic Education was placed under severe scrutiny, not only for the hazardous infrastructure that led to Michael's death but also for the manner in which the grieving family was treated by this government department (Saba et al. 2018).

That these deaths because of hazardous pit latrines are not only a travesty but a clear moral violation of human dignity, is exemplified in the South African Human Rights Commission (SAHRC) having taken legal steps against five provincial education departments for continued use of pit latrines (McCain 2021). During the SAHRC's investigations into the extent of the problem, it was found that by 2021 more than 3,000 schools across South Africa still made use of pit latrines (McCain 2021). This follows a report carried out by Amnesty International in 2020 that called for immediate governmental action, where it was reported that the South African government's own statistics of 2018 showed that 19% of 23,471 public schools made use of illegal latrines alone for sanitation purposes (Amnesty International 2020). In spite of national coverage and litigation, in the year of writing, 2023, another four-year-old drowned in a pit latrine in the Eastern Cape province.

Tronto's work on the ethics of care, frames care also as a political project and argues that care should be at the heart of democratic political agendas (Sykes & Gachago 2018, p. 86). Her third phase of care, 'caregiving or taking care of', includes the competence of effectively responding to needs and judicious procurement and deployment of resources to meet needs (Bozalek 2011, p. 58). In both these domains, the departments of education are then failing to demonstrate care. The indictment of a lack of care cuts even deeper, considering that these events and the lack of response to them affect the most vulnerable of society. It is exactly our vulnerability as human beings that forms the foundation of a duty to care, while the most vulnerable in these cases are the ones neglected.

While the very real duty of safeguarding their populace from physical harm and harm to dignity caused by public infrastructure lies at the feet of government, an ethics of care places the duty of care with the self (Leget 2011, pp. 101–103). In other words, although blame can be laid formally on state infrastructure, the question remains whether the individuals and communities involved in these schools are endorsing thorough care. With the high number of cases reported since 2014 across the country, it is highly questionable whether the schools where these occurrences still take place are endorsing ethics and principles of care. Whether enough is being done at the grassroots level to curtail these dramatic events remains a valid concern. An ethics of care involves the individual in exercising care as a duty, thereby requiring action from all participants in the education communities where these circumstances prevail. An ethics of care as a principle does not focus on blame, but on what should be done by all to ensure that our learners are cared for. It requires the 'I' and the 'us' to act.

With the prevailing occurrence of pit latrine deaths, it is clear that education infrastructure still remains a key concern for 21st-century education, but an ethics of care rewrites this from an institutional problem alone to an 'us' problem. The problem is not for 'them' to solve, but for 'us' to resolve. The educators, principals, parents and community have as much a duty of care for these learners as systemic entities do.

## Case study 3: The hazard of uncaring interaction with learners

In a widely reported case in South Africa, a student teacher was implicated in the suicide of a young learner after allegedly making homophobic remarks towards the learner in class (Chetty 2022; Govender 2022; Khumalo 2022a). This case could be redefined as a potential case of bullying, albeit it then between teacher and learner. The same conclusions as derived in Case Study 1 regarding the need for relational leadership and a community of care then apply (cf. pp. 8–9). Quoting Lerato Phalakatshela from OUT, an LGBTQIA+ organisation in Pretoria, on the circumstances leading to the learner's suicide, Khumalo reports (2022a):

> School becomes everything to you because you spend most of your time there. If you feel like you are not being accepted or humiliated, it can either depress one, make them anxious about going to school, and sometimes lead them to do drugs or even [*died by*] suicide.

With this statement, Phalakatshela highlights the importance of the school environment in its entirety to foster a community of care, a community of compassion for the other in order to repair our broken individual and collective worlds. The absence of a community of care is heart-wrenchingly evident when the reported last words of the deceased learner to his aunt are considered:

> 'Will my sexuality always be something people joke about? Will I live like this forever?' (Khumalo 2022b)

That the greater community failed to care for the learner and his family is also exemplified when one considers that they were given the proverbial run-around from the police station to the police station when attempting to report the events to authorities (Khumalo 2022b).

Khumalo (2022a) further reports on the discussion with Phalakatshela on learners requiring understanding and acceptance as a form of support from their teachers by noting: 'Phalakatshela added teachers might not offer that support and other pupils might feel enabled to also mistreat their classmates'.

Hereby, Phalakatshela exemplifies the need for modelling care by teachers so as to promote caring relationships and curtail enmity (Noddings 2005, pp. 21–23).

The correlation with Case Study 1 aside, these events also highlight the requirement of a caring 'practice' (cf. p. 6) of education and the need for confirmation in classrooms. One report of the events described above is that the student teacher made an uncaring remark regarding the learner's sexuality as part of a lesson on sexuality (Khumalo 2022b). Teachers should take care, in both senses of the meaning, when conducting their practice. While care should be taken by teachers not to encroach on the dignity of their learners, they should also express and model care by nurturing learner dignity. A 'practice' of care would place compassion, empathy and our interwoven humanity at the forefront (Brugere 2014, pp. 73–77; Shanyanana & Waghid 2018, p. 1390; Smit & Scherman 2016, p. 3).

A 'practice' of care would not shy away from topics on sexuality but would frame the lesson as a care event (Noddings 2005, pp. 24–25) – exploring the topic while allowing for individual representation in the 'other is us' context, not the learner as an exemplar approach. For example: such a lesson in the practice of care framework of approach would aim at strengthening empathy by exploring sexuality as both an individual reality as well as a shared human quality. In this way the topic is approached as open to dialogue, multiple representations are validated in discussion and presentation and the learner as an isolated exemplar is avoided. This also ties to the confirmation aspect of a teaching practice of care (Noddings 2005, pp. 26–27), as it clarifies that the learner is worthy of consideration and representation while normalising individual differences as a shared characteristic in the collective community of the classroom. Without confirmation of individual value and considered effort towards a practice of care when planning or executing lessons, the risk of socialising prejudice through education practice is a valid concern (Kurian 2023, p. 8).

All in all, as this case study shows, it can be severely destructive if an uncaring teaching practice is a norm.

## Case study 4: The Fourth Industrial Revolution and education

In 2016, the founder of the World Economic Forum, Klaus Schwab, laid out the case for why we are in fact entering a 4IR (Schwab 2016). Aside from the advent of new technologies such as artificial intelligence (AI), the Internet of Things (IoT), nanotechnology, etc., the development of complex technologies is occurring ‘at an exponential rather than a linear pace’ (Schwab 2016) – thereby cementing a new age of industrial revolution. The scope of this change was not missed by the South African government, and in 2018, it reported on parliamentary discussions on the scope of influence, opportunities and risks that would have to be met in response to 4IR, including by the Department of Higher Education and Training (Parliament of the Republic of South Africa [PRSA] 2018).

It is no secret that South African society is marred by inequality when it comes to access to basic services and quality education (Bozalek & Winberg 2018, p. 1; Grant et al. 2010, p. 81), which would of course include access to technology. Already on the back foot, it stands to reason that rural South African schools will struggle most to adapt to 4IR demands and should be a core focus for development by the government (Yende 2021). To further complicate matters, a self-evident key component and hurdle for the success of 4IR technology integration in education is teacher training in new technologies (Koopman 2022, p. 61; Yende 2021, pp. 56–58). Although it then follows from the preceding arguments in this chapter that a caring education system would tie their well-being and success to the empowerment of its teachers, as Maringe and Chiramba aptly put it (2022, pp. 176–178): ‘humans drive change’.

Even if the digital divide is overcome, it would still require human intervention and action for the application and exploration of technologies to occur in the classroom. So too, an ethics of care requires agency, a commitment to care. Teachers will have to demonstrate through modelling that they care about their subject (Noddings 2005, p. 23), as well as the means and tools they use to explore their subject. The duty of care is twofold in its application in education in this instance: on the one hand, educators should demonstrate a genuine interest in applying these technologies, and on the other, they need to genuinely care about their learners being exposed to and empowered to use these technologies for success in their world. For this to work, the teaching practitioner needs to care for their practice and to willingly and actively involve themselves in the development of their skills and use of these technologies.

Once again, a community of care will be required to procure, build and provide the necessary tools and infrastructure to succeed. A concerted effort for curriculum development in favour of 4IR will be a must. For this to come to flourish, the education communities will have to care about their learners' future.

## Conclusion

As exemplified in the case studies, an ethics of care addresses more than moral behaviour and human interactions. It places a moral duty of care and concern for learner flourishing in the broadest sense on the educator and the education community. Care is, therefore, more than a specific type of act – it is a way of being, acting upon others, assisting others and approaching our lives and professions.

It is a form of ethics that endeavours not only to ensure that all receive the care required to be efficacious individuals in their society but also a form of ethics that assists the reshaping of our individual characters and our social institutions to be better versions of ourselves for a better world for us all. The issues confronting education in the 21st century, especially in South Africa, may be best met with an education that places such a form of care at the heart of its actions and deliberations.

Chapter 3

# Teaching within the confines of the law: A 21st-century skill?

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## ■ Abstract

Much has been written about the need for 21st-century teachers to focus on aspects such as critical thinking, technological changes, problem-solving and leadership. However, a review of the relevant literature on

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21st-century skills reveals a lack of emphasis on preparing pre-service and beginner teachers for the disciplinary, societal and emotional challenges they will encounter as they start their careers. Academic literature and reports in printed and social media make it abundantly clear that there is a need to change our teaching methods. Equally important are the constant and dynamic changes in the teaching environment. Beginning teachers today confront discipline, societal and emotional challenges that their counterparts from 20 years ago could not even fathom.

In the South African education context, the situation is further complicated by our history, significant socio-economic disparities and the varying conditions of schools across different percentiles. Now more than ever, it is essential for teachers to be empowered to achieve their personal and national education goals within a legal framework that regulates the rights and responsibilities of all parties involved. This framework is crucial to ensuring that schools become havens where optimal teaching and learning can occur. Based on the aforementioned points, the authors of this chapter believe that while the 21st-century skills discussed are crucial, it is equally important for South African beginner teachers to have a sound understanding of human rights, common law and other relevant legal principles when entering the teaching profession. Therefore, this chapter aims to explore the importance of empowering beginner teachers to address the dilemmas they may encounter within the confines of the law.

# ■ Introduction

Jan (2017, p. 50) highlights how every dimension of humanity – economically, technologically and socially – has been and continues to be in flux. The author further discusses the complex challenges these rapid changes pose for teachers, policymakers, educationists and education managers. According to Jan, highlighted challenges such as emotional, underscore the necessity for teachers to cultivate specific soft skills in their learners, intelligence, flexibility, adaptability, teamwork, leadership and communication skills (Rosli 2024), while also mastering the integration of technology into their teaching. Driscoll (2023) similarly emphasises the changes required in education. She believes that 20th-century education emphasised compliance and conformity over creativity. In contrast, a 21st-century classroom should prioritise creativity, along with critical thinking, collaboration and communication (Driscoll 2023; P21 Network 2019).

Tican and Deniz (2018, p. 181) aver to the need for people (teachers) who have spent much of their lives in the 20th century to now adapt to the requirements of the 21st century. If one considers the current average age of the teacher population in South Africa, one cannot help but wonder if the teachers currently in service are prepared for the changes the 21st-century demands. In 2015, Simkins (2015, p. 34) reports that the highest number of South African teachers fell within the 45–49 years of age category. The 2018 Teaching and Learning International Survey (TALIS) statistics (Organisation for Economic Co-operation and Development [OECD] 2019, p. 2) indicated that South African principals are over 51 years old on average, while the average age of South African teachers is 43 years. Gustafsson (2022, p. 16) reports an average age of 45 years for teachers across all post levels (Relative Education Qualification Value [REQV] notches). At the same time, the picture looks remarkably similar in the tertiary education sector, where the average age of academics between 2007 and 2019 moved from 44.8 years of age in 2007 to 45.3 years in 2013 and reached 45.7 years of age in 2019 (Cloete, Bunting & Van Schalkwyk 2022, p. 41).

From the aforementioned, a clear picture emerges of 20th-century teachers and academics tasked to teach 21st-century learners and students with a strong relationship with technology and having different learning styles and needs (Hernandez-de-Menendez & Morales-Menendez 2019, p. 713). The same authors, accordingly, emphasise the challenges faced by, especially higher education institutions, in adopting their teaching strategies to advance the learning experience and educational performance of such students demanding an education that benefits them in their future lives (p. 714). Given that most learners and pre-service teachers currently in training are either Generation Z (Gen Z) or Generation Alpha (Gen Alpha), one cannot help pondering on the preparedness of teachers and lecturers to cope with what the generational gap brings. The main distinctive characteristic of students attending universities now is the strong bond they formed with information and communication technology (ICT). These millennials have different learning styles and are most effective when participating in multisensory activities.

As the rest of the chapters in the book focus on aspects related to pedagogical matters, among others, the development of critical thinking skills, the use of technology for teaching and the utilisation of social media in teaching, this chapter focuses on empowering teachers to teach within the confines of the law. Researchers such as Segalo (2020, p. 9), acknowledge that teachers are too often trained to teach subject knowledge, and too seldom trained to deal with taking care of learners, thus lacking the skills to deal with, for example, pregnant learners in a just and legally sound manner. Teaching within the confines of the law means that one should consider the relevant legal documents and doctrines teachers should be aware of and which regulate professional teacher conduct to ensure that legal requirements are met and the human rights of all education stakeholders are protected. The law, moreover, plays a crucial role in reforming education as it attends to changes needed regarding the operation of schools and the improvement of quality education delivery (Yeban 2023).

Before guiding and preparing beginner teachers for the discipline, societal and emotional challenges that their counterparts from 20 years ago could not have fathomed, it is essential to explore the societal changes that have impacted how schools have had to adapt or may need to adapt. Once, the current societal impact on school discipline, learner wellness and societal conformity has been expounded upon, a legal framework embedded in various legal documents and doctrines are discussed. This is followed by a synopsis of the way South African universities attempt to prepare pre-service teachers to teach within the confines of the law. The chapter concludes with an in-depth discussion on the most important aspects beginner and current in-service teachers should be cognisant of.

## The 20th-century society versus the 21st-century society

As one reflects on the changes the world has experienced in the last 100 years, it is astounding to consider what people have lived through and adapted to. This reflection leads to the realisation that these changes have had, and continue to have, a significant impact on society today. While there are many changes to discuss, the authors will focus on the following: Communication and technology, gender roles, family structures and equality, and cultural diversity.

### Communication and technology

In the 20th century, people communicated using landline phones and letters (Novak 2019), while people went out to cinemas and theatres for entertainment. Technology was not an integrated part of life. Television, newspapers and radio were the known forms of mass media. Only at the end of the 20th century did mobile phones, household computers, laptops and emails become part of everyday life (Novak 2019). The 21st century, on the contrary, is an era of smartphones, instant messaging apps and social media. Information is at everyone's fingertips, including learners, and the world has shrunk as people connect globally with ease (Novak 2019). The importance of embracing advanced communication technology for successful learning, especially during the coronavirus disease 2019 (COVID-19) pandemic, became essential to ensure the continuity of teaching and learning (Mabidi 2022, p. 329). The same author also emphasises the opportunities technology attributes to post-COVID-19 teaching and learning by allowing for the online distribution of learning resources, the creation of self-designed content and the provision of opportunities for consistent communication between teachers and learners.

## Gender roles, family structures and equality

During the 20th century, gender roles were more rigid and more traditional. Society had firm expectations of men and women, especially in terms of family, societal and career roles. The nuclear family, with a two-parent household, was the ideal of the 20th century, with less acceptance of diverse, unconventional family structures leading to greater acceptance of single-parent households, same-sex couples raising children and chosen relationships (Oláh et al. 2018, p. 41). A drive for gender equality emerged at the end of the 20th century as gender equality movements gained momentum and spilt over to the 21st century, which also experienced a movement for the increased representation of women in leadership roles (UN Women 2021), as well as for the recognition of lesbian, gay, bisexual, transgender, queer or questioning, intersex, asexual and more (LGBTQIA+) rights (Morris 2023).

## Cultural diversity

As the 20th century progressed, advocacy for civil rights and respect for diversity increased. However, minority groups continued to be marginalised as dominant cultures prevailed in many aspects of life. Pousther and Fetterolf (2019) found that, while the latter is still true, changes brought about by advances in technology, opening the world and leading to greater globalisation, led to a stronger emphasis on celebrating and embracing cultural diversity. Teaching learners from diverse cultural backgrounds is, however, no easy task as caring for learners from collectivistic cultures may require teachers to prioritise social harmony and family needs, while learners from individualistic cultures may require more emphasis being placed on their individual freedom and personal development (Bian et al. 2022, p. 2).

While change in society should be for the better, there is no doubt that change often goes along with disruption and, thus, requires adaptation by those touched by it. Considering the aforementioned changes society has adapted to over the last 100 years, the disruption some of these changes have brought into the education sphere has required and still requires great adaptation.

# Impact of a changing society on the 21st-century classroom

Over the last 20 years, rapid political, social and economic changes have transformed the structure of societies around the globe (Bećirović & Akbarov 2015, p. 21), as has become clear in the preceding discussions.

These profound changes in society have forced education systems to change – to become more flexible and compatible with modern-day, contemporary issues and to successfully address new realities and challenges. Changes also necessitated the adoption of new policies being implemented to change the education landscape. According to the *National Policy Framework for Teacher Education and Development* in South Africa (2006, p. 6), this has led to 'extremely complex conditions' under which teachers need to work.

The same Framework highlights the importance of the role teachers need to fulfil in the intellectual, moral and cultural preparation of the next generation. Warnick and Scribner (2020, p. 99) consider schools to have been, and still to be, spaces of moral growth which should elicit community oversight. This aligns with the four pillars identified by the United Nations Educational, Scientific and Cultural Organization (UNESCO) in *Learning: The treasure within* (1996), namely that life-long education should be based not only on 'learning to know' and 'learning to do', but also on 'learning to live together' and 'learning to be'. If this holds true, two questions arise – are teachers sufficiently revered given their important role in growing the moral basis of the future society and does the community assist teachers in this regard?

The truth is that the social roles of teachers, their responsibilities and their duties changed significantly alongside the changes within education systems across the world. While the scope of teachers' responsibilities has increased exponentially, their status within society has become lower (Bećirović & Akbarov 2015, p. 21). A few decades ago, teachers enjoyed high societal status; they were recognised and respected for their expert knowledge and the work they do. In modern society, financial or material standing is what is valued, while the value attributed to knowledge, competencies and commitment has declined drastically (p. 26). A good illustration is the adoration of the youth (and less youthful) of TikTok influencers, social media personalities and the like. As teachers are generally paid less than other more white-collar professionals, not to even mention the earnings of social media influencers and celebrities, their services are valued less.

In agreement, the South African Council for Educators (2020, p. 18) explains that, owing to the harmful media reports, both parents and learners hold negative perceptions of teachers. On the contrary, teachers may also contribute to the lowering of their status in society by not living up to the standards required of them (Calitz & De Villiers 2020, p. 85; Mthiyane & Mudadigwa 2021).

To maintain the previous respect attached to the teaching profession teachers, themselves, should showcase exemplary ethical and professional behaviour (Monteiro 2014, p. 61) of which integrity, respect, trust and care are essential components. While integrity necessitates honesty, dependability and honourable teacher conduct, respect requires teachers to value human dignity, diverse spiritual and cultural values, and to promote equality. To be trustworthy, teachers need to be open and fair, care for learners and always act in the best interests of the learners (Dimkpa 2015, p. 73). Teachers must conduct their teaching responsibilities by adhering to the ethical and professional principles attached to the teaching profession, which is currently mostly not the case (Keshmiri, Jambarsang & Mehrparvar 2023). This could, according to Kriel, Livingston and Kwenda (2023, p. 2), be because of pre-service teachers not being aware of the ethical risks attached to teaching and not being introduced to codes of ethics.

On the other side of the coin, a perusal of literature often points to teachers becoming the scapegoats of everything that is wrong with education. Bećirović and Akbarov (2015, p. 27) allude to teachers across the world being criticised for failures in education, immediately blamed for behavioural problems among learners and for poor learner academic achievement, while their work is rarely appreciated and recognised. Pawlewicz (2022, p. 2912) refers to 'historical policy stories' blaming teachers for poor educational reform, while Fauth et al. (2020, p. 1284) caution against using measures equalising teaching quality to teacher quality. Esteve et al. (in Bećirović & Akbarov 2015, p. 27) point to the ingrained idea of parents that, when a child succeeds it is because of their own potential and quality, but when the child fails, it is the fault of the teacher. It appears as if teachers, of today, are not only required to respond to demands by parents in terms of learners' educational outcomes but are also called to answer society's needs in terms of widening access to education, in schools where greater democracy may increase pressure on teachers to maintain a culture of teaching and learning (p. 24).

In their study focused on the reasons for the increasing problems teachers face in maintaining classroom discipline and control, Alam, Aziz and Qazi (2018, p. 241) identified two dominant factors, among various opinions, that significantly contribute to the rise of discipline issues among learners in Asian classrooms. These two factors were changing social values and the influence of what the researchers coin, *an irresponsible media* (p. 242). The authors argue that the Western concept of the *self*, along with a disregard for age, status or experience, has led to a lack of courtesy towards teachers. This has resulted in rudeness, disrespect and, in some cases, threats of violence (p. 242). While it is important to instil self-confidence in a learner, taking self-importance too far may have become 'too much of a good thing'. In the same vein, most of the participants in their study believed the traditional values and attributes found in the Asian home were fast changing.

There is an emergence of an approach of self-importance and self-gratification among the younger generation as opposed to the traditional respect and regard for elders and the family. The resulting loss of positive values at home has now overflown into the classroom (p. 243). From a Western viewpoint, Bećirović and Akbarov (2015, p. 24) report that social changes not only impact the relationships between teachers and learners but also between parents and teachers. It is not too far in the past where being a teacher brought about certain privileges and authority. While there is no doubt that some abused the authority and privileges, the current focus on learner rights, which are now legally guaranteed, has led to teachers often becoming the victims of humiliation and at times several types of violent attacks. However, to date, no proper mechanism has been created to guarantee equal protection of teachers and learners to create an efficient and well-functioning learning environment (p. 25).

Although the *Bill of Rights* (RSA 1996) guarantees human rights to all individuals (teachers and learners alike) and obliges the State to protect, promote and respect such constitutional rights, Legotlo (2000, p. 16) opines that teachers are often unjustly attacked on the grounds of a lack of professionalism which, according to the same author, should be seen as a threat to teachers' humanness. While teachers have a right to human dignity, they will be required to prove that their self-esteem has been impaired and their reputation has indeed been harmed (Legotlo 2000, p. 17).

According to Stolsky (in Bećirović & Akbarov 2015, p. 25), the role played by societal pillars, which he refers to as educational agents, has through the years impacted moral, civic and social education, but their role has become limited in recent times. The most important of these educational agents is the family. Historically, mothers played a key role in the moral, emotional and social education of a child, but in modern times mothers have become too busy leading to limited time spent with their children, especially given the increase in divorce and single parenthood (Duvning, in Bećirović & Akbarov 2015, p. 25). As a direct result, parental duties, such as basic interpersonal relationship skills and founding moral values, have become the duty of the teacher. Parents and society, accordingly, require schools to be responsible for the development of moral, civic and emotional values in children. As societal issues within communities find their way into the schools, teachers are, furthermore, expected to initiate and maintain programmes focused on social issues alongside their academic teaching (Wallen, Young & Levin 2021, p. 365).

In terms of the irresponsibility of the media, Alam et al. (2018, p. 243) mention that the development in technology has led to an increase in accessibility and availability. People today have access to electronic entertainment in various forms all day long, seven days a week. Basson (2015, p. 2) reports on a 2010 study which found that apart from sleeping, children between the ages of 8 and 18 spend more time with some form of electronic media than any other activity, as electronic media constitutes the greatest part of the entertainment environment of children and teenagers (Basson 2015, p. ix). Electronic media, which stretches from television and movies to computer games, from song lyrics to music videos, as well as various social media applications such as TikTok, X (formerly known as Twitter) and Facebook, all convey messages, albeit positive or negative, which become part of a child's internal world, subtly shaping their thoughts and behaviours (p. 2).

Social media applications expose young people to individuals who are willing to sacrifice their souls just to make a profit. Furthermore, Alam et al. (2018, p. 243) report on a tendency in the media to portray teachers negatively as not deserving of respect because they are arrogant and unfair, while 'gangster' type learners, who are rude and aggressive, are to the contrary portrayed in a positive light. It is in line herewith that Bećirović and Akbarov (2015, p. 24) point out that, while mass media offers interesting learning opportunities, the negative consequences thereof should not be ignored. Teachers, for example, often find themselves having to compete against the 'stars' of television and Internet and are, therefore, forced to adapt and integrate technology to remain relevant. Teachers are, moreover, often the victims of verbal attacks and forms of humiliation through social media, leaving them with emotional and psychological consequences and feelings of disempowerment to deal with (De Wet 2021, p. 35).

In their respective studies into the influence of electronic and social media on school discipline, Nyongesa, Kiprop and Chumba (2019), Ntakirutimana and Andaka (2019) and Musau, Okoth and Matula (2017) acknowledge the positive contribution of the various forms of media to the teaching and learning. However, while the three studies are all focused on countries on the African continent, all the authors provide ample evidence from studies across the world pointing to the accompanying negative influences the media have on education. The most disconcerting issues emerging from the literature are:

- A loss of the ability to communicate with others face-to-face and a loss of socialisation skills in some cases lead to social isolation (Musau et al. 2017, p. 203; Nyongesa et al. 2019, pp. 63, 65).
- Moral decay, with high exposure to pornography and sexting (Ntakirutimana & Andala 2019, p. 3; Nyongesa et al. 2019, p. 63).
- Disrespect for authority and defiance of school rules, increased truancy and reduction in classroom attendance (Ntakirutimana & Andala 2019, pp. 3, 11; Nyongesa et al. 2019, p. 63).

- Decline of attention paid to detail, as well as a decrease in the ability to retain information accompanied by a decreased attention span and concentration levels as they become used to constantly consulting various social media platforms (Ntakirutimana & Andala 2019, pp. 3, 6, 11; Nyongesa et al. 2019, p. 63).
- A reluctance to do research, as the learners rely on social media to provide easy access to low-quality information (Nyongesa et al. 2019, p. 63).
- Exposure to violence because of low levels of parental control in terms of age restrictions, especially in gaming (Basson 2015, p. IX; Musau et al. 2017, p. 203).

While all the abovementioned negative influences of technological advances are disconcerting, the emergence of cyberbullying is identified as one of the worst emerging problems faced by schools and parents alike. Unlike the face-to-face bullying of the past, cyberbullying – referring to the sending, posting or sharing of negative, harmful, false or mean content via cell phones – is not limited to a specific location, like a schoolyard. Cyberbullying continues anywhere access to the Internet is available, it is as if there is no escape from it (Cirello 2013, p. 2; Rueda 2019). Deliberate harmful, threatening and/or aggressive messages, which are repetitively sent via text messages, emails, instant messaging or posted on social media platforms are considered as cyberbullying. Cirello (2013, p. 3) reports that American adolescents include sexting and cyberbullying in how they communicate with one another. However, the same holds true for adolescents across the world. The author lists the spreading of malicious rumours and posting embarrassing pictures and/or videos on various social media platforms such as Snapchat, X (formerly known as Twitter) and Facebook as ways used by cyberbullies to humiliate, damage reputations and peer relationships the victim may value. Rueda (2019) adds the sharing of personal information to the list of techniques used by cyberbullies. Not only learners but also teachers fall victim to cyberbullying.

What makes cyberbullying so damaging are:

- The hurtful and humiliating content can be sent to large numbers of people instantaneously (Cirello 2013, p. 11).
- A cyberbullying attack can happen at any time from which the victim cannot escape (Cirello 2013, p. 11).
- The bully cannot witness the immediate harm caused, thus creating the impression that there will be no consequences (Rueda 2019).
- Victims experience the situation as uncontrollable, as they have no control over where the bullying happens, or with whom their information is shared (Rueda 2019).

- As anything shared online becomes a permanent part of the web, the malicious content may later be viewed by prospective schools or employers, who have no idea that the information is untrue, leading to life-long consequences (Rueda 2019).

There is little doubt that the changes brought about by developments in technology and communication have clearly impacted schools and the daily lives of teachers with both positive and negative outcomes. The discussion will now move to how the changes in societal views on gender roles, changes to family structures, as well as cultural diversity in the classroom have impacted the role of educators.

Despite the strides made in terms of gender equality in the 21st century, it is disconcerting to realise that gender biases and gender stereotyping are still evident in classrooms across the world, as well as in our daily lives outside of schools. In their study, Alan, Ertac and Mumcu (2018, p. 876) illustrate the negative influence a teacher with traditional gender views can have on girls. The researchers found a lowering in performance in objective maths and verbal tests by girls who were taught by such teachers for more than a year, with an expounding effect the longer the girl learners are exposed to the teacher, while there was no effect on the boy learners. Nduagbo (2020) refers to various studies between 2004 and 2016 reporting on what may be involuntary differentiations made by schools and teachers in how they treat boys and girls from the earliest days in schools through to the senior years. Differentiation relates to the manner of discipline, the manner of praise and biases in terms of what can be referred to as ‘feminine’ and ‘masculine’ subjects. Even more disconcerting are biases found in educational material, including textbooks, perpetuate gender stereotypes, such as women often being portrayed as weaker, more dependent, and helpless than boys, as well as the omission of people outside the gender binary and instances of tokenism.

Schools are important microcosms for addressing social issues such as prejudice, marginalisation and even oppression, especially when it comes to sensitive topics such as gender identity (Goldstein-Schültz 2020, p. 155; Nduagbo 2020). However, systematic heterosexism, that is the ‘positioning [of] heterosexuality as cultural and social norm’ thereby granting heterosexual people power and privilege at the expense of LBGTQIA+ people may lead to LGBTQIA+ learners to experience a lack of security, feeling unsafe, attacks on their personhood and even a lack of access to resources (Goldstein-Schültz 2020, p. 155). The reality is that LGBTQIA+ learners report experiences of verbal harassment, physical harassment, ridicule, discrimination and infringement of their right to equality through the prevention of using their preferred pronouns (Goldstein-Schülz 2020, p. 156; Ubisi 2021, p. 106). Gender-based violence is referred to by Clark (2020, p. 358) as a social evil. Willingham-Jaggers (in Clark & Kosciw 2022, p. ix) expresses concern about the readiness of pre-service teachers, even when well equipped to work with LGBTQIA+ learners, for the outside pressure they may find themselves subjected to, pressures to limit diversity, becoming verbal targets of 'anti-gay' parental rights groups, while they try to create learning environments that are safe and affirming for all.

As society moved from the 20th century to the 21st century, technological advances shrinking the world, the resulting globalisation, as well as societies' willingness to open towards the non-traditional, questioning stereotypes, have created a new diverse school environment. Daily teachers are required to carefully traverse diversity issues, require a particular competence to balance their own internal beliefs and biases, with being the ultimate role model to learners to embrace 'otherness', respect the choices of others and realise the value of everyone (Han and Thomas in Álvarez Valdivia & González Montoto 2017, p. 511).

While 21st-century teachers are traversing the many challenges brought about by a changing world, it is imperative that they comprehend the importance of teaching within the confines of the law, not only for their own protection, but also to protect every child in their care, but what does this mean for South African teachers, specifically? We believe that a good starting point is for teachers to understand the laws governing education which directly impact their working environment to ensure they teach within the confines of the law.

## ■ Teaching within the confines of the law

It is imperative for teachers to be aware of the impact of the law on schools, and the implications important legal documents have while fulfilling their day-to-day tasks. Simultaneously, teachers should not see themselves as lawyers, or be so concerned about legal issues that they forget their primary responsibility – educating the learners in their care (Wallen et al. 2021, p. 256). In this section, the legal framework in which South African teachers must function is outlined followed by what the authors consider the most important legal aspects teachers should be aware of to ensure that remain safe within the confines of the law.

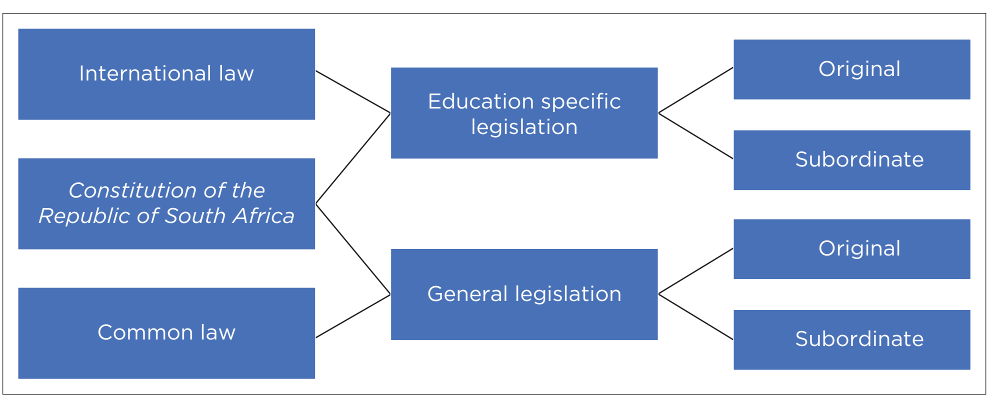
A legal framework provides a framework of documents containing a set of rules for a country to follow and may include a constitution, legislation, regulations and contracts (*Collins Dictionary*; National Resource Governance Institute 2015). Such a framework contains laws and legally binding regulations that regulate human relationships. Kotzé and Pienaar (2021, p. 293) explain that a theoretical legal framework should be clearly differentiated from the practical realisation thereof as the latter is dependent on numerous factors that may inhibit its successful implementation. As the South African legal framework consists of different legislation, Figure 3.1 is inserted to illustrate the framework that is used for this chapter. The prominence of each part of the framework is forthwith discussed.

## International law

Henkin (2023, p. 2) explains international law as the law of the global systems of nation-states, which reacts to radical changes to serve international purposes and is shaped by the prevailing politics and values of these systems. As such, international law is, not limited to South Africa, but rather entails different international shared agreements. These collective agreements are based on consensus between diverse countries, having authority outside the different borders and are binding on all countries who sign them (Oosthuizen 2019, p. 25).

Within the scope of this study, the following documents are relevant as the human rights provided by them are mirrored in the Constitution (1996): the *Universal Declaration of Human Rights* (UN 1948), the *Convention on the Rights of the Child* (CRC) (UN 1989) and the *African Charter for the Rights and Welfare of Children* (African Charter) (AU 1990).

As stated by UNICEF (2023), children's rights consist of four key leading principles, namely the right to non-discrimination; the best interests of the child; the right to life, survival and development; and the right to expression. Like all people, children are protected by the mentioned legal instruments (UN 1948: art. 7; UN, 1989: art. 2[1]; AU, 1990: art. 3) against unfair discrimination (the first principle). Both the *Universal Declaration of Human Rights* (UN 1948), through Article 3.1, and the *African Charter* (AU 1990), through Article 4.1, provide that the best interests of the child (second principle) should always be a primary consideration. Children's




*Source*: Authors' own work.
**FIGURE 3.1:** Legal framework.

inherent right to life, survival and development (third principle) is guaranteed by Article 6 of the CRC (UN 1989), while Article 27 obliges state parties to give effect to each child's right to an adequate bodily and psychological, spiritual, moral and social development and, thus to an appropriate standard of living. Article 3.2, alongside, recognises the need for children to be, protected and cared for to ensure their overall well-being. In this regard, Article 3.3 demands that states ensure that institutions, such as schools, act responsibly in terms of the protection and/or care of children, and maintain standards formulated by competent authorities with specific reference to competent supervision, health, safety and suitability of personnel.

The protection of children against all negative forms of behaviour, such as abuse, inhumane treatment and degrading behaviour, is furthermore, provided by both the CRC (UN 1989: art. 19) and the *African Charter* (AU, 1990: art. 27), aimed at protecting every child's human dignity. The African Charter specifically includes the protection of children against all forms of sexual exploitation, sexual abuse, any engagement in sexual activity or any prostitution as well as pornographic activities. The CRC (UN 1989: art. 39), in turn, calls for measures to be put in place for child victims of abuse, exploitation and/or inhumane, degrading treatment to be allowed to recover in fostering environments focused on re-establishing the child's dignity, self-respect and health (UN, 1989: art. 39).

With reference to the fourth key principle, the right to expression, Article 13 of the CRC (UN 1990) recognises the right to freedom of expression which goes together with the right to access information as provided for in Article 17. This right is, specified to include access to national and international sources aimed at the promotion of the children's social, spiritual and moral well-being as well as their physical and mental health. This right, however, contains an inherent limitation (art. 17[e]) which calls for appropriate guidelines to be set for the protection of the child from information and material injurious to their well-being.

Linked to the right to access information is the right to privacy. On this matter, the *Declaration of Human Rights* (UN, 1948: art. 12), the CRC in Articles 16(1) and 16(2) and the *African Charter* in Article 10 prohibit all infractions on a child's honour and standing as well as any unlawful obstruction of a child's privacy, which includes families and homes. The way in which the rights recognised by international law and discussed thus far are forthwith linked to the human rights embedded in the *Constitution of the Republic of South Africa Act 108 of 1996* (RSA 1996). Although the *Universal Declaration on Human Rights* (UN 1948) was adopted as early as 1948, Brown (2016, p. 2) explains its relevance for the 21st century while placing emphasis on the fact that education remains central in the strive to ensure respect for human rights and essential to meet future societal demands as the practical realisation of human rights is born within classrooms.

## The *Constitution of South Africa Act of 108 of 1996*

In adherence to the four key leading principles attached to children's rights by international law, the Constitution (RSA 1996), in Chapter 2, provides for the protection of children's democratic rights (1996: sec. 7) as well as for the safeguarding of children against unfair discrimination (1996: sec. 9[3]) (first principle). Regarding the second key principle, the Constitution (RSA 1996) provides that the best interests of the child be of paramount importance (1996: sec. 28[2]), thus elevating this principle to be considered supreme in matters concerning children (Du Plessis & Küng 2019, p. 200).

Everyone's right to life (third principle) is guaranteed by Section 11, while Section 10 calls for the protection and respect for human dignity in Section 10, which is also acknowledged as a founding democratic value in Section 7 of the Constitution (1996). Everyone is, moreover, guaranteed protection from all forms of abuse and inhumane degrading treatment (1996: sec. 12[1][d][e]). The Constitution, furthermore, provides for the right to access to information (fourth principle) (1996: sec. 32), while Section 16(1) allows forth the right to freedom of expression including the freedom to receive or share information (1996: sec. 16[1][b]), artistic creativity (1996: sec. 16[1][d]) and academic freedom (1996: sec. 16[1][c]). It should, however, be noticed that Section 16(2) contains an inherent limitation in terms of the freedom of expression with specific mention of the prohibition of, among others, expressions provoking violence (1996: sec. 16[2][b]) and encouraging hatred with the intent to cause harm (1996: sec. 16[20][c]). Together herewith, the Constitution (RSA 1996) guarantees the right to privacy including the right to their person, property, possessions and privacy of communication (sec. 14).

As the law also sets boundaries beyond which rights do not extend, the Constitution (1996) provides for a general limitation clause in Section 36 thereof. This section stipulates the circumstances under which, the reasons for which, and the factors which need to be considered for rights to be reasonably and justifiably limited to avoid those rights being enforceable to an extent that they disregard the rights of others.

# Legislation and common law principles

The most prominent legislation and common law principles having a direct effect on education in South Africa are, forthwith, discussed.

## The *National Education Policy Act 27 of 1996*

The *National Education Policy Act 27 of 1996* authorises the Minister of Education to determine national education policies consistent with constitutional provisions. Such policies could address teacher salaries and the conditions of employment (Preamble). It could also include provisions regarding, among others, the planning, provision, coordination, management, governance, monitoring and evaluation as well as the well-being of the education system. As such, the Minister of Education can adopt education policy to provide legal provisions for teacher-learner ratios, compulsory school attendance, learner admissions, school hours and school calendars, learning standards, as well as for control and discipline (Section 3).

Seeing that a healthy and just education system is crucial for the future of South Africa, it is essential that the Minister of Education invest in the adaptation, development and implementation of a national education policy to path the way forward for schools by guiding them to meet the altering challenges and demands of the 21st century. Akgün and Alpaydın (2022, p. v) stress the importance of policies to guide education in adjusting to the intensified social mobility, new media and technological advances brought along by the 21st century. The same authors identify the significance of education as being the most significant vehicle to resolve mutual economic concerns, maintain global competitiveness, preserve peace and develop future citizens able to live sustainable lives.

## The *South African Schools Act 84 of 1996*

Taking cognisance of the provisions provided in this Act is extremely important to all education role players, as it was promulgated solely for the education sphere. The Preamble in the *Schools Act 84 of 1996* aims at enhancing democratic transformation in society, remedying past prejudices and providing for education of increasingly high quality for all learners and in so doing laying a foundation for the development. It, moreover, strives to fight all forms of unfair discrimination, ensure economic well-being, protect diverse cultures and languages, uphold human rights, set uniform rules and advance co-responsibility for the education of the youth.

The strive for the delivery of quality education is echoed in Section 8 (RSA 1996), obliging school governing bodies to adopt a code of conduct for the learners in discussion with teachers, learners and parents, to ensure disciplined learning environments, as a prerequisite for teaching to occur. Such a code should be adopted using the Guidelines for the Consideration of Governing Bodies in adopting a Code of Conduct for Learners (1998). These Guidelines (1998) advocate the identification of an acceptable standard of safe and moral learner behaviour expected of valuable and accountable citizens (Item 1.4). It should, also, identify a set of moral values, norms and standards to be upheld. Codes of Conduct for Learners should focus, not on punishments, but on positive discipline, self-control and excellent behaviour (Item 1.6) while holding all role players accountable for the formation and maintenance of suitable learning environments (Item 1.10).

Because all learners (Item 3.6 – no exemptions) are obliged to behave in accordance with a school's code of conduct, they must be informed that unacceptable behaviour will be addressed. As parents remain responsible for their children's behaviour, the Guidelines (1998: itm. 6.1) expect parents to support schools in addressing unwanted learner behaviour at schools. The Guidelines (1998: itm. 7.5), moreover, highlight the authority of teachers to discipline learners with the aim of correcting their behaviour.

## The Code of Professional Ethics for educators

The Code of Professional Ethics, issued by the Council in terms of Section 5(c) of *the South African Council for Educators Act 31 of 2000*, is especially important for teachers as it demands teachers to behave in an ethical correct manner. In recognising that teachers' attitudes, self-discipline and degree of dedication determine the quality of teaching in schools (Item 2.2), this Code obliges teachers to uphold human rights (Item 2.3) and to portray behaviour that will not discredit the education profession (Item 2.4).

The Code of Professional Ethics, through Items 3–8, also pins down strict provisions relating to teacher conduct towards learners, parents, the community, colleagues, the education profession and the employer. Acting in a just manner is extremely important for teachers as they not only impart knowledge to learners but also must teach learners social values such as respect for others, integrity, loyalty, responsibility, competence, fairness and honesty, for which acting as an impeccable role model is essential. The standing of this Code for teachers is accentuated by Roy (2023), in stating that it is crucial in ensuring the maintenance of lofty standards and professional teacher conduct. According to the same author, the latter entails that teachers conduct themselves respectfully, with dignity and compassion.

## Common law principles

Although the *in loco parentis* principle (duty of care – *to assume the role of a parent*), as part of common law, dates to the 17th century, it is still as prominent for the 21st-century teacher as it has been for the

17th-century teacher. In the legal framework of South Africa, this principle signifies teachers' and schools' obligation to diligently care for the mental and physical safety and well-being of learners while in their care and, consequently, that the Department of Basic Education will be vicariously liable in terms of Section 60 of the *South African Schools Act 84 of 1996* if learners sustain injuries because of teachers not adhering to their duty of care (Wiid 2023, p. 73). It is, alongside, important to notice that this common law principle has been adopted by legislation and accommodating regulations such as the Code of Professional Ethics for Educators (2000, itms. 3 and 3.13) obliging teachers to refrain from any form of humiliation and psychological or physical abuse as well as to take reasonable precautionary measures to ensure learner safety.

Society often asks who will be held responsible and liable if learners are, for example, bullied, assaulted or injured while at school and to what extent signing indemnity forms will exempt schools from taking responsibility. Kemper (2020, p. 26) answers this question by indicating that the *in loco parentis* principle entails that teachers and schools in charge of learners must take responsibility. The same author cautions that teachers must be cognisance of the fact that indemnity forms will not exempt them from liability and that injured learners will even be able to institute legal proceedings against them 3 years after they turn 18 years of age. Given the number of learners who are seriously injured and negatively affected by others at schools or during school activities, Kemper (2020, p. 29) underscores the importance of teachers and schools to, constantly, be aware of their duty of care and to prevent such occurrences.

Coetzee (2023, p. 10) opines that society may legally expect teachers to perform their professional duties and establish caring relationships built on trust with dedication and in an ethical manner. Calitz and De Villiers (2020, p. 81), in agreement, state that parents, obligated to send their children to school, need to trust schools and teachers with the education and supervision of their children. The same authors argue that upkeeping safe school environments conducive to meaningful teaching and learning falls within the scope of this doctrine. This doctrine, according to De Wet (2020, p. 169), 'demands' from teachers to protect learners from all potential injury, whether of physical or mental nature. They also highlight the second component of the *in loco parentis* principle, namely that it provides teachers with the authority to guide, direct and discipline learners, which leads, firstly, to the responsibility of teachers to act as role models of behaviour, morality and attitudes and, secondly, to learners' responsibility to respect and follow teacher directions (p. 92). Regarding teachers' authority to discipline learners as part of their *in loco parentis* function, Walton (2023, p. 473) cautioned that this authority is limited to the administering of moderate, reasonable and just corrective measures. It is against this background that De Wet (2021, p. 22) condemns the increasing incidents of school violence in which teachers are key role players, either as perpetrators or victims.

## Helping teachers to teach within the confines of the law

In this chapter, we highlighted the significant role teachers play in the intellectual, moral and cultural preparation of the youth as schools should function as spaces of moral growth. However, the discussion that followed pointed to various hindrances teachers face relating to the poor views of teachers within society, the negation of the key role teachers play, as well as the increased expectations placed on teachers in terms of the moral education of the youth. We also alluded to problems faced with discipline, control and support.

The fact remains that society should not forget that schools are important social institutions governed by values and norms (Warnick & Schribner 2020, p. 101), aiming at, among other, the 'development of vocational soft skills, the promotion of autonomy, and the acquisition of civic dispositions of community engagement and understanding' (p. 103). In this regard, Wallen et al. (2021, p. 33) caution that 'learners learn as much from *how* they are taught and treated at school as they do from *what* they are taught'.

Thus, if pre-service teachers are, not only given a good understanding of the laws governing their position but also introduced to possible new and innovative ways to use the law to guide their learners to develop these civic characteristics needed to ensure a civil society, many of the current problems in schools will not be addressed. Although most teacher education institutions do introduce pre-service teachers to relevant education legislation, it appears not to be sufficient. This could be because of pre-service teachers not realising the importance of such training or not fully comprehending the practical application thereof in practice.

While teachers are not lawyers and classrooms are not courtrooms, it is imperative that all should realise that they are bound by the law. In this regard, Strosin (2021) stresses the importance of the fact that ignorance of the law will not exempt anyone. Because teachers work within a specialised field regulated by specific laws, it could be expected for them to familiarise themselves with these laws, how they work, what their rights and responsibilities are, and how to act within the confines of these laws (Strosin 2021). As the law assists in setting standards for acceptable behaviour, helps to mitigate conflict, provides access to justice, ensures safety, protects the vulnerable and makes human rights a reality, Soken-Huberty (2023) urges teachers to become knowledgeable of the most important legislative provisions applicable to the sphere of education and acquaint themselves with the ways on how to instil a deep-rooted moral and ethical code in learners.

This is extremely important as the study of Mahaye (2023, p. 554) found teachers to be aware of learners' rights to safety and thus aware of how it may affect disciplinary measures taken by schools. The same study, however, found teachers to have limited knowledge of education legislation making the management of learner behaviour a complex issue, thus leading to unsafe school environments.

Warnick and Schribner (2020, p. 103) stress that school policies and practices should align with the overarching role of education. The same authors criticise school disciplinary practices aimed at punishing learners, such as suspending and expelling them, which they consider the most severe forms of punishment. Such measures, as set forward by these authors (pp. 104–105), contradict the following special characteristics of schools relating to discipline:

1. The function of schools in society is to instil vocational, civil and liberal values in learners to ensure forthcoming responsible, respectful and resourceful citizens who place value on human freedom and equal opportunities and are prepared to act to the benefit and well-being of the community.
2. Schools are social institutions that focus on providing ample developmental and growth opportunities for learners, comprising of a group of vulnerable minors, while believing in their ability to make informed decisions. Thus, schools should adopt an ethos of development highlighting patience and encouraging forgiveness.
3. Schools need to, constantly, be aware of the responsibility they share in the behaviour of learners and acknowledge the value of reflection.
4. As community-bound institutions, schools are reliant upon the trust and respect of the community and, thus, to implementing objective, fair and rational discipline measures.

Taking the previously mentioned into consideration, it has become evident that schools and teachers should carefully rethink their practices and invent ways to adapt to the changing society of the 21st century and in doing so, to regain society's trust. We argue that the latter entails schools and teachers starting to live up to the principles of the Constitution and using their knowledge of education legislation to ensure fair and just actions. With specific emphasis on disciplinary measures taken in schools, we propose replacing the punitive disciplinary practices traditionally used in schools with more positive measures aimed at correcting learner behaviour as well as with processes aimed at resolving misbehaviour by concentrating on redressing the harm done, holding wrongdoers accountable for their actions and, even including parents as well as community members in rectifying learner behaviour (restorative justice). This is in line with the aim of discipline, namely, to shape learners' behaviour in a manner that will lead to self-discipline and self-control (Thakur 2017, p. 315) which, in turn, has the potential to lead to positive teacher–learner relationships (Tartari 2018), teaching effectiveness and the well-being of teachers and learners alike (Wang & Kuo 2019, p. 82). The advantage of learner self-discipline is also highlighted by Zuković and Stojadinović (2021, p. 6), as a central means to preventing undesirable learner behaviour in future and, subsequently, to the creation of safe and secure schools. The importance of creating sound teacher–learner relationships is emphasised by authors such as Gandzel (2022, p. 91) by pointing to the positive impact it has on learners' feeling of belonging and worth which, in turn, enhances their academic performance. We support the notion of Warnick and Schribner (2021, p. 103), namely that learners should be actively involved in disciplinary processes to enable them to reflect on their behaviour, understand the consequences thereof, and take responsibility and be accountable for their own actions.

Because of the positive impact of progressive discipline on learners' self-esteem (Zuković & Stojadinović 2021, p. 8), it is argued that its use will assist teachers in disciplining learners effectively while adhering to their constitutional obligation to respect the right of learners to human dignity. The importance of positive discipline is highlighted by the same authors as it signifies a disciplinary process aimed at teaching and encouraging learners to develop the necessary social skills to apply when confronted with real-life situations. On the other side of the coin, the study results of a study conducted by Ferguson and Gfroerer (2023) stress the positive impact of positive discipline has on adults. The study found substantial changes in the attitudes, values and self-reported behaviours of adults, as well as a decrease in the use of oppressive and harsh punitive measures such as corporal punishment.

In noting that the *South African Schools Act 84 of 1996* (DBE 1996) obliges schools to adopt a code of conduct based on positive disciplinary strategies to serve as a framework for learner discipline in schools, Padayachee and Gcelu (2020, p. 7) explain that positive discipline entails correcting rather than punishing deviant learner behaviour. For this, the same authors advocate the creation of positive teacher–learner relationships built on trust, the set of clear guidelines as to what acceptable behaviour entails and the positive reinforcement (smile, approval and acknowledgement) of good learner conduct. Positive discipline, accordingly, entails guiding learners to take responsibility for their own behaviour which, in turn, inspires the moral and intellectual development of learners to become self-disciplined individuals who can, proactively, decide upon their own conduct (Chigudu 2020, p. 92). As such, the same authors (2020, p. 97) emphasise the importance of learners being actively involved in the adoption of codes of conduct, as well as the importance of teachers to model good behaviour (2020, p. 100).

## Conclusion

This chapter set out to fill the gap in the literature pertaining to preparing teachers for the societal, disciplinary and emotional dilemmas they are likely to encounter as 21st-century teachers by focusing on a legal framework. This was based on the view that teachers need a thorough understanding of human rights, relevant common law and legal principles when entering the teaching profession to ensure safe and just learning environments in which optimal teaching and learning can thrive.

Emphasis was placed on societal changes brought along by the 21st century (communication and technology, gender roles, family structures and equality, as well as cultural diversity) and the importance of teachers, who grew up during the 20th century, to adapt to these changes if they want to teach 21st-century learners effectively. In this regard, the focus was placed on the impact of a changing society on 21st-century classrooms and the exponential increase of society's expectations of teachers to develop the youth to fulfil their role as future citizens, while less status is attached to the teaching profession. It is in view of the latter that the authors stress the importance of teachers showcasing exemplary ethical and professional behaviour while conducting themselves within the confines of the law. This will, not only assist teachers to avoid prosecution but also to respect the human rights belonging to learners and to regain the trust of learners and society. In conducting themselves in an ethical and professional sound manner, teachers will be able to overcome unjustified onslaughts by social media, build positive relationships with both learners and parents, care for learners while acting in their best interests and lead by example. It is argued that when we have disciplined schools, we will not need a hierarchy; when we cultivate disciplined thought, we will not need bureaucracy and when we have disciplined action, we will not need undue and punitive disciplinary measures.

Chapter 4

# Self-directed pedagogy: Lifelong professional development in the 21st century

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## Abstract

Self-directed learning (SDL) can be regarded as both a process and a learner characteristic. It is viewed as a personal and self-driven endeavour where all aspects of learning are regulated by the learner. These aspects include goal setting, informed decision-making, the application of suitable skills and strategies, personal reflection and assessment of set goals to foster deep, lifelong learning. Furthermore, a key element of SDL is that learners take ownership and responsibility for their own learning. This responsibility and ownership can be nurtured and strengthened by equipping learners with the necessary skills, attitudes and knowledge for SDL activities. Additionally, SDL and its associated skills can be developed through purposeful teaching and learning activities. Teachers must guide and assist learners in cultivating practical and explicit SDL skills and knowledge, which learners can then apply in reflecting on their learning and assessing their progress towards achieving learning objectives. As learners advance to higher grades, the need for SDL becomes increasingly critical, making it essential to explore how SDL can be fostered in the 21st century classroom. Characteristics such as autonomy, motivation, self-efficacy and reflection should underpin pedagogical approaches that promote deep, lifelong learning. The most significant distinguishing factor of the 21st century is the rapid and ever-changing demand for competencies required to thrive in a professional environment. Self-directed learning can help prepare learners to function effectively in this dynamic professional environment.


## Introduction

The *South African Curriculum for the Twenty-first Century* underwent a comprehensive review in 2000, led by a dedicated committee (Department of Education 2000). While there was support for the principles of outcomes-based education and the curriculum itself, the implementation process faced several challenges. These included a skewed curriculum structure, a lack of alignment between curriculum and assessment policies, insufficient teacher training and support, and inconsistencies in the quality of learning materials. In response, the committee developed a comprehensive set of recommendations addressing curriculum structure, teacher training and the provision of learning materials (RSA 2000).

Fast-forwarding to 2018, the stage was set for the Teacher Development and Curriculum Management Lekgotla, which convened in Pretoria, South Africa. The overarching theme was to align the curriculum with the aspirations of *Vision 2030*, or the *National Development Plan* (2012). During the gathering, the Director-General emphatically emphasised the urgency of equipping students with skills that were not only relevant to the evolving world but also those that might emerge in the future. With this foresight, the Lekgotla embarked on the ambitious mission of delineating a 12-year trajectory for the school curriculum. This trajectory sought synchronisation with the demands of the 21st century and the transformative potential of the Fourth Industrial Revolution (4IR). Furthermore, the Lekgotla undertook the critical task of addressing critical issues such as decolonising the curriculum and advancing social justice. The discussions within the assembly resonated with the paramount significance of inclusive, high-quality education. A harmonious blend of academic and pragmatic knowledge was deemed essential to equip learners for the dynamic world they would navigate (Department of Basic Education [DBE] 2018).

Self-directed learning can help students to realise the ideals laid out in the *South African Curriculum for the Twenty-first Century* by empowering them to take control of their own learning and develop the skills and knowledge necessary to succeed in a rapidly changing world (Jossberger et al. 2010; Morris 2019). Ultimately, SDL can help students to develop the knowledge, skills and competencies they need to thrive in the 21st century and contribute to the realisation of *Vision 2030*.

## ■ Self-directed learning

The concept of SDL has undergone diverse interpretations, rooted in the idea that individuals possess an unlimited potential for growth and development, as proposed by Dewey (1916, p. 70). Dewey's philosophy asserts that teachers should guide and facilitate learning without undue interference or control (Dewey 1916, p. 170). Moate and Cox (2015, p. 382) and Wilcox (1996, p. 165) advocate for actively engaging learners in a supportive and collaborative learner-centred relationship. Building upon this, Allan and Clarke (2007, p. 65) and Wilcox (1996, p. 165) emphasise the role of learning experiences in cultivating learners' ability to independently manage their learning. Crucial components such as active engagement, collaboration and learner autonomy emerge as integral facets of SDL (Allan & Clarke 2007, p. 65; Moate & Cox 2015, p. 382; Wilcox 1996, p. 165).

Knowles and Associates (1984, p. 11) underscore the significance of learners' experiences as vital resources for effective learning, emphasising the necessity of self-direction as individuals grow in capacity. Knowles (1975, p. 18) defines SDL as a process where individuals proactively diagnose their learning needs, formulate goals, identify resources, choose strategies and evaluate outcomes. Wilcox (1996, p. 165) echoes this definition, characterising SDL as a process where individuals autonomously plan, initiate and evaluate their learning endeavours. Garrison (1997, p. 18) expands this definition, presenting SDL as an approach motivating learners to personally and collaboratively manage cognitive and contextual processes, ensuring the development of meaningful learning outcomes. Francom (2010, p. 31) reinforces this perspective, underscoring the need for both skills and subject matter knowledge in a specific academic domain for effective SDL.

Various perspectives on SDL exist, with Brockett and Hiemstra (1991, p. 23) defining it as a personality construct emphasising individual roles in self-regulation. Bagheri et al. (2013, p. 15) and Knowles (1975, p. 18) position SDL as a personal, self-directed endeavour, wherein learners autonomously manage goal setting, decision making, skills application, reflection and goal evaluation, fostering enduring learning. Ownership and responsibility in SDL, central to the learner's journey (Bolhuis 2003, p. 329; Brockett & Hiemstra 1991, p. 36), find reinforcement through equipping learners with the necessary skills, attitudes and knowledge for SDL activities (Bolhuis 2003, p. 329). Purposeful teaching and learning activities, according to Francom (2010, p. 29), play a crucial role in nurturing SDL and its associated skills. Olivier (2019, p. 2) introduces a nuanced perspective, considering self-direction a variable state wherein students, through independent and collaborative initiatives, take control of their learning processes and resources. Olivier notes that the dynamics of SDL are influenced by external factors and networks established between individuals.

In the pursuit of fostering SDL, teachers play a pivotal role in guiding learners and developing explicit SDL skills and knowledge. Learners, advancing to higher grades, increasingly necessitate SDL, prompting an exploration of how SDL can be cultivated for 21st-century skills. The alignment of social constructivist notions with SDL is evident, emphasising autonomy, motivation, self-efficacy and reflection during SDL (Breed 2013, p. 13; Candy 1991, p. 342; Gharti 2019, p. 63; Hawkins 2018, p. 446; Van Deur 2018, p. 10). Social constructivism, emphasising learners' construction of their understanding, aligns with the notion of students carrying out inquiry and developing capacity as self-directed learners (Van Deur 2018, p. 9).

## Self-directed learning and self-determination theory, autonomy, motivation and self-efficacy

### Self-determination theory

The theory of self-determination, recognised as a motivational framework (Reeve 2012, p. 152), underscores the pivotal role of enhancing learners' intrinsic motivation for heightened engagement. As articulated by Deci and Ryan (2000, p. 227), self-determination theory posits that understanding human motivation necessitates consideration of innate psychological needs, including competence, autonomy and relatedness.

This theory presupposes that optimal learning engagement occurs when cultural and classroom contexts align with and support these innate psychological needs (Deci & Ryan 2000, p. 229; Schewe 2016, p. 12). Conversely, if these contexts impede these needs, learners are likely to experience dissatisfaction (Deci & Ryan 2000, p. 229; Schewe 2016, p. 12).

The self-determination theory posits that learners' engagement is intricately tied to their sense of control over learning (autonomy), belief in their own competence, and feeling connected to peers and teachers (relatedness) (Deci & Ryan 2000, p. 229; Nichols & Dawson 2012, p. 466; Schewe 2016, p. 12). In essence, learner engagement thrives when there's a concerted effort to enhance autonomy, competence and relatedness in the learning environment.

## Self-determination theory and learner engagement

Marks (2000, p. 155) describes learner engagement as the comprehensive measure of the quantity and quality of learner participation in their educational courses, emphasising the components of 'attention, interest, investment, and effort' during the learning process. Christenson, Reschy and Wylie (2012, p. 817) and Skinner and Pitzer (2012, p. 22) further elaborate on this concept, characterising learner engagement as active, constructive and meaningful participation and commitment in all dimensions of learning.

The vital role of learner engagement in the learning process and educational achievements is consistently underscored in research (Kanaparan 2016, p. 30; Reeve 2012, p. 163; Schewe 2016, p. 1; Wonglorsaichon, Wongwanich & Wiratchai 2014, pp. 1748, 1749). Learners are less likely to attain their educational goals when faced with indifference towards learning material, lack of support from peers and teachers, and self-doubt regarding their capabilities (Lam et al. 2012, pp. 413, 416; Reeve 2012, pp. 157, 166; Rumberger & Rotermund 2012, p. 503). The challenges of learner indifference are further compounded in the 21st century by contemporary distractions such as the Internet and smartphones, alongside tools that provide instant answers at the push of a button.

Building on this, learner engagement is a 'multidimensional construct' (Bergdahl 2020, p. 26), encompassing interconnected behavioural, emotional and cognitive dimensions (Christenson et al. 2012, p. 817; Fredericks, Blumenfeld & Paris 2004, p. 61). Behavioural engagement involves observable characteristics such as participation, effort, dedication and contribution to class discussions (Fredericks et al. 2004, pp. 6–7;

Marks 2000, p. 156; Schewe 2016, p. 27). Emotional engagement includes reactions to the school environment, teacher and peers, encompassing feelings of belonging, value, appreciation, interest and curiosity (Ainley 2012, p. 284; Fredericks et al. 2004, p. 3; Schewe 2016, p. 27). Lastly, cognitive engagement involves learners' willingness to exert effort for comprehension, use learning strategies, prefer challenges and invest mental effort (Ainley 2012, p. 284; Fredericks et al. 2004, p. 3; Marks 2000, p. 156; Schewe 2016, p. 27).

The motivational basis for learner engagement lies in autonomy, competence and relatedness, as they play a fundamental role in how students emotionally, cognitively and behaviourally engage in learning activities (Schewe 2016, p. 92). Therefore, fostering learner engagement involves addressing these core aspects.

## Self-determination theory and autonomy

Learner autonomy, defined by Holec (1981, p. 3) as the 'ability to take charge of one's learning', is not an inherent trait but a skill that can be acquired through natural means or formal learning. This acquisition involves taking responsibility for all decisions related to learning. Najeeb (2013, p. 1239) characterises learner autonomy as a multidimensional capacity for making informed choices about one's learning. In a complementary perspective, Dam (1990, p. 102) elaborates that learner autonomy entails the ability and willingness to act independently and collaboratively, being socially responsible and actively participating in the social processes of classroom learning. Najeeb (2013, p. 1239) emphasises that autonomous learning is a continuous lifelong process extending beyond the classroom.

Recognising autonomy as crucial to lifelong learning (Gavrilyuk 2015, p. 2283; Najeeb 2013, p. 1239; Tyson 2019, p. 32), teachers play a crucial role in fostering learner autonomy (Egel 2009, p. 2023). Factors supporting autonomy encompass past educational experiences (Ryan & Deci 2017, p. 351), learner–teacher and learner–learner collaboration and trust (Bennett 2018, p. 129; Dogan & Mirici 2017, p. 168; Schewe 2016), accountability (Yamashita 2015, p. 63), active involvement (Dam 2018, p. 263), effective cognitive and affective strategies (Bennett 2018, p. 128; Chan 2003, p. 49), engaging tasks and activities (Kemala 2016, p. 13), encouragement, motivation (Bennett 2018, p. 128) and autonomy-supportive strategies (Ryan & Deci 2017, p. 351).

Teacher motivational styles, classified as controlling or autonomy-supportive in alignment with the principles of self-determination theory, significantly influence learners' autonomy (Deci & Ryan 2000, p. 240; Reeve 2012, pp. 159, 165; Ryan & Deci 2017, p. 351; Schewe 2016,

p. 55). Autonomy-supportive teachers integrate learners' interests, preferences, curiosity, sense of challenge and desire for choices into lessons, thereby enhancing learner autonomy, competence and relatedness (Reeve 2012, p. 166). Conversely, controlling teachers diminishes learner autonomy, competence and relatedness (Reeve 2012, p. 166).

## Self-determination theory and competence

Competence, described as the feeling of being capable of mastering tasks and developing skills within a given context, is crucial for learners (Holt et al. 2019, p. 642). Competent learners, according to Trenshaw et al. (2016, p. 1194) and Schewe (2016, pp. 122–123), perceive themselves as capable and view themselves as able rather than inept.

The fulfilment of learners' competence desire hinges on possessing the necessary knowledge and skills to achieve their goals. Teachers' structures significantly influence learners' perception of competence, with clarity and consistency in goals fostering a sense of competence (Guvenc 2015, p. 649; Trenshaw et al. 2016, p. 1194). When learners understand how to complete tasks, accomplish goals and know what is expected of them, they can control and adjust their behaviours, leading to increased competence perception (Guvenc 2015, p. 649).

In classrooms where teachers' structures support learners' sense of competence, there is higher engagement and more frequent use of SDL techniques and strategies (Guvenc 2015, p. 649).

Learners' self-efficacy, or confidence in their abilities, is shaped by how teachers define learning (Schewe 2016, p. 50). Teachers, through explicit and implicit messages about the purpose of tasks and activities, play a vital role in helping learners achieve their goals (Anderman & Patrick 2012, p. 181). Learners perceiving their teachers as mastery-goal oriented experience greater enjoyment, increased effort and engage in deeper cognitive processing, while performance-goal structures diminish learner engagement (Anderman & Patrick 2012, p. 181).

The organisation of mastery-oriented goals in the classroom should include social relationships, recognising the central role of relatedness in developing student motivation (Schewe 2016, p. 51).

## Self-determination theory – relatedness and autonomy

According to self-determination theory, which emphasises the universal need for belonging and connection, fostering a sense of relatedness among learners to teachers and peers in the classroom is crucial (Ryan & Deci

2000, p. 64). The term 'relatedness' in this context is defined as the psychological need for close emotional connections and the desire for warm and caring relationships (Schewe 2016, p. 28).

In classrooms where teachers actively encourage interaction and discussion, learners develop a positive sense of belonging and relatedness among their peers (Furrer, Skinner & Pitzer 2014, p. 104; Kufakunesu 2015, p. 52). Such environments contribute to higher emotional engagement, where teachers consider and support learners' viewpoints and interests, remaining responsive to their needs (Pianta, Hamre & Allen 2012, p. 368). Self-determination theory addresses motivational challenges in learning by emphasising the importance of learners having faith in their ability to excel (competence), feeling at ease with both teachers and peers to take risks and engage in discussions (relatedness), being interested in the learning material and recognising the importance of learning (Fredericks et al. 2004, p. 80; Furrer, Skinner & Pitzer 2014, p. 106; Schewe 2016, p. 63; Shihusa & Keraro 2009, p. 414; Skinner & Belmont 1993, p. 572).

Moreover, learners are more likely to engage in academic work when teachers create nurturing environments and provide support both socially and academically (Schewe 2016, p. 53). Additionally, learners who perceive their teachers as promoters of interaction and classroom discussion not only show higher emotional engagement but also employ SDL strategies (Fredericks et al. 2004, p. 80; Guvenc 2015, p. 649).

One of the objectives of SDL is to aid learners in achieving autonomy in their learning (Tredoux 2012, p. 17). Autonomy, as defined by Gharti (2019, p. 65), entails significant independence, encompassing detachment, reflective thinking, decision-making and autonomous intervention. Autonomous learners have the ability and freedom to schedule and monitor their learning responsibly and effectively based on their needs, interests and abilities (Gharti 2019, p. 65). According to Hawkins (2018, p. 448), Kumaravadivelu (2006, p. 176) and Thanasoulas (2000), learner autonomy refers to the ability to take responsibility for one's learning through various strategies, methods and processes.

Holec (1981, p. 3) and Benson (1997, p. 16) assert that learner autonomy involves proficiency and skill in assuming control and responsibility for one's own learning. This suggests that learner autonomy includes setting goals, identifying suitable content, choosing appropriate strategies and approaches, tracking the learning process, and assessing what has been learned (Boyadzhieva 2016, p. 37; Gharti 2019, pp. 63, 66; Najeeb 2013, p. 1240). Autonomous learners are those capable of working independently without the assistance of others (Gharti 2019, p. 63).

According to Merriam and Bierema (2014, p. 73), guiding learners towards greater learning autonomy for SDL ensures continuous learning throughout their lives. Understanding the principles of SDL can help reasonably autonomous learners self-analyse the steps, adjustments and improvements needed in their learning (Caffarella 1993, p. 29; Ng & Confessore 2010, p. 12).

Autonomy and learning strategies or methods are frequently mentioned in prominent explanations of SDL, implying that SDL is a dynamic process rather than a static product (Hawkins 2018, p. 448). Learner autonomy is gained in stages and at various levels; teachers can direct learners to augmented learner autonomy, and there can be both individual and social (group-oriented) autonomy depending on the context (Oxford 2016, p. 31). Consequently, the classroom teacher plays a vital role in learner autonomy (Alonazi 2017, p. 185; Çakici 2015, p. 38; Han 2014, p. 45; Yan 2012, p. 558). For a clearer understanding of autonomy in terms of fostering learner engagement, the levels of autonomy in learners are of importance.

## Levels of autonomy

Scholars have proposed various models to encourage the development of learner autonomy (Egel 2009, p. 2025). Nunan (1997, p. 195) offers five levels to encourage learner autonomy, namely, awareness, involvement, intervention, creation and transcendence, and includes both content and process. According to Dang (2012, p. 54), Nunan's model 'provides a useful index in a gradual developmental order of learner autonomy [...] and processes in each stage are clearly specified'. However, Egel (2009, p. 2026) and Dang (2012, p. 54) state that some of Nunan's suggested levels are easier to integrate into instructional materials than others and that the context of the learners should be taken into account. Nunan (1997, p. 201) affirms that this model explains how 'autonomy can be a normal, everyday addition to regular instruction [...] and will be dictated by the contexts and environments in which the teaching and learning takes place'.

According to Nunan (1997, p. 195), the levels are described as follows.

### Level 1: Awareness

Learners are introduced to the educational objectives and subject matter of the materials they are using. They recognise how different learning strategies align with specific tasks and identify their preferred learning approaches.

### Level 2: Involvement

The learners actively participate in choosing their own learning goals from a variety of options presented to them. They exercise their decision-making skills by selecting from a range of possibilities.

### Level 3: Intervention

The learners play an active role in the modification and adaptation of the objectives and content of the learning programme. They customise tasks to suit their individual needs and learning styles.

### Level 4: Creation

Learners take the initiative to formulate their own learning goals and objectives. They design and implement their own learning activities, demonstrating a high degree of autonomy and self-direction.

### Level 5: Transcendence

Learners extend their learning beyond the classroom, connecting classroom concepts to real-world applications. They assume the roles of teachers and researchers, sharing their knowledge and insights with others and contributing to the broader learning community.

Teachers need to make a concerted effort to promote various and scaffolded levels of learner autonomy by means of the learning activities and strategies they design. To foster learner engagement, procedural awareness is not sufficient as a status quo strategy for involvement. To enhance autonomy and engagement, learners need to be actively engaged as agents in charge of their learning activity.

## Self-directed learning and motivation

Motivation holds a pivotal role in SDL, forming the essence of a systematic comprehension of SDL (Garrison 1997, p. 18). Pintrich and Schunk (1996, p. 4) define motivation as the process of initiating and sustaining goal-directed action, while Gagné and Medsker (1996, p. 168) characterise it as 'cognitive persistence, the drive, tendency, or desire to undertake or complete a task, expend effort, and do a quality job'. Dörneyi (1998, p. 118) portrays motivation as a mechanism where an instigation force propels action until another force emerges or the desired result is achieved, reconciling static and dynamic concepts.

In the field of SDL, learners are motivated to take personal and collective ownership of 'cognitive and contextual processes' to construct and validate meaningful learning objectives (Garrison 1997, p. 18). According to Du Toit-Brits and Van Zyl (2017, p. 50), learner motivation significantly influences SDL, serving as the driving force for SDL. Self-directed learning, according to Deci and Ryan (2000, p. 61), transpires when learning motivation is intrinsically or extrinsically motivated and voluntarily chosen. Garrison (1997, p. 26) emphasises motivation as the most significant and pervasive dimension in his SDL model, stating that it ‘reflects perceived value and anticipated success of learning goals at the time learning is initiated and mediates between context and cognition during the learning process’. To understand the comprehensive impact of motivational factors, Garrison (1997, p. 27) distinguishes between entering motivation and task motivation.

## Entering motivation

The initial phase of motivation, known as entering motivation, signifies a personal decision by learners to participate in a task or activity (Abd-El-Fattah 2010, p. 587; Garrison 1997, p. 27; Tredoux 2012, p. 24). Described by Thompson (1992, p. 103) as the ‘coming together of attitudes, feelings, and goals’, entering motivation involves a commitment that shapes learners’ attitudes and intentions. Recognising the formation of entering motivational states is crucial because of its substantial impact on the time allocated to learning activities (Garrison 1997, p. 26). Additionally, entering motivation sets the stage for a committed approach to a specific purpose and the subsequent need for action (Abd-El-Fattah 2010, p. 587; Corno 1989, p. 114; Garrison 1997, p. 26). The development of a learner’s initial motivational state occurs through the selection of goals and intentions, as well as the decision to actively participate (Garrison 1997, p. 26).

Influential factors in determining a learner’s entry motivation include valence and expectancy (Abd-El-Fattah 2010, p. 587; Garrison 1997, p. 27). When learners perceive that learning objectives align with their needs and are achievable, their motivation is heightened (Garrison 1997, p. 27; Margueratt 2007, p. 3). Valence represents the attractiveness of specific learning objectives and is shaped by personal needs and affective states (Garrison 1997, p. 27). The persistence in a learning activity or task is reflected in learners’ personal needs (Garrison 1997, p. 27). Expectancy, which refers to the belief in achieving a desired outcome, encompasses both personal characteristics, such as competence, and contextual characteristics, such as contingency (Garrison 1997, p. 27). Competence and contingency act as mediating constructs for expected control (Garrison 1997, p. 27). Creating opportunities for learners to exert control and make choices early in the process enhances their entering motivational state, thereby influencing their SDL and persistence in learning activities or tasks (Garrison 1997, p. 28; Tredoux 2012, p. 24).

## Task motivation

The second phase, task motivation, involves learners’ persistence in completing a task (Abd-El-Fattah 2010, p. 587; Garrison 1997, p. 28;

Tredoux 2012, p. 24). This phase underscores the importance of maintaining learners' attention on the current learning activity or task (Garrison 1997, p. 28; Tredoux 2012, p. 24). Active engagement is crucial for learners to direct and sustain their motivation throughout the learning process (Garrison 1997, p. 28). Task control, self-management and volition are intricately connected to task motivation, as highlighted by Abd-El-Fattah (2010, p. 587), Garrison (1997, p. 28) and Stockdale (2003, p. 56).

Volition, as defined by Corno (1994, p. 229), refers to the ability to maintain focus, concentration and effort on an activity or task despite potential distractions. Garrison (1997, p. 29) considers volition a critical skill for SDL, playing a meta-motivational role in guiding and sustaining commitment to learning objectives. Corno (1994, p. 229) asserts that volition is essential for academic achievement, acting as a motivator by focusing and maintaining commitment to learning objectives. Garrison (1997, p. 29) emphasises the necessity of this motivational function for learners to take responsibility for achieving optimal educational objectives, linking it to the self-monitoring aspect of SDL. Both internal states and external factors play a role in influencing learners' motivation to take responsibility for their own learning (Garrison 1997, p. 29).

## Internal motivation

Motivation, as explained by Schunk, Pintrich and Meece (2002, p. 4), is the process of initiating and sustaining both internal and external tasks directed towards specific goals. Wang (2010, p. 74) characterises internal motivation as engagement in actions for their inherent value, with tangible benefits including pleasure, learning, satisfaction, interest or challenge. This leads learners to display complete, voluntary and autonomous involvement in tasks or activities (Guvenc 2015, p. 648). Dörneyi (1998, p. 121) describes internal (intrinsic) motivation as behaviour undertaken for its own sake, driven by the desire to experience pleasure and satisfaction, such as the joy derived from a specific activity or fulfilling one's curiosity.

Internal motivation can be classified into three subtypes: internal motivation (to know), internal motivation (towards achievement) and internal motivation (to experience stimulation) (Carbonneau, et al. 2012, p. 1149; Dörneyi 1998, p. 121; Vallerand et al. 1992, p. 1005). The first subtype of internal motivation is exemplified by learners who engage in endeavours for the enjoyment and fulfilment of learning new information or skills, satisfying curiosity and exploring the world (Carbonneau et al. 2012, p. 1149; Dörneyi 1998, p. 121; Vallerand et al. 1992, p. 1005). The second subtype, internal motivation towards achievement, occurs when learners participate in endeavours for the satisfaction of surpassing themselves, overcoming obstacles and achieving specific goals or objectives

(Carbonneau et al. 2012, p. 1150; Dörneyi 1998, p. 121; Vallerand et al. 1992, p. 1005). The third subtype, an internal motivation to experience stimulation, emerges when a learner engages in an endeavour to experience stimulating sensations (Vallerand et al. 1992, p. 1006).

To nurture learners' internal motivation to learn, it is essential to provide opportunities for control, choice and collaboration in the learning experience (Çakici 2015, p. 38; Garrison 1997, p. 24; Valerio 2012, p. 32). According to Ryan and Deci (2000, p. 55), both internal and external motivation can lead to high-quality learning. However, the effectiveness of external motivation depends on learners' motives for engaging in the task or activity (Ryan & Deci 2000, p. 55). Valerio (2012, p. 30) notes that external motivation originates from sources external to the learner, such as providing rewards for effective task completion (e.g. point systems), and should only be employed to develop learner competencies or enhance internal motivation.

## External motivation

External (extrinsic) motivation, according to Dörneyi (1998, p. 121), involves engaging in behaviour as a means to an end, specifically to attain some extrinsic reward. Wang (2010, p. 74) adds that learners display external motivation when participating in tasks or activities with the aim of receiving external incentives, such as praise or good marks. Additionally, external motivation can manifest when learners partake in tasks to evade punishment (Dörneyi 1998, p. 121; Guvenc 2015, p. 648).

Dörneyi (1998, p. 121) outlines four types of external motivation. The first type, regulation, is the least self-determined form, with motivation originating solely from external influences (Dörneyi 1998, p. 121). The second type, introjected regulation, refers to externally enforced rules that learners adopt to avoid feelings of guilt (Dörneyi 1998, p. 121). The third type, identified regulation, occurs when learners engage in a task because they respect, agree with and perceive its utility (Dörneyi 1998). The fourth type:

> [*I*]ntegrated regulation, represents the most advanced form of extrinsic motivation, involving choiceful behavior fully assimilated with the [*learner's*] other values, [*needs,*] and identity. (p. 121)

Addressing the key challenge for teachers, Brophy (2010, p. 156) emphasises the importance of helping learners appreciate learning experiences beyond intrinsic motivation. Moreover, Dörneyi (1998, p. 121) suggests that external rewards may contribute to internal motivation in certain contexts if adequately internalised and self-determined. Therefore, teachers should not only identify the origin of learners' motivation for effective learning but also 'find ways to shift [*learners'*] sources of motivation from external and introjected (controlled) regulation to identified and integrated (more autonomous) regulation' (Schewe 2016, pp. 43, 44).

## Self-directed learning and self-efficacy

Educational self-efficacy, a central concept in education, revolves around learners' self-perception of their ability to achieve predefined academic goals (Nottidge 2014, p. 17). Du (2013, p. 12) adds depth to this understanding, describing self-efficacy as a dynamic and context-specific assessment of competence in performing specific tasks. In essence, educational self-efficacy encompasses a learner's self-assessment of resilience, capabilities and competence in successfully establishing, organising, executing and completing learning goals or objectives.

A self-directed learner, according to Carson (2012, p. 23), embodies high self-efficacy, intrinsic motivation, the ability to diagnose learning needs, set goals based on that diagnosis, choose appropriate strategies, self-evaluate using internal evidence and external feedback, and a willingness to confront new challenges.

Makonye (2016, p. 201) emphasises that self-directed learners, because of their elevated autonomy, possess a 'high degree of self-efficacy and an internal locus of control', attributing their learning success to personal efforts. Coutinho and Neuman's study (2008, p. 147) underscores the role of a supportive environment, particularly the influence of teachers in nurturing learners' self-efficacy.

Bandura (1993, p. 136) argues that self-efficacy beliefs significantly contribute to motivation, impacting goal setting, effort expenditure, perseverance and resilience to failure. Lebler (2007, p. 31) notes the pivotal role of learners' self-reflection, influencing problem-solving confidence, resilience and motivation.

In the classroom, teachers' strategies play a vital role in shaping learners' self-efficacy and motivation (Shohoudi et al. 2015, p. 71). Linnenbrink and Pintrich (2003, p. 122) highlight three crucial components associated with self-efficacy: motivational engagement, behavioural engagement and cognitive engagement.

### Motivational engagement

Motivational engagement encompasses three crucial components: interest, value and affect (Linnenbrink & Pintrich 2003, p. 125). Interest, in this context, refers to a learner's intrinsic curiosity about the content, materials or task (Linnenbrink & Pintrich 2003, p. 126). For example, some learners may display intrinsic interest in specific aspects of words, while others find fascination in understanding tenses. Value revolves around the utility learners attribute to the content, materials or task (Linnenbrink & Pintrich 2003, p. 126). Certain learners may lack personal interest in tenses but recognise their usefulness for accurate communication. Lastly, affect captures learners' beliefs about the overall significance of the content or task in alignment with their broader life goals (Linnenbrink & Pintrich 2003, p. 126).

## Behavioural engagement

Within the field of behavioural engagement, teachers can effectively gauge students' involvement by observing their actions, including effort, persistence and help-seeking behaviours (Linnenbrink & Pintrich 2003, p. 123). This engagement involves the distinction between executive help-seeking and instrumental help-seeking. Executive help-seeking occurs when a learner seeks assistance to complete a task or to avoid working, while instrumental help-seeking is motivated by a desire to understand and learn the task or material (Linnenbrink & Pintrich 2003, p. 123).

Distinguishing these help-seeking behaviours is essential, as they reveal different motivations and approaches to learning. Learners who exhibit low self-efficacy tend to doubt themselves, lack perseverance, avoid challenging tasks and are more prone to falling short of meeting learning objectives (Carson 2012, p. 13). Conversely, learners with high self-efficacy believe in their abilities, demonstrate perseverance, willingly tackle complex tasks and are more likely to achieve learning objectives (Carson 2012, p. 13). This connection between self-efficacy and behavioural engagement highlights the impact of learners' beliefs in their capabilities on their approach to learning tasks and, consequently, their likelihood of meeting educational goals.

## Cognitive engagement

Engaging cognitively in learning involves critical thinking, diverse learning strategies and the application of metacognition (Connor 2004, p. 2). It is challenging for teachers to detect cognitive engagement as it transpires within the minds of learners (Linnenbrink & Pintrich 2003, p. 124). A reliable approach to assessing cognitive engagement is through the observation of learners' discussions, questions and comments (Linnenbrink & Pintrich 2003, p. 124). To enhance cognitive engagement, teachers must introduce learners to various profound learning and cognitive strategies.

# Nurturing self-directed learning in learners

It stands to reason, then, that SDL can only flourish should teaching practitioners employ strategies that foster engagement, self-efficacy and autonomy. To this extent, several SDL strategies have been identified that promote SDL. The imperative is for teachers to make use of such strategies to develop learners who are skilled at and motivated towards practising lifelong learning.

## Twenty-first-century identified self-directed learning strategies

Oxford (1989, p. 8) defines learning strategies as 'specific actions taken by the learner to make learning easier, faster, more enjoyable, more self-directed, more effective and more transferable to new situations'. There are various learning strategies identified in 21st-century research with the potential to foster SDL (De Beer & Gravett 2016, p. 40), including collaborative learning, cooperative learning, project-based learning and problem-based learning.

## Collaborative learning

Palmer, Peters and Streetman (2010, p. 304) argue that collaborative and cooperative learning are often used interchangeably, sharing common features such as group members actively learning, working together to share knowledge, requiring group interdependence for cohesion and pursuing a common goal (Waemusa 2016, p. 20). Despite these similarities, it is crucial to acknowledge the various differences.

Described as an active and engaging learning process, collaborative learning involves a group forming a learning community, collaborating to achieve mutual understanding and knowledge towards a common objective (Çakici 2015, p. 35; Palmer et al. 2010, p. 304; Sangiorgio 2015, p. 85). Palmer et al. (2010, p. 304) and Waemusa (2016, p. 20) explain that it entails negotiation between learners without assigning specific sections of a task to individuals, allowing group members to collectively work towards producing a joint output (Sangiorgio 2015, p. 85). Learners team up to explore significant questions or meaningful projects, with each member contributing to the overall effort (McInnerney & Roberts 2004, p. 205). The tasks are flexible, enabling teachers to delegate authority to the learners (McAllister & Alexander 2009, p. 289; Moate & Cox 2015, p. 382). Communication, questioning and negotiation play essential roles in collaborative learning (Brindley, Walti & Blaschke 2009, p. 3; Clifford 2012; Waemusa 2016, p. 22).

Encouraging the use of collaborative learning is recommended, as learners from diverse cultures explore different ideas, while those from the same culture may arrive at similar conclusions when working collaboratively (Amabile 1998, p. 83). Barkley, Cross and Major (2005, p. 28) highlight that collaborative learning emphasises the social construction of knowledge between teachers and learners, involving both parties in collaborative tasks and activities.

## Cooperative learning

Cooperative learning is a collaborative approach where learners unite to accomplish shared goals and tasks, intending to reap mutual benefits (Foldnes 2016, p. 40; Soanes & Stevenson 2004, p. 314). The essence of cooperative learning lies in the idea that the combined effort of each group member is less than the total work required, highlighting the collective nature of the work (Asensio et al. 2015, p. 266). Gunter, Estes and Mintz (2010, pp. 262–263) emphasise shared objectives, equitable distribution of work and close interaction among group members to underscore the importance of cooperative learning. Sangiorgio (2015, p. 85) further clarifies that cooperative learning involves learners independently addressing sub-sections before consolidating them into the final product.

According to Johnson and Johnson (2014, p. 845), five crucial elements must be thoughtfully integrated into the learning task to establish and maintain effective cooperative learning. These elements encompass 'positive interdependence, individual accountability, promotive interaction, social skills, and group processing' (Johnson & Johnson 2014, p. 845). Positive interdependence centres on the perception that each group member and the group collectively are intricately connected, with success depending on mutual support (Çakici 2015, p. 37; Johnson & Johnson 2014, p. 845). Individual accountability stresses each group member's personal responsibility for completing assigned work or sub-sections (Johnson & Johnson 2014, p. 845). Promotive interaction involves learners supporting each other's academic performance by assisting, encouraging and acknowledging each other's learning efforts (Johnson & Johnson 2014, p. 845). The effective application of social skills, including decision-making, trust-building, communication and conflict-management skills, enhances the overall effectiveness of a cooperative group endeavour (Johnson & Johnson 2014, p. 845). Lastly, group processing entails evaluating the process followed by group members to optimise their own and each other's learning, aiming to identify ways to improve the overall process (Johnson & Johnson 2014, p. 845).

## Project-based learning

Project-based learning unfolds in a structured manner, starting with the identification of a problem and concluding with the creation of an authentic product, as outlined by Castaneda (2014, p. 159). Thomas (2000, p. 1) characterises this instructional model as one that organises learning around specific challenges, focusing on challenging questions or problems. It engages students in design, problem-solving and decision-making, offering them autonomy over extended periods and resulting in the creation of realistic products or presentations.

Within this approach, learners are tasked with exploring a genuine problem or topic and producing a product that demonstrates their understanding, as emphasised by Essien (2018, p. 439), Hoose (2017, p. 6) and Reid-Brown (2017, p. 3). The duration of project-based learning varies, ranging from a few days to several weeks, fostering collaboration among learners who actively participate in decision-making about different aspects of the project (Hoose 2017, p. 6). Engaging in project-based learning not only equips learners with diverse skills but also serves as motivation for the application of SDL skills (Hoose 2017, p. 6; Reid-Brown 2017, p. 4).

### Problem-based learning

In project-based learning, the focus, according to Bell (2010, p. 39), is on creating a learning artefact, while problem-based learning, as outlined by Bell (2010, p. 39) and Grant (2011, p. 38), revolves around discovering new information, prioritising knowledge acquisition during the process over the solution itself. Framed within a dynamic, task-driven framework rooted in inquiry, problem-based learning serves as a method to enhance teaching and learning quality, as described by Loyens, Magda and Rikers (2008, p. 413). The overarching goals include helping learners construct a comprehensive and flexible knowledge base, fostering successful collaboration, acquiring effective problem-solving skills, internalising motivation for learning and nurturing SDL skills.

Within the field of problem-based learning, teachers adopt the role of facilitators, guiding learners in constructive learning to enhance their critical and SDL abilities, as emphasised by Das et al. (2002, p. 276). Therefore, it becomes crucial to actively involve learners in defining and addressing their own learning needs (Groves, Règo & O'Rourke 2005). Makonye (2016, p. 189) further clarifies that problem-based learning involves collaborative efforts among learners in small groups to tackle significant or meaningful problems, employing SDL to seek the knowledge, concepts and skills necessary for problem-solving.

## Limitations and further research

This study only provides theoretical insights into the role of SDL in fostering lifelong professional development in the 21st century. The study does not incorporate any empirical data, nor does it incorporate case studies. Lastly, the motivation for this literature study is based on the needs within the South African context. To further explore how SDL can effectively support lifelong professional development in the 21st century, additional research is needed.

Further research is recommended, as follows:

- Systematic literature review of SDL practices in fostering lifelong professional development.
- A systematic literature review of practical challenges in implementing SDL in South Africa.
- Developing a self-directed framework for professional development in the 21st century.

## Conclusion

Aside from the South African curriculum for the 21st century facing challenges in implementation, the South African curriculum aims to be aligned with *Vision 2030*, outlined in the *National Development Plan* (Republic of South Africa [RSA] 2012) which places specific demands on education for delivering self-directed learners. Self-directed learning is a key approach to empower students and develop the essential skills envisioned by *Vision 2030* to become part of the school curriculum in response to the demands that the 21st century poses. Self-directed learning involves active engagement, collaboration and autonomy. Through SDL and SDL-promoting strategies, learners take responsibility for their learning, set goals, identify resources and evaluate outcomes. Self-determination theory, which forms the heart of SDL, emphasises the role of guidance and learner autonomy. Learner engagement encompasses behavioural, emotional and cognitive dimensions and is influenced by autonomy, competence and relatedness. Teachers play a crucial role in promoting learner engagement and autonomy by creating supportive environments. Central to this endeavour are the learning strategies that educators apply and promote. For fostering core SDL skills, behaviours and attitudes, 21st-century research identifies four key learning strategies that educators can endorse: Collaborative learning, cooperative learning, project-based learning and problem-based learning.

Chapter 5

# Empowering pre-service teachers: Enhancing self-directed learning with reflective Thinking Maps®[1]

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## Abstract

This research aimed to determine the extent to which pre-service teachers were self-directed and critical thinkers before and after implementing Thinking Maps® as a teaching strategy. Researchers studied a group of first- to fourth-year Bachelor of Education (BEd) pre-service teachers from a South African university's School of Commerce and Social Studies in Education (SCSSE). Participation in completing the Williamson questionnaire and reflecting on the Thinking Maps® teaching strategy was voluntary. A mixed-method triangulation technique was employed to collect data, combining quantitative-descriptive surveys with qualitative-phenomenological research methods. Williamson's self-rating scale of self-directed learning (SDL) assessed participants' self-directedness while implementing SDL strategies across five distinct areas: awareness, learning strategies, learning activities, evaluation, and interpersonal skills. Pre-service teachers reflected on their use of Thinking Maps® as a teaching strategy. Exploratory factor analyses were conducted to establish construct validity, while Cronbach's alpha was utilised to test the reliability of the resulting factors. The qualitative data aimed to enhance understanding of the phenomenon under study. The researchers coded the raw data into thematic patterns based on the study's conceptual framework to interpret the collected data from interviews and reflections. Pre-service teachers recognised the importance of applying Thinking Maps®, which supported them in applying their new knowledge to classroom practices and promoting SDL, critical thinking, and creativity. Therefore, it is recommended that future training for pre-service teachers be structured around Thinking Maps® to support the development of their critical thinking and SDL skills.

## Introduction

This chapter investigates the effectiveness of Thinking Maps® instruction in enhancing pre-service teachers' self-directed learning (SDL) and critical thinking skills across various subject fields. Commentators on critical thinking research emphasise its multi-faceted nature and the importance of multiple perspectives (Ennis 2002, p. 45; Facione & Gittens 2016, p. 2; McPeck 1981; Paul & Elder 2006). To develop critical thinking skills and metacognitive processes, educators evaluate metacognitive methods, dispositions, attitudes and behavioural characteristics, intellectual qualities and universal intellectual standards of reasoning (Ennis 2002, p. 46; Facione & Gittens 2016, p. 2; McPeck 1981; Paul & Elder 2006). Fisher (2011, p. 15) notes that a critical thinker must also know how to ask questions, when, and what to ask. This includes developing the capacity to reason, recognising when to use reasoning and deciding which technique to use (Supriyatno, Susilawati & Ahdi 2020, p. 1101).

Developing 21st-century skills has emerged as a vital component within pre-service teacher preparation. In contemporary society, characterised by dynamic transformations, the acquisition of 21st-century skills has emerged as a crucial factor for achieving success in many domains, including both personal and professional realms. These abilities, including critical thinking, problem-solving, communication and teamwork, have become indispensable in navigating the complexities of the modern world. The use of Thinking Maps®, a visual instrument that facilitates cognitive processes, has been recognised as a prospective strategy for enhancing these abilities among pre-service educators (Bunt et al. 2022, p. 7) . According to Hyerle and Alper (2011, p. 1), 'Thinking Maps are a pattern language, which emerges unique patterns that are congruent, respectively, with each of the cognitive processes.' Furthermore, it is worth noting that using Thinking Maps® may effectively cultivate and enhance communication and cooperation abilities (Bunt et al. 2022, p. 6) Hence, integrating Thinking Maps® within pre-service teacher education programmes may serve as a viable approach to cultivating 21st-century skills among prospective teachers.

In higher education, the ability to use critical thinking and argumentation to solve academic difficulties is crucial (Barnett 2015, p. 64; Bowell 2017, p. 582; Erikson & Erikson 2018; Grosser & Olivier 2017, p. 4). Consequently, the researchers focused on three essential critical thinking skills – analysis, synthesis and evaluation – which are crucial for pre-service teacher preparation (Department of Basic Education 2011). Additionally, the study aimed to determine if Thinking Maps® could benefit all pre-service teachers in the School of Commerce and Social Studies in Education (SCSSE) to enhance their critical thinking skills in various subject areas by guiding their thinking with universal intellectual norms of reasoning.

Teaching students to think critically is of the utmost importance. According to Odenwald (2010), encouraging students to voice their opinions contributes to their intellectual growth and SDL. Once pre-service teachers have developed self-confidence, they will be better equipped to contribute to class discussions and help others make sense of their learning. When teaching, students may learn to think critically about what they read and believe what they say. Hyerle (2012, p. 58) notes that the brain gets 90% of its information through sight. Thinking Maps® are useful as they represent the abstract ideas behind visual learning, map completion and the processing of complex visual structures (Siew & Mapeala 2017, p. 381). Thinking Maps® are developed throughout the learning and teaching processes, encouraging the brain to consider a visual pattern. For students to develop the critical thinking abilities necessary to deal with real-world issues, their assigned tasks or activities should increase in complexity and difficulty (Kuh 2001, p. 131). As most students do not possess advanced abilities (Weimer 2003, p. 50), it is essential to incorporate critical thinking into the curriculum and syllabus to allow students to develop and apply these abilities (Ewing 2020, p. 80).

Developing critical thinking skills has been a top priority in South African education since 1997. The 2011 *Curriculum and Assessment Policy Statement* (CAPS) emphasises the importance of teaching and learning methods that cultivate critical thinking skills for Grades R–12. Students must possess critical and creative thinking skills to identify and solve problems, make decisions, manage their time and resources efficiently, and collect, analyse, organise and evaluate data critically. They should also communicate effectively using visual, symbolic and linguistic skills, and apply science and technology in a thoughtful and innovative manner, demonstrating their capacity for critical and creative thinking (Department of Basic Education 2011). Teacher involvement ensures that students acquire critical thinking abilities consistent with the goals set out by CAPS.

The literature underscores the importance of teaching critical thinking processes, intellectual qualities and universal intellectual standards of reasoning using Thinking Maps® (Hyerle & Yeager 2007, p. 2). Each map represents a distinct cognitive process suitable for individuals of all ages and academic disciplines (Hudson 2013).

## ■ Theoretical framework

Bozkurt (2017, p. 211) posits that the theory of social constructivism is a philosophical framework that asserts the significance of social interaction and the development of individual meanings in the process of learning. The construction of knowledge and the development of higher-order cognitive levels are outcomes that arise from social interactions and collaborative learning experiences. The study emphasises the significance of pre-service teachers' effective engagement with their peers regarding Vygotsky's zone of proximal development (ZPD). According to Vygotsky (1978, p. 78), the ZPD can be defined as the difference between an individual's current level of growth achieved through independent problem-solving and the potential level of development that can be reached through problem-solving with the guidance of an adult or collaboration with a more proficient peer. Hence, students must seek help from peers with a greater depth of knowledge, as this can aid them in effectively organising their obtained knowledge of Thinking Maps® and expedite their academic advancement. According to Knowles (1975, p. 15), the adult learning theory can be defined as the intrinsic psychological and cognitive progression that occurs as individuals reach intellectual maturity. Additionally, Knowles emphasises the significance of SDL as a central component of adult learning theory. The fundamental principle underlying SDL is adult education, which posits that teachers must understand their own learning needs and take charge of their own learning processes (Louws et al. 2017, p. 171). Based on adult learning theory, individuals demonstrate enhanced learning capabilities when they have high motivation levels and can actively participate in learning materials that directly apply to their lives (Manning 2007, p. 107). The pedagogical strategy of Thinking Maps® and the students' educational experience must be firmly rooted in practical, real-life contexts. The study was developed based on Vygotsky's ZPD and the significance of social interaction, in accordance with the concepts proposed by adult learning theory, to promote SDL among pre-service teachers. Moreover, it is essential to situate Thinking Maps® within the broader context of visual representations, as they are fundamentally visual diagrams. This topic will be discussed in the section titled 'Visual representations'.

## ■ Visual representations

Although visual communication has become increasingly important, many courses still rely heavily on conventional modes of oral and textual instruction (Daniels 2018, p. 1). However, the rise of digital technology, social media and open practices in higher education has led to a search for the use of various visual media in South Africa and globally (Buckley & Nerantzi 2020, p. 197). Nonetheless, there is a need for further information on the advantages, disadvantages and potentials of using such visual presentation. Educators across traditional, hybrid and fully online classrooms are growing interest in using visual representation to engage students in their studies. While Microsoft (MS) PowerPoint, a popular slide show, enables users to include pictures in presentations, some argue that this feature is often exploited primarily for decorative purposes rather than to stimulate thought and learning (Gabriel 2008, p. 258). Hallewell and Lackovic (2017, p. 1166) investigated the use of 145 photographs in MS PowerPoint slides used in undergraduate Psychology lectures at 16 United Kingdom (UK) universities. They found that only 33% were referred to explicitly, with the majority representing a case of 'unprobed representations', in which neither the photograph nor its meaning was explicit. In addition, Carpenter, Witherby and Tauber (2020, p. 138) state that students tend to overestimate the usefulness of pictures, even when they are merely used for aesthetic reasons, leading them to believe they have learnt more than they have. However, visual aids may significantly improve comprehension by supplementing the text with extra explanations directly applicable to the material (Carney & Levin 2002, p. 7).

Visuals also have an emotional impact, and since humans evolved from visual to verbal communication, images have the power to tap into deeper regions of the human mind (Harper 2002, p. 14). As a result, visual representation has become increasingly prevalent in research, academic practice and the classroom.

## Thinking Maps®

Using Thinking Maps® can be a successful teaching strategy for improving students' cognitive and metacognitive abilities in classrooms. Costa and Kallick (2009, p. 33) state that 'thinking is natural and spontaneous, competent thinking must be trained'. Therefore, education aims to teach students how to think and reason critically. Experts believe using Thinking Maps® as a teaching approach is an excellent way to accomplish this goal. Teachers and students alike may develop a common visual language via the usage of Thinking Maps®, and this technique reflects an individual's ability to learn and retain information based on a foundation of developing cognitive abilities (Asfor 2008, p. 21). The most effective strategy for capturing thinking and speeding up the learning process is to control teachers' and learners' learning experiences and create connections between knowledge and thought (Alabdulaziz & Alhammadi 2021, p. 3).

Students can improve their critical thinking and problem-solving abilities through Thinking Maps®, which provide eight visual aids for text comprehension and analysis (Hyerle & Yeager 2007, p. 3). Thinking Maps® facilitate active meaning-making and encourage the use of cognitive processes, metacognitive strategies, dispositions and the fundamental criteria of intellectual reasoning (Minnie 2017).

Thinking Maps® are based on cognitive skills that build on the brain's natural ability to identify patterns and support visual learning. These skills include defining, explaining, analysing, classifying, comprehending cause-and-effect relationships, interpreting part-whole associations and visualising learning trajectories or cognitive steps to solve problems (Hyerle & Yeager 2007, p. 2). Thinking Maps® visually represent these skills and promote metacognition when students use them to depict their thinking processes (Hyerle 2009, p. 120). These maps can be used for any topic and effectively convey complex ideas (Hudson 2013).

Thinking Maps® are flexible and student-centred, unlike other graphic organisers, and help to develop students' critical thinking skills by reinforcing visual patterns for thinking (Hyerle & Yeager 2007, p. 7). Eight different diagrams are recommended to correspond to eight essential thinking processes (Hyerle & Yeager 2007, p. 2).

By using the language of Thinking Maps® as a collection of tools, instructors can support successful teaching practices and enhance student performance. Students and teachers can develop their own conceptual understandings while sharing a common visual language (Hudson 2013).

Thinking Maps® replace poorly organised brainstorming webs and static graphic organisers, allowing students to think abstractly and apply their knowledge to challenging problems.

Hyerle (2014, p. 164) asserts that the circle maps primary purpose is ‘brainstorming ideas and thoughts about a topic’. Students choose a central subject or topic using a circle map and put potential ideas in the outside circle (Long & Carlson 2011, p. 3). Students with a higher level of previous knowledge are expected to have more ideas to contribute to the outer circle. Circle maps have diverse practices, such as ‘vocabulary development, accessing prior knowledge, identifying misconceptions or reviewing information after lessons’ (Hyerle & Yeager 2007).

It is vital to notice that even while numerous thoughts are written, some of these ideas may only be partly or not connected to the main subject. Therefore, the circle map should be used as a starting point for every class so the instructor can measure past knowledge and remove inaccurate background information (Ohst et al. 2014, p. 2).

Another option is to break up the circle map into smaller sections. Students are given a crucial topic for 5 minutes and asked to jot down their thoughts in a specific-coloured pen. During the following discussion, students must discuss and compare their findings with those seated next to them. Students may use a different colour pen to add their classmates’ original ideas to their own circular map. As a final step, request students to revisit their circle maps and either add or delete topics from the lecturer’s lesson that they did not know about at the beginning, depending on what the teacher has taught.

The bubble map ‘requires that students use only single adjectives to describe the topic’, according to Long and Carlson (2011, p. 3). The fundamental idea is developed using several adjectives (Long & Carlson 2011, p. 2). As a result, this method necessitates the student to improve their vocabulary and elaborative thinking skills. Using words that evoke specific feelings is critical to communicating a particular viewpoint effectively.

A tree map may be employed as a visual structure for any material or written endeavour (Hakim 2018, p. 6). Circle map concepts may need to be more organised and predictable; thus, this map can be used to categorise. As a result, a tree map may be utilised to arrange and categorise all the concepts to make them more accessible (Hyerle & Alper 2011, p. 15).

It is possible to see how events are related by looking at flow maps and visual representations of a time sequence. It prioritises information in order of importance, from most critical to least critical. This map requires logic and sequential thinking to arrange the relevant concepts at the appropriate points in the timeline (Long & Carlson 2011, p. 3). For example, this might signify a progression in time (i.e. chronology), a progression in the ranking (best to worst, quickest to slowest, largest to smallest) or a progression in an organisation (i.e. stages or steps to be taken).

The double bubble map compares ideas for similarities and differences (Omar, Zubiar & Seng 2016, p. 35). Both the centre and outer circles or bubbles reveal similarities and differences. Higher-order thinking is required to determine the contrasts and similarities in this map.

The central concept's cause-and-effect connection may be shown using a multi-flow map. The left side is for causes, while the right is for effects (Hakim 2018, p. 7). High-level reasoning abilities are required to examine the reasons and implications of a situation. Understanding why something occurred or measuring the importance or result of an event requires a great deal of mental effort.

The leftmost side of a brace map enlarges the central notion to include all its defining elements and assists in identifying whole and part relationships. It breaks a topic into multiple components and related parts (Omar et al. 2016, p. 35). This should be done using nouns. The nouns are explained in further detail in the brace map. This is a higher-order thinking map because of the way concepts are divided into parts.

According to Hakim (2018, p. 4), using the bridge map demands 'relative and associative thinking, whereby ties must be created between several notions, opposing the Double Bubble Map, which can only employ two concepts'. Therefore, when utilising a bridge map, it is essential to identify a link between the various elements of the diagram.

# Methodology

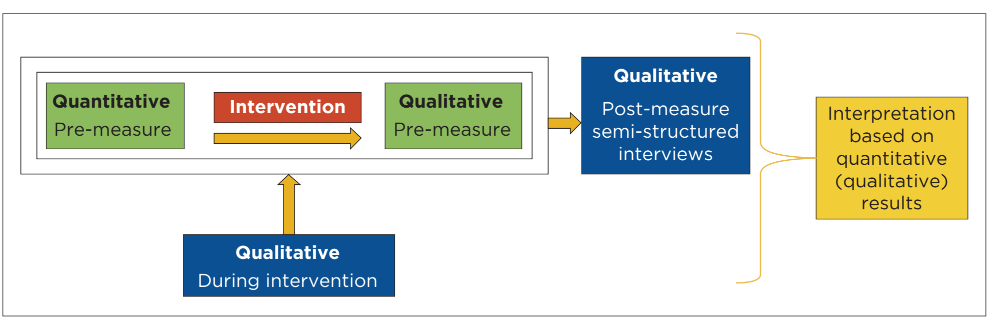
## Participants

Researchers studied a group of first- to fourth-year Bachelor of Education (BEd) pre-service teachers from a South African university. Firstly, before starting the study, participants provided informed consent, ensuring their understanding of the study's risks, benefits and voluntary nature. This research targeted BEd pre-service teachers because of observed SDL limitations in their courses. The goal was to address these gaps during their studies before they became teachers. The research primarily aimed to identify a teaching strategy that potentially fosters SDL, and the researchers decided on Thinking Maps®. Each participant who voluntarily indicated to participate in this study was expected to complete the self-rating scale of self-directed learning (SRSSDL) questionnaire online as a pre-test to measure the level of self-directedness in the learning process. Of the 407 participants in the school-based project, 277 completed Williamson's questionnaire on SDL. Secondly, after the intervention, the participants were requested to write reflections on the benefits of the training material of Thinking Maps® that supported their SDL development, and 108 students submitted their reflections. Thirdly, the SRSSDL questionnaire followed as a post-test to measure the level of self-directedness at the end of the learning process. Lastly, interviews were scheduled with individual participants (preferably five voluntary participants per year group) at times and venues convenient to the participants and lasted for approximately 45 minutes or until data saturation occurred. Participants were recruited transparently and were always assured confidentiality and voluntary participation. They were selected to participate because they completed the pre-measures and submitted consent. Only these students could be used, as all future data collection in the post-measures was completed solely by them.

## Research design

According to McMillan and Schumacher (2010), research design describes the study processes, including the settings under which data will be collected.

As shown in Figure 5.1, an embedded mixed-method experimental research design incorporates quantitative and qualitative data into an experimental framework. The priority of the design was established by the quantitative, experimental methodology and a qualitative dataset subservient to the method (Creswell & Plano Clark 2018, p. 274). The quantitative, experimental dataset and qualitative datasets subordinate to it determined the design's priority (Creswell & Poth 2017, p. 193). In the mixed methods experimental design, researchers must determine why and when qualitative data should be obtained and how to avoid bias if qualitative data are collected during the experiment. This was avoided by using multiple data collection points as well as using triangulation. Quantitative pre- and post-test data prior to and after the implementation of the intervention were collected, which only focused on the SDL of the participants. In quantitative methodology, participants were asked to complete a questionnaire using the (Williamson 2007, p. 66) SRSSDL to determine their SDL. Qualitative and descriptive data were gathered




*Source*: Authors' own work.

**FIGURE 5.1:** Research design.

by requesting participants to write reflections on their experiences of the training material to support their development of SDL during the implementation of the intervention. Qualitative interview data were also collected after the intervention to follow up on the participants' experiences after completing the intervention. The North-West University's Ethics Committee, the NWU Research Data Gatekeeper Committee, granted ethical clearance (ref. no. NWU-01218-20-A2) before the study commenced.

# Data analysis

## Quantitative: Data analysis

Descriptive (frequency and percentages) and inferential statistics (confidence intervals) were employed. Each item's responses were scored using a four-point scale rather than a five-point Likert scale. To obtain precise and accurate participant responses, the researchers have adjusted the Likert scale such that students cannot select option three on the five-point scale, namely 'sometimes' (Van Tonder et al. 2021, p. 47). A statistician from the certified university statistical consultation services determined that the modified Likert scale is statistically valid.

Cronbach's alpha tested the reliability of the resulting factors. Factors with Cronbach's alpha coefficients of 0.7 and above, but at least 0.5, were considered reliable, and factor scores based on the average scores of the questions within each factor were calculated afterwards.

Multi-level modelling was used to determine the change in the SRSSDL score of the different factors, namely awareness, learning strategies, learning activities, evaluation and interpersonal skills.

As a result of the lack of generalisability because of using a purposive/convenient sample instead of a random sample, effect sizes were employed for interpretation purposes rather than *p*-values. The following recommended settings were applied: An effect size of 0.2 suggests a small or practically non-significant change, an effect size of 0.5 shows a medium impact or noticeable practical difference and a value of 0.8 indicates significant effects or a significant practical difference. The influence of respondents' biographical data, such as age, mother-tongue language, academic background, year group and subject area, was also determined using multi-level modelling. The biographical variable was also considered a factor in this instance.

A qualified statistician conducted the quantitative data analyses on the researchers' behalf and assisted with the interpretation.

## Qualitative: Data analysis

The qualitative analysis aims to interpret the data and the resulting themes to facilitate comprehension of the studied phenomenon. Data analysis is an ongoing process (Anderson 2010, p. 5). Content analysis was used to make meaning of the data by going through it systematically, thus making meaning of the participants' responses. To make sense of the collected data from the interviews and reflections, the researchers coded the raw data into pattern themes based on the study's conceptual framework (Nieuwenhuis 2020, p. 136). The transcribed data in this study were analysed through inductive codes and associated with the thematic idea so that the meaning units could be examined together (Nieuwenhuis 2020, p. 136). In ATLAS.ti™, the researchers used open coding (creating and naming a new code) or in vivo coding (the selected segment forms the name of the new code) to create labels or concepts to attach to each data segment.

# Research results

## Quantitative research results

In this chapter, the researchers will report on the quantitative data and focus on the pre- and post-test of Williamson's (2007) SRSSDL to measure the participants' SDL during the implementation of Thinking Maps® under the five distinct areas of SDL: Awareness, learning strategies, learning activities, evaluation and interpersonal skills.

Table 5.1 shows the number of participants and the variation of subject areas exposed to the Thinking Maps® teaching strategy.

The largest group of participants represent the Business Studies subject area (39.3%). History is the second largest group (24.2%), with Economics (21.7%) as the third largest, while Accounting had the lowest percentage of participants (14.8%).

### Confirmatory factor analysis

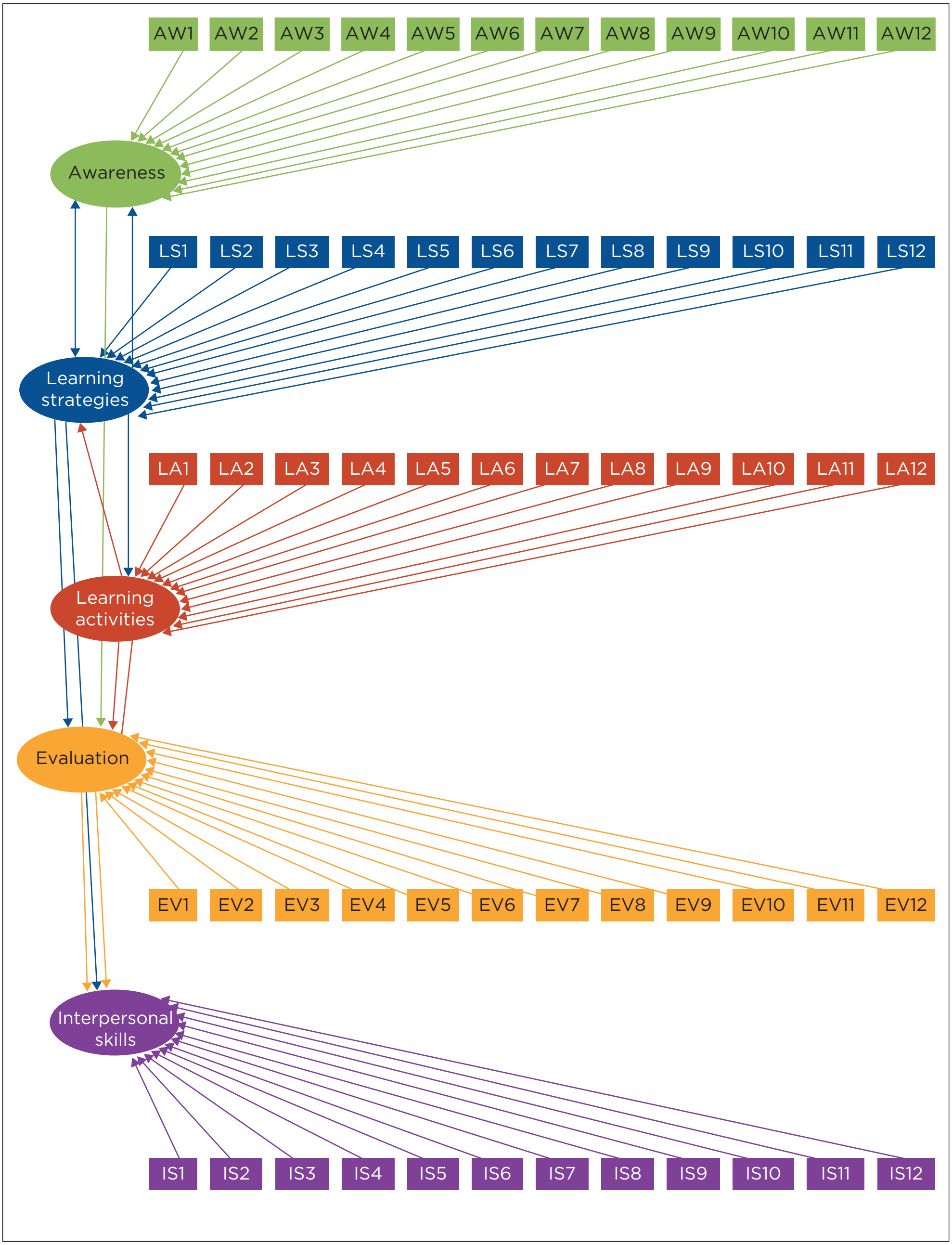
Hox and Becher (1999) explain that structural equation modelling (SEM) assesses the relationships among theoretical constructs using regression or path coefficients and thus tests how well the theoretical model fits the data. A confirmatory factor analysis (CFA), using an SEM, was conducted on the pre-test data ($n$ = 277) of this study to assess how well the proposed model fits the data (Figure 5.2). All the variables contribute

**TABLE 5.1:** Subject areas Accounting, Business Studies, Economics and History in the study.

| Subject area | Frequency | % |
|---|---|---|
| Accounting | 41 | 14.8 |
| Business Studies | 109 | 39.3 |
| Economics | 60 | 21.7 |
| History | 67 | 24.2 |
| **Total** | **277** | **100.0** |

*Source*: Authors' own work.

statistical significance to the model ($p$-values of all the regression coefficients $< 0.05$), and all the correlations between the constructs are practically significant (correlations ranging between 0.45 and 0.92), seeing that a correlation of 0.5 is considered to be large or practically significant according to Pallant (2010).




*Source*: Authors' own work.

**FIGURE 5.2:** Structural equation modelling diagram of the theoretical model being tested.

## Model fit summary

Fit indices from three of the broad categories are reported, namely: Chi-squared test statistic divided by the degrees of freedom (CMIN/DF), comparative fit index (CFI) and root mean square error approximation (RMSEA) with a 90% confidence interval (LO 90 and HO 90). Blunch's (2015) guideline values (as indicated in Table 5.2) will be used for interpretation.

CMIN/DF (Chi-squared test statistic divided by the degrees of freedom)

Guideline value: Near 1

Reported value: 1.69

The reported value of CMIN/DF is 1.69, which is higher than the guideline value of 'Near 1'. Typically, a CMIN/DF value closer to 1 indicates a better fit. A value of 1.69 suggests a reasonably good fit, but not perfect. According to Van Tonder and Van Deventer (2023, p. 7), values below three are usually considered to be an indication of an acceptable fit in structural equation modelling.

Comparative fit index (CFI)

Guideline value: > 0.95

Reported value: 0.73

The reported value for CFI is 0.73, which is considerably below the guideline value of > 0.95. The CFI measures the relative improvement in the fit of the researchers' model compared to a baseline model. Values close to 1 (or above 0.95) are desired to indicate a good fit. A value of 0.73 suggests that the model might not fit the data adequately (Van Tonder & Van Deventer 2023, p. 7).

Root mean square error approximation (RMSEA) with 90% CI (LO 90 and HO 90)

Guideline value: Around 0.05

Reported value: 0.05 (90% CI: 0.047–0.053)

The reported RMSEA value is 0.05, which aligns with the 'Around 0.05' guideline value. The RMSEA measures fit per degree of freedom, and values

**TABLE 5.2:** Structural equation modelling fit indexes (guidelines and reported values).

| Broad category | Absolute fit measure | Relative fit measure | Non-central distribution |
|---|---|---|---|
| Fit index | CMIN/DF | CFI | RMSEA (LO 90: HI 90) |
| Guideline value | Near 1 | > 0.95 | Around 0.05 |
| Reported value | 1.69 | 0.73 | 0.05 (0.047:0.053) |

*Source*: Authors' own work.
Key: CMIN/DF, Chi-squared test statistic divided by the degrees of freedom; CFI, comparative fit index; RMSEA, root mean square error approximation.

closer to 0 indicate a better fit. Additionally, the 90% confidence interval for RMSEA ranges from 0.047 to 0.053, which is a narrow range centred around the guideline value. This suggests that the model fit is acceptable in terms of RMSEA.

Based on Blunch's (2015) guideline values, the model is acceptable for CMIN/DF and RMSEA. However, the CFI value suggests room for improvement in the model's fit to the data.

The model was investigated further in terms of reliability.

## Reliability (Cronbach alpha)

Reliability determines whether a questionnaire and its underlying factors continuously reflect what is being measured. This means that:

- All other things being equal, a person completing the questionnaire at two different moments in time should receive the same score for each item each time completing the questionnaire.
- Two people who are similar in terms of the constructs the questionnaire measures should receive the same results for these factors.

Table 5.3 presents Cronbach alpha values of the subscales resulting from the CFA.

Each segment is significant in evaluating a student's profile in educational constructs. When assessing 'Awareness', a Cronbach's alpha of 0.76 highlights a good internal consistency within its questions, from Q1.1 to Q1.12. An average score of 40.15 for this construct indicates a moderate level of awareness among respondents, though with a standard deviation of 4.24, there is evident variability in these responses. Moving onto 'Learning strategies', the internal consistency remains commendable, with a Cronbach's alpha of 0.71. However, the average respondent's score of 38.60 falls slightly behind that of awareness, indicating a tad lower engagement in this domain. The standard deviation remains in the moderate range at 4.33.

**TABLE 5.3:** Cronbach's alpha values calculated for the constructs.

| Construct | Questions | Cronbach's alpha | M | SD |
|---|---|---|---|---|
| Awareness | Q1.1–Q1.12 | 0.76 | 40.15 | 4.24 |
| Learning strategies | Q2.1–Q2.12 | 0.71 | 38.60 | 4.33 |
| Learning activities | Q3.1–Q3.12 | 0.80 | 38.57 | 4.73 |
| Evaluation | Q4.1–Q4.12 | 0.75 | 39.85 | 4.44 |
| Interpersonal skills | Q5.1–Q5.12 | 0.81 | 39.71 | 4.80 |
| **Total score** | **Q1.1–Q5.12** | **0.87** | **196.88** | **22.54** |

*Source*: Authors' own work.
Key: M, mean; SD, standard deviation.

'Learning activities', on the other hand, boasts a robust Cronbach's alpha of 0.80, highlighting a strong correlation among its encompassed questions. The mean score here is 38.57, with a standard deviation of 4.73, indicating a marginally increased variability compared to its predecessors. The 'Evaluation' construct exhibits a creditable internal consistency, reflected by its Cronbach's alpha of 0.75. With an average score of 39.85, it is evident that respondents have a balanced capability in this area. The associated variability, standing at a standard deviation of 4.44, is moderate. 'Interpersonal skills' stands out with a notable Cronbach's alpha of 0.81, denoting a strong cohesion in its questions. The mean score is 39.71, but the standard deviation of 4.80 suggests a slightly heightened variability among the respondents.

Lastly, the aggregate 'Total score', encompassing the entirety of the constructs, achieves an outstanding Cronbach's alpha of 0.87, marking an exemplary internal consistency across all questions from Q1.1 to Q5.12. This holistic score averages 196.87, a summative representation of all individual constructs, and understandably, its standard deviation of 18.18 is on the higher side because of the comprehensive nature of this score. The constructs presented each have commendable internal consistencies, as indicated by their respective Cronbach's alpha values. While 'Awareness' and 'Interpersonal skills' score higher on average, all constructs display moderate variability. The total score reflects an aggregation of all individual scores, encapsulating the essence of the entire survey.

The reported Cronbach alpha values, which ranged between 0.71 and 0.87, are all above the guideline value of at least 0.7 (Field 2018). A Cronbach's alpha coefficient of 0.7 or above indicates reliability (Taber 2018). The reported Cronbach alphas were used to test the reliability of the construct, where reliability refers to internal consistency. Table 5.4 indicates that all the constructs' The Cronbach's alpha coefficients exceed the established threshold, suggesting that the constructs demonstrate satisfactory reliability. As part of a bigger research project, the SRSSDL has already been used at the North-West University (NWU) (*n* = 403). They obtained Cronbach's alpha coefficients between 0.76 and 0.88 for the SRSSDL for the five categories of the questionnaire, indicating the SRSSDL was reliable in the South African context (Petersen & Mentz 2016). The means of the resulting factors ranged between 38.57 (SD = 4.73) and 40.15 (SD = 4.24), and the reported means of the overall SRSSDL score is 196.87 (SD = 18.18), indicating that participants' SDL is high.

## Demographic profile

To provide an overview of the demographic profile of the typical participant, frequencies were used, seeing that this can reflect how many people chose

**TABLE 5.4:** Descriptive statistics of constructs at pre- and post-test.

| Construct | Pre-test | | Post-test | |
|---|---|---|---|---|
| | M | SD | M | SD |
| Awareness | 40.66 | 4.37 | 41.58 | 4.11 |
| Learning strategies | 38.72 | 4.79 | 39.56 | 4.89 |
| Learning activities | 38.29 | 5.24 | 40.05 | 4.91 |
| Evaluation | 40.13 | 4.82 | 40.40 | 4.97 |
| Interpersonal skills | 39.99 | 5.30 | 40.87 | 4.37 |
| **Total** | **197.79** | **20.31** | **202.46** | **19.78** |

*Source*: Authors' own work.
Key: M, mean; SD, standard deviation.

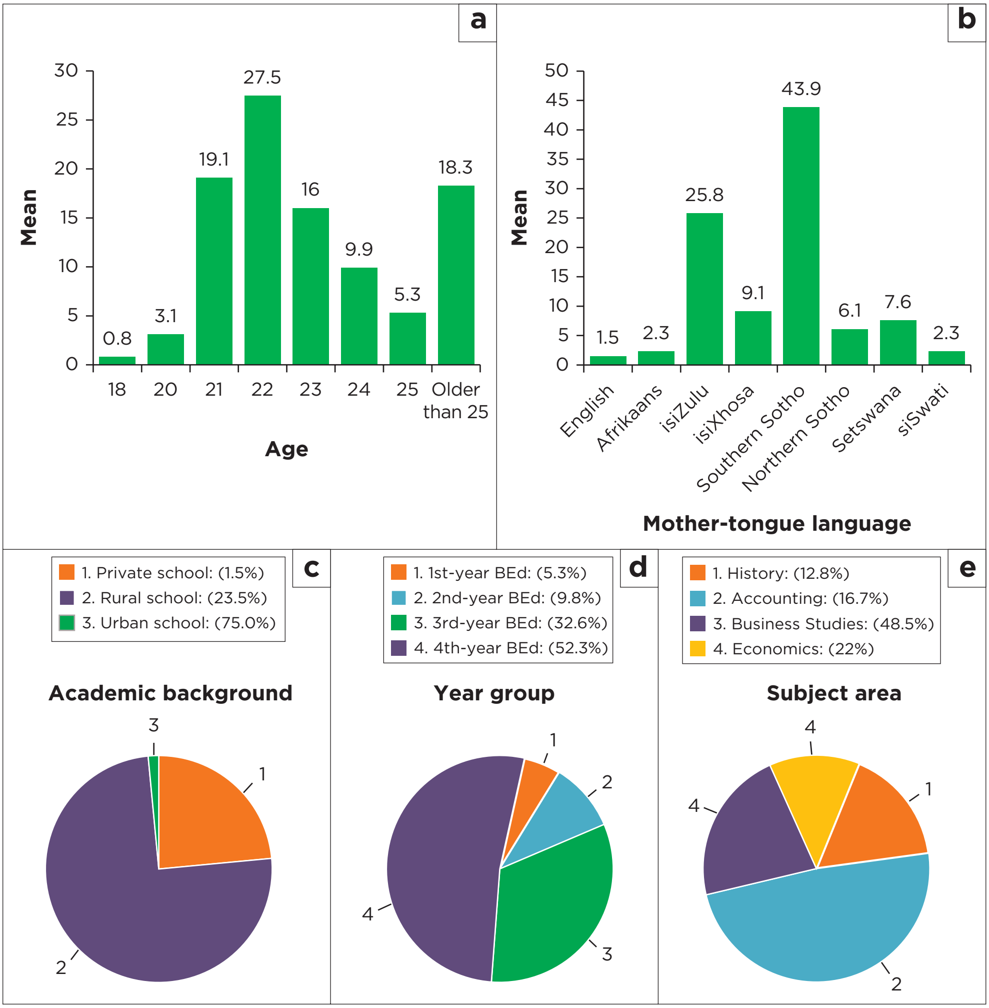
each option (Pallant 2010). The frequencies were calculated only for the respondents who completed both the pre- and post-tests ($n$ = 132) but reflected the information provided by the participants during the pre-test.

As reflected in Figure 5.3, most of the participants (62.6%) were between the ages of 21 and 23 and Sotho (43.9% Southern Sotho and 6.1% Northern Sotho) was indicated by half of the participants as their mother-tongue language. This is unsurprising considering the participants are undergraduate students attending university in the Gauteng province, as the majority demographic is Sesotho, with smaller groups of isiZulu, English and Afrikaans students. The age is also within the anticipated range, as most university students come directly from high school. The majority of the participants (75.0%) matriculated from schools situated in urban areas. Considering where the university is located, this is also to be expected, as most schools are located in towns. Considering the more student-specific demographic information, more than half of the participants were fourth-year BEd students (52.3%), with Business Studies being the subject area with the highest proportion (48.5%). Unfortunately, the senior fourth-year students participated most, as this intervention was designed across all year groups. Regarding the subject choice, this is expected as well, as Business Studies has the most students. History had the fewest participants, which was expected.

## Descriptive statistics

Means and standard deviations were used as descriptive statistics to summarise the data from the pre- and post-test SDL questionnaires. The mean is simply the average, and the standard deviation provides information regarding the spread of the data around the mean (Field 2018). These were calculated for the constructs, seeing that construct validity was already proven (refer to Table 5.4).

The means reported for the constructs ranged between 38.29 (SD = 5.24) to 40.66 (SD = 4.37) for the pre-test and 39.56 (SD = 4.89) to 41.58 (SD = 4.11) for the post-test. Considering the total SRSSDL score, it changed




*Source*: Authors' own work.
Key: BEd, Bachelor of Education.

**FIGURE 5.3:** Bar graphs and pie charts based on the frequencies of the demographical variables: (a) age, (b) mother-tongue language, (c) academic background, (d) year group and (e) subject area.

from 197.75 (SD = 20.31) to 202.44 (SD = 19.78) in Table 5.4. These values reflect minor improvements between the pre- and post-test. Instead of a five-point Likert scale, responses for each item were rated on a four-point scale. To obtain precise and accurate participant responses, the researchers adjusted the Likert scale to prevent students from selecting option three on the five-point scale, namely 'sometimes'. The pre-test scores are very high, and it can be interpreted that the students might have overestimated their SDL abilities. According to the literature, students would exaggerate 'their own self-directedness, as students who are not fully aware of what SDL entails tend to make assumptions regarding their own levels of SDL (Petersen & Mentz 2016, p. 52)' (Bunt & Van Tonder 2021, p. 210).

The levels of self-directedness in learning were also calculated based on the total SRSSDL score, as indicated in the literature. However, because of the high levels of self-directedness at the pre-test level, the distributions stayed relatively the same, with most participants having high levels at both the pre- and post-test, as seen in Table 5.5.

The participants were divided into three distinct groups regarding their SDL as perceived by themselves, namely: Low (48–112), moderate (113–176) and high (177–240). This grouping was categorised using a standardised statistical procedure. Table 5.5 shows the number of student participants divided into the three specific groups of SDL according to the questionnaire. This research focused on the results obtained for the moderate and high groups, as there were no participants in the low group. According to Table 5.5, most of the participants fall into the group with a high rate of self-directing skills before and after applying the Thinking Maps® teaching strategy. For this reason, it was decided to base the further analyses on the scores calculated for the constructs and the total SRSSDL score (instead of the levels), as this will visibly reflect improvements.

## Dependent *t*-tests

Improvements in SRSSDL scores were investigated using dependent *t*-tests. Field (2018) describes this analysis as testing whether two means collected from the same sample (pre- and post-in) differ significantly. The interpretation of these analyses will be based on the effect sizes because a convenience sample was used instead of a random sample (*p*-value will be reported for completeness). The following guideline values are used for interpretation: ~ 0.2 small effect or practically non-significant difference; ~ 0.5 medium effect or practically visible difference and ~ 0.8 large effect or practically significant difference (Ellis & Steyn 2003).

# Differences: Total sample

This part of the investigation started by considering differences in the pre- and post-test scores of the sample.

In assessing the statistical significance of various constructs, as indicated in Table 5.6, 'Awareness' presents a *p*-value of 0.05 when comparing

**TABLE 5.5:** Frequencies of the level of self-rating scale of self-directed learning at pre- and post-test.

| Level of self-directedness | Pre-test frequencies (%) | Post-test frequencies (%) |
|---|---|---|
| Low (48–112) | 0.0 | 0.0 |
| Moderate (113–176) | 14.4 | 9.8 |
| High (177–240) | 85.6 | 90.2 |

*Source*: Authors' own work.

**TABLE 5.6:** Differences in the constructs of self-directed learning between the pre- and post-tests based on the total sample.

| Construct | Test | Mean | SD | *p* | Effect size |
|---|---|---|---|---|---|
| Awareness | Pre-test | 40.66 | 4.37 | 0.05 | 0.21 |
| | Post-test | 41.58 | 4.11 | | |
| Learning strategies | Pre-test | 38.72 | 4.79 | 0.17 | 0.18 |
| | Post-test | 39.56 | 4.89 | | |
| Learning activities | Pre-test | 38.29 | 5.22 | < 0.01 | 0.34 |
| | Post-test | 40.05 | 4.91 | | |
| Evaluation | Pre-test | 40.08 | 4.84 | 0.53 | 0.08 |
| | Post-test | 40.44 | 4.97 | | |
| Interpersonal skills | Pre-test | 40.05 | 5.29 | 0.17 | 0.15 |
| | Post-test | 40.86 | 4.39 | | |
| **Total score** | **Pre-test** | **197.75** | **20.31** | **0.04** | **0.23** |
| | **Post-test** | **202.44** | **19.78** | | |

*Source*: Authors' own work.
Key: SD, standard deviation.

post-test to pre-test results, placing it on the borderline of statistical significance, given that the standard threshold is typically 0.05. Meanwhile, the 'Learning strategies' construct yielded a *p*-value of 0.17, indicating no significant difference between the pre-test and post-test outcomes using the standard 0.05 benchmark. In contrast, the 'Learning activities' construct reveals a robust statistical significance, as evidenced by its *p*-value of less than 0.01, underscoring a marked distinction between the initial and subsequent test scores. However, the 'Evaluation' and 'Interpersonal skills' constructs, both with a *p*-value of 0.17, do not demonstrate statistically meaningful changes, mirroring the pattern seen in 'Learning strategies'. Notably, when examining the 'Total score', there is a *p*-value of 0.04, signifying a significant variance between pre-test and post-test results at the 0.05 level. To encapsulate, only 'Learning activities' and 'Total score' among the constructs evaluated manifest significant shifts between their pre-test and post-test scores at the 0.05 level. 'Awareness' staggers on the edge of significance, whereas the remaining constructs remain consistently non-significant at this threshold.

## Differences per biographical group

It was decided to take the investigation further by performing analyses for different biographical groups (refer to Table 5.7). The biographical variables investigated were age, academic background and year group. Only noteworthy differences are reported, and because of small sample sizes, some groups were collapsed for these analyses.

For individuals younger than 22, there is a noticeable difference in the 'Learning activities' scores between the pre-test and post-test, with a *p*-value of 0.02, indicating statistical significance at the 0.05 threshold.

**TABLE 5.7:** Differences in the constructs of self-directed learning between the pre- and post-tests within the various biographical groups, based on their *p*-values.

| Biographical group | Construct | Test | M | SD | *p* | Effect size |
|---|---|---|---|---|---|---|
| Age: Younger than 22 | Learning activities | Pre-test | 37.26 | 5.71 | 0.02 | 0.53 |
| | | Post-test | 40.28 | 4.87 | | |
| Age: 22 | Learning strategies | Pre-test | 38.78 | 3.86 | 0.09 | 0.39 |
| | | Post-test | 40.29 | 4.35 | | |
| | Learning activities | Pre-test | 38.55 | 4.14 | 0.01 | 0.57 |
| | | Post-test | 40.92 | 4.39 | | |
| Academic background: Urban | Learning activities | Pre-test | 37.87 | 5.21 | < 0.01 | 0.38 |
| | | Post-test | 39.83 | 4.68 | | |
| Year group: First- and second-year BEd | Awareness | Pre-test | 40.55 | 4.57 | 1.02 | 0.39 |
| | | Post-test | 42.34 | 3.75 | | |
| Year group: Third year BEd | Learning activities | Pre-test | 37.34 | 6.20 | 0.01 | 0.48 |
| | | Post-test | 40.31 | 4.52 | | |

*Source*: Authors' own work.
Key: M, mean; SD, standard deviation; BEd, Bachelor of Education.

However, for those aged 22, while the 'Learning strategies' scores do not show a statistically significant change with a *p*-value of 0.09, their 'Learning activities' scores present a strong significance with a *p*-value of 0.01. Moreover, participants from an urban academic background demonstrated a significant difference in their 'Learning activities' scores, having a *p*-value of less than 0.01. Interestingly, the 'Awareness' scores for first- and second-year BEd students have a *p*-value of 1.02. This unusually high value, exceeding the typical 0–1 range, suggests no statistical significance. Meanwhile, third-year BEd students exhibited a strong significance in their 'Learning activities' scores with a *p*-value of 0.01. Overall, 'Learning activities' for the groups 'younger than 22', 'age: 22', 'urban academic background', and 'third-year BEd' revealed significant post-test alterations at the 0.05 level. Conversely, 'Learning strategies' for those aged 22 and 'Awareness' for first- and second-year BEd students remained consistent. Among the 22-year-old participants, an improvement was noted for the learning strategies construct (0.39 effect size), which could also be linked to the intervention allowing students to learn concepts more easily when using or applying the Thinking Maps® strategy. It is important to note that the Thinking Maps® teaching strategy can also assist with learning.

# Qualitative research results

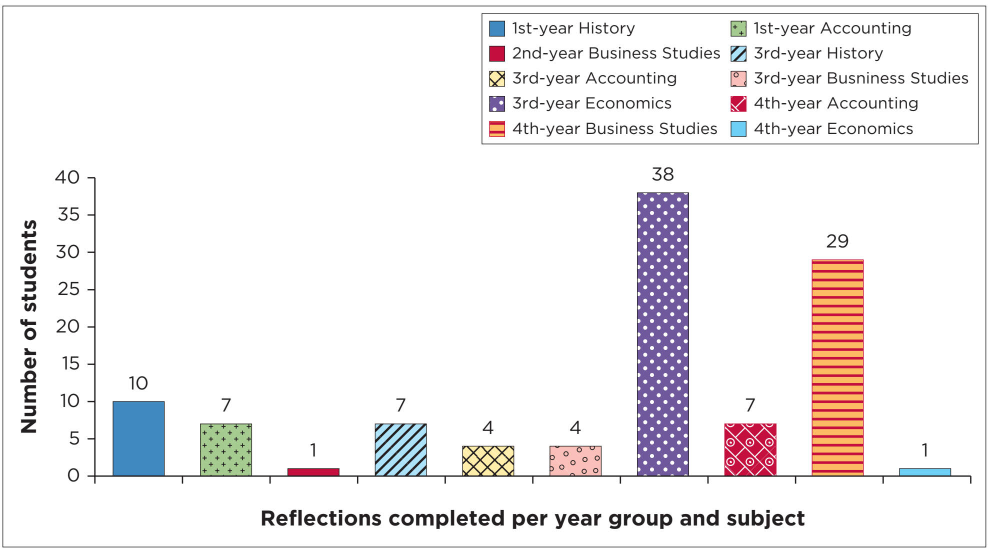
## Reflections

Only 108 students enrolled for the school-based project completed the reflections. The number of students per year group and subject is indicated in Figure 5.4 (Van Tonder et al. 2021, p. 49).

Inductive thematic analysis was used to study students' thoughts on Thinking Maps®. Original codes were created from the data, then categories were created from the initial codes. The categorisation forms the themes (Braun, Clarke & Hayfield 2022, p. 427). Verbatim quotations from students in the different year groups supported each theme's sub-categories. Table 5.8 indicates the themes and categories.

## Theme 1: The promotion of self-directed learning using Thinking Maps®

Applying Thinking Maps® during teaching and learning promoted various SDL dispositions and skills.




*Source*: Authors' own work.
**FIGURE 5.4:** Reflections completed.

**TABLE 5.8:** Themes and categories.

| Themes | Categories |
|---|---|
| The promotion of self-directed learning using Thinking Maps® | • Being an independent student<br>• Planning<br>• Analysing and summarising learning strategies<br>• Creativity<br>• Ability to improve workflow |
| Applying Thinking Maps® in teaching and learning | • The value of Thinking Maps® for the class<br>• Planning teaching and learning<br>• Thinking Maps® as teaching, learning and assessment strategies |

*Source*: Authors' own work.

### ☐ *Being an independent student*

The participants indicated that the Thinking Maps® made them more independent, with motivation and persistence identified as specific factors promoted by the Thinking Maps®.

> 'I have learnt to be independent as I had to re-draw the maps from scratch.' (Fourth-year Accounting student)
>
> 'It helps me to develop thinking skills and to learn independently.' (Fourth-year Business Studies student)
>
> 'It develops my critical thinking as it enforces independent thinking and planning.' (Third-year Business Studies student)
>
> 'It developed me to be independent make things without seeking help from others.' (Third-year Economics student)

### ☐ *Planning*

The participants indicated that their planning improved when they applied the Thinking Maps®.

> 'That I should plan before implementation and gave me an easier way to unpack critical topics.' (First-year History student)
>
> 'It helps one to prior plan and generate ideas before the execution.' (Fourth-year Accounting student)
>
> 'It develops your skills in such a way that as a learner you need to have planning and be organised for every event that will occur.' (Third-year Business Studies student)
>
> 'I think that the Thinking Maps® is a great strategy to use when a person plans something and when a person would like to know what might happen in different situations.' (Fourth-year Business Studies student)

### ☐ *Analysing and summarising as learning strategies*

The participants indicated that they could more easily analyse the content by breaking it down with the Thinking Maps®.

> '[/]t helped me to be more analytic when looking at the content. Be able to pin-out the most imperative terminologies of that specific content.' (Third-year Economics student)
>
> 'It can be used to revise before an exam as it also serves as a sort of summary of certain content.' (Third-year Economics student)
>
> 'They make it easy to break down content.' (Fourth-year Business Studies student)
>
> 'The thinking strategy creates a clear understanding towards a certain content which enables me to break down the whole topic by showing important points or information.' (Third-year Economics student)

The participants also reversed the analysis process using the Thinking Maps® to summarise the content.

'I found it effective in summarising information.' (Fourth-year Accounting student)

'Thinking Maps® can make learning easy because these maps can be used to summarise, categorise and structure information of a specific content.' (Fourth-year Business Studies student)

'It was a nice experience to know that you can use different types of maps to summarise your lesson.' (First-year Accounting student)

'The Thinking Maps® are a very effective tool to use when presenting a lesson, the help you to summarise the content and only focus on essential information.' (Fourth-year Business Studies student)

Overall, the structuring of the content graphically improved the participants' learning.

'It's an easy visual way to understand and break down information that contains a lot of theory.' (Third-year Economics student)

'The strategy of Thinking Maps® is effective as it delivers common visual language "from information explained in different ways."' (Third-year Economics student)

'Thinking Maps® are a broader visual tool to organise content knowledge, effective in completion of complex and well-reasoned activities/tasks/assignments and can increase individual thinking skills.' (Fourth-year Accounting student)

### □ *Creativity*

Participants widely indicated the enhancement of creativity.

'I always try to think of ways to do things differently and be unique using creative thinking and interpret these Thinking Maps® strategy into my studies.' (Second-year Business Studies student)

'They make learners to be creative as well as they come with different ways when approaching or dealing with Thinking Maps®.' (Third-year Economics student)

'To think more and to be creative.' (First-year Accounting student)

'For me, Thinking Maps® encourage creativity.' (Fourth-year Accounting student)

### □ *Ability to improve workflow*

The Thinking Maps® had a general influence on the participants' work. It was vastly indicated to have improved the ease of doing work.

'I think the Thinking Maps® are a good way to have one with their academic work. They help by making complex things seem simpler and easier to complete.' (Second-year Business Studies student)

'I learnt that work or any task can be made easier and more understandable when broken down into parts using the Thinking Maps®.' (Second-year Business Studies student)

'[*T*]hey make work easier as they give clues and order of how to structure your writing.' (Second-year History student)

'[*T*]hey are very useful and help one to complete tasks easier.' (Fourth-year Accounting student)

'[*I*]t makes an assignment easier. you can use the points you used on the maps to write an essay.' (First-year History student)

'It makes it easier to avoid mixing up topics or information.' (Third-year Economics student)

## Theme 2: Applying Thinking Maps® in teaching and learning

The participants identified the valuable contribution that Thinking Maps® might have in their own classes one day.

### *The value of Thinking Maps® for the classroom*

The participants agreed that the Thinking Maps® would improve teaching and learning in general.

'Thinking map are easy to use and apply in our everyday teaching and learning, for it to be effective.' (Third-year Economics student)

'It is one of the easy methods in teaching and understandable for learning.' (Third-year Economics student)

'I can use this strategy for teaching learners many subjects in a broader form. I can also use this strategy to make learners become more interested in the lessons.' (Fourth-year Accounting student)

### *Planning teaching and learning*

The participants indicated that the Thinking Maps® would again improve planning immensely. The Thinking Maps® will enhance the planning of teaching and learning.

'Each Thinking Maps plays a huge role in planning our lessons and using one or all of them will be beneficial for learners.' (Second-year Business Studies student)

'Thinking Maps® help an individual gather information, plan and form a layout of what they need to know or learn about a topic.' (Third-year History student)

'It helps one to prior plan and generate ideas before the execution in class.' (Fourth-year Accounting student)

'Make lesson planning easier.' (Third-year Economics student)

'Making planning and presenting easy.' (Third-year Economics student)

### *Thinking Maps® as teaching, learning and assessment strategies*

Participants also indicated that the teacher could apply the Thinking Maps® during different phases of teaching and learning. However, the participants needed to be clearer on implementing it as a teaching or assessment strategy. The only clear indication of using Thinking Maps® as a strategy is as a learning strategy by applying it as a generic cooperative learning tool.

> 'To create a group activity.' (Third-year Economics student)
>
> 'Divide learners into groups and allocate each thinking map to a specific group.' (Fourth-year Business Studies student)
>
> 'It can be used within group activity, whereby each student can take on different thinking role in the group.' (Third-year Economics student)

Even though there is no specific way of using the Thinking Maps® as teaching strategies, participants were adamant that they could be used as one.

> 'I can use this strategy for teaching learners many subjects in a broader form.' (Fourth-year Accounting student)
>
> 'I can use them during teaching and learning.' (Third-year Economics student)
>
> 'Shows me different ways of teaching strategy and how to apply them.' (Fourth-year Business Studies student)
>
> 'This strategy can be used to enhance learning in the classroom.' (Fourth-year Business Studies student)

A similar thought was also evident regarding Thinking Maps® as an assessment strategy.

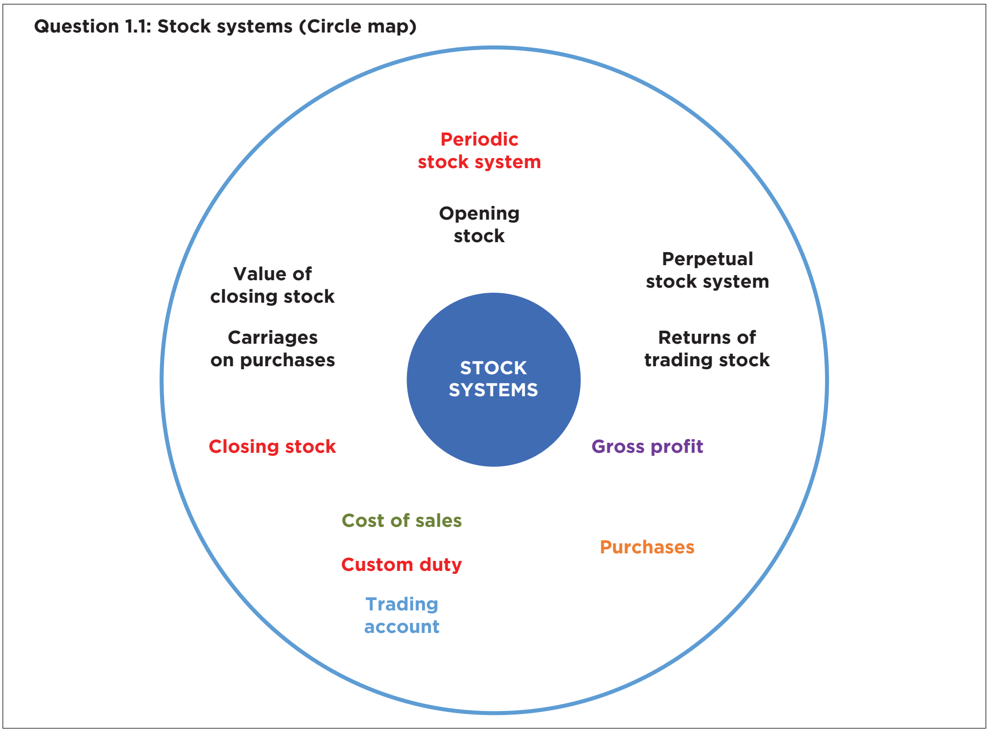
> 'I can use them even when assessing the learners.' (Third-year Economics student)
>
> 'I will use a circle map to test prior knowledge, tree map to teach a content that has comparison.' (Fourth-year Business Studies student)
>
> 'I will integrate it in long questions assessments.' (Third-year Business Studies student)

### ☐ *Observation of Thinking Maps® artefacts*

#### ○ *Circle map*

In first-year Accounting, the participants had to apply specific topics to specific Thinking Maps® that the lecturer indicated. Figure 5.5 shows the application of a circle map related to stock systems. The lecturer marked the correct topics using a red check mark symbol. This would indicate correct thinking in terms of the central issue. Any topic not marked this way could be considered irrelevant knowledge linked to the main topic.

Regarding the number of terms added to the map, one could argue that the student shows sufficient knowledge of the topic. If very few terms were added, say between two and three, it would indicate minimal understanding. The layout and structure of the map are also correctly implemented, and it appears that the student understood how to use this map correctly.



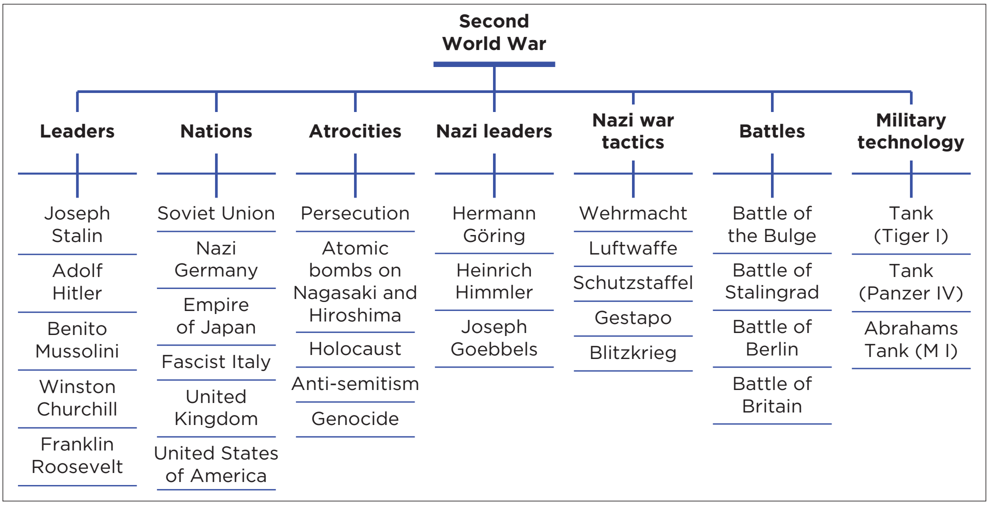

*Source*: Authors' own work.
**FIGURE 5.5:** Circle map.

## ○ *Tree map*

In the fourth-year History class, students were asked to categorise themes of the Second World War (WWII) based on the lesson that was presented previously. Figure 5.6 is an example of a student's tree map, where it is seen that various categories have been classified, ranging from leaders, nations and atrocities to battles and military technology. Under each category, several concepts are listed, showing organisational thinking. From the structure and layout of the map, the student demonstrated that they could apply organisational thinking by executing the map correctly.

## ○ *Bubble map*

In the first-year History class, students were asked to create a bubble map describing the Dutch farmers colonising the Cape Colony during the 1700s. From Figure 5.7, we can see that the layout and structure are correct. However, the example shows some misunderstandings regarding how to use the map. A bubble map requires the use of adjectives to develop




*Source*: Authors' own work.

**FIGURE 5.6:** Tree map.


*Source*: Authors' own work.

**FIGURE 5.7:** Bubble map.

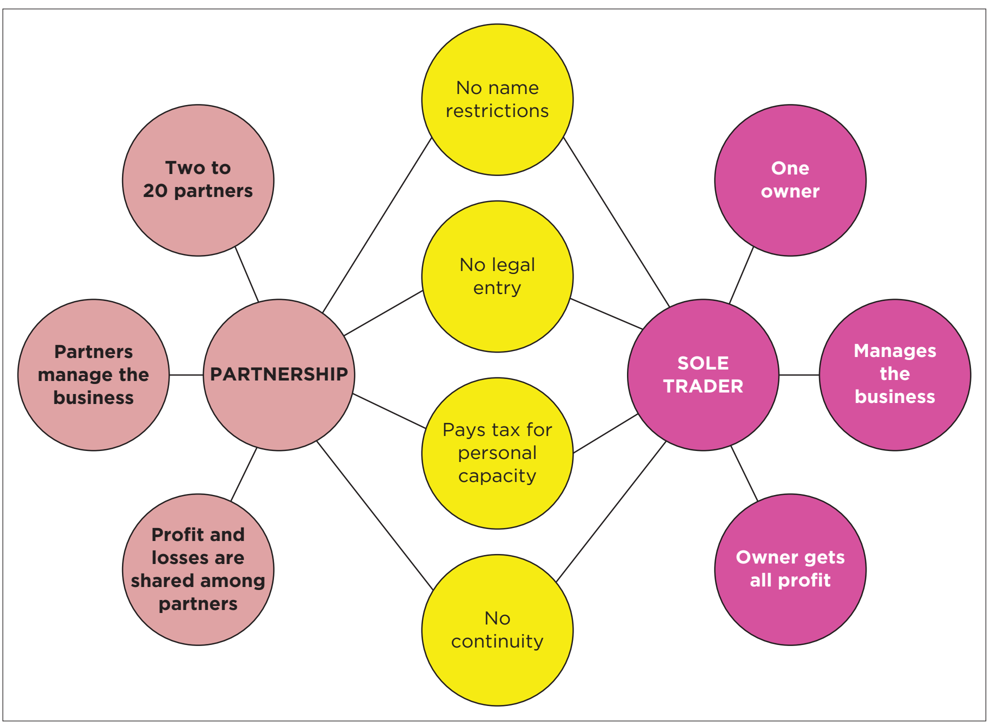
language skills. In this map, only one circle uses an adjective, the word 'wealthy'. The term 'traders' is also repeated.

### Double bubble map

In the fourth-year Business Studies class, students used a double bubble map to compare a partnership with a sole proprietor. In Figure 5.8, the student demonstrated that they could use the appropriate layout and structure of the map and apply the correct comparative thinking. For example, the ideas in the centre are similar between the two forms of ownership, while the ideas on the outer edges are different. The use of colour also allows for better visual differentiation.

### Flow map

In the third-year economics class, students were required to create a flow map to represent the formula to calculate gross domestic product using an expenditure approach. A flow map can sequence things in stages or phases and formulas. In Figure 5.9, a flow map is structured correctly and uses



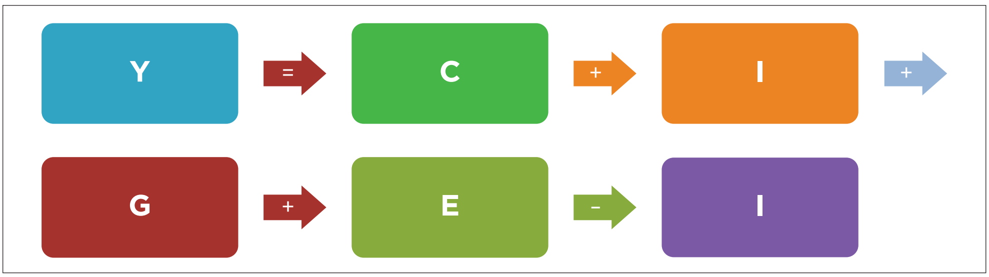

*Source*: Authors' own work.

**FIGURE 5.8:** Double bubble map.

striking colours, which may assist in the learning process. Some spacing issues exist, such as in the case of 'consumption'. However, it is apparent from the flow map that the student understood how to use the flow map.

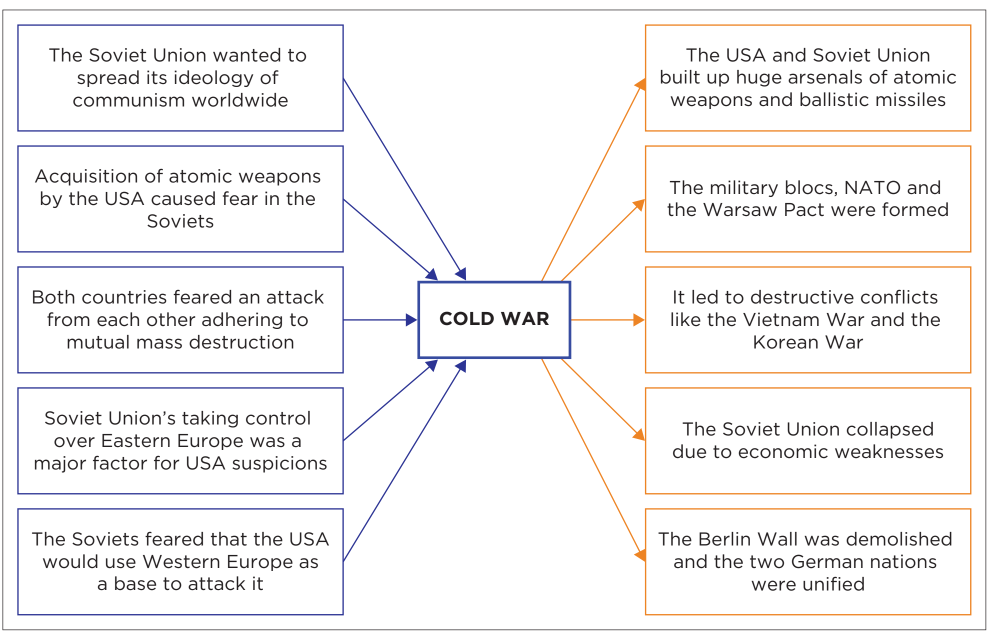
### ○ *Multi-flow map*

In the fourth-year History class, students were asked to create a multi-flow map, examining the causes and effects of the Cold War. Figure 5.10 shows a student's work, the causes on the left side and the effects on the right side.




*Source*: Authors' own work.
Key (top and bottom left to right): C, consumption; I, investment; G, government spending; E, exports; I, imports.

**FIGURE 5.9:** Flow map depicting the formula to calculate gross domestic product using expenditure approach.




*Source*: Authors' own work.
Key: USA, United States of America; NATO, North Atlantic Treaty Organization.

**FIGURE 5.10:** Multi-flow map.

The structure and layout of the map are technically correct. The student applied the correct thinking process and executed the map correctly, showing reasoning and logic skills. The central topic is seen as the 'anchor' or 'bridge', as one cause flows to the effect. The subject of History also lends itself well to this type of map, as cause and effect are part of the skillset required by History students.

### ○ *Brace map*

In the first-year History class, students were asked to create a brace map of the Dutch and Africans' effects on their social and economic structures. The brace map is the analysis map, a higher-order map requiring students to break down concepts into parts. Figure 5.11 is an example where the central concept is on the left-hand side of the bracket, namely the social and economic effects. On the right-hand side, the various characteristics are presented. As is evident, the student has used the correct structure and layout. Analysis has been utilised regarding the thinking procedure used, as the social and economic effects are expanded upon and analysed in further detail, showcasing additional depth and scrutiny.

### ○ *Bridge map*

In the fourth-year Business Studies class, students were asked to create a bridge map highlighting the analogies of a leader's personal attitudes. The bridge map allows for comparing multiple concepts, unlike a double bubble map, which only allows two comparisons. In Figure 5.12, the student has used a bridge map's correct layout and structure. The related factor used is 'personal attitudes of effective leaders'. Several analogies are provided,

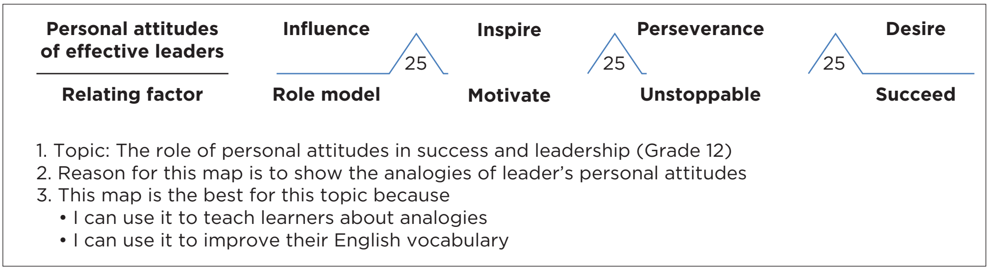
**The effects that each group's relation had on the other's social and economic structures**

**Social and economic effects of each group on the other**

- The Dutch forced removal of grazing areas from the indigenous people
- The indigenous people's culture, religion and beliefs were changed
- Slaves were unfairly mistreated by their Dutch owners and did not receive any wage but received a plate of food
- The Dutch mistreated the the indigenous people and regarded themselves more intelligent and superior
- The slaves' rights were socially disrespected as they were sold and bought at any given time
- Some free Africans at the Cape took part in the slave trade and earned money through these transactions
- Slaves played a central role in building the settlers' economy by working tirelessly in agriculture and other labour

*Source*: Authors' own work.

**FIGURE 5.11:** Brace map.




*Source*: Authors' own work.
**FIGURE 5.12:** Bridge map.

such as 'influence', 'role model', 'inspire', 'motivate', 'perseverance' and 'desire'. Regarding the thinking process used in this map, comparisons have been made for various concepts relating to influential leaders' personal attitudes.

## ■ Discussion

Integrating the Thinking Maps® teaching strategy is a valuable pedagogical tool that enhances students' SDL capabilities. This chapter delves into the transformative impact of Thinking Maps on SDL through a comprehensive analysis of both quantitative and qualitative data.

A profound improvement was noted in the domain of 'Learning activities', evidenced by the substantial alterations observed between pre-test and post-test scores. This increment signifies the efficient role of Thinking Maps® in facilitating a structured visual representation of knowledge. Such a systematic portrayal aids students in meticulously assimilating and organising content, thereby leading to enriched learning outcomes.

The reliability of the quantitative data is further substantiated by Cronbach alpha values, which ranged from 0.71 to 0.87, exceeding the guideline value of 0.7. This reflects the internal consistency within the questionnaire subscales. The participant demographic predominantly comprised Business Studies students, with History and Economics following suit and Accounting registering the least participation.

The qualitative dataset, constituting reflections and examples pertaining to Thinking Maps®, provides a layered dimension to the overall analysis. Participants supported the virtues of this strategy with a marked enhancement in metacognitive reflection, self-control and creativity. This qualitative insight aligns seamlessly with the quantitative findings, consolidating the academic argument favouring Thinking Maps®.

Despite the optimistic results, areas warranting circumspection exist. The heightened pre-test scores could potentially indicate an overestimation of SDL capabilities among students, stemming perhaps from a lack of comprehensive understanding of the SDL construct. While Thinking Maps® prompted an overall improvement in SDL, it is crucial to acknowledge the absence of significant changes across all constructs. This disparity signals the necessity for strategic refinement. As illustrated by the bubble map example, inconsistencies in applying Thinking Maps® underline the imperative for clearer and more explicit instructional methodologies.

An in-depth examination of the five distinct SDL areas reveals the following insights.

## Awareness

*Quantitative data*: Displayed moderate awareness with a Cronbach's alpha of 0.76.

*Qualitative data*: Participants reported a reinforcement in self-reliance and motivation.

## Learning strategies

*Quantitative data*: Displayed commendable internal consistency with a Cronbach's alpha of 0.71.

*Qualitative data*: Unveiled material understanding facilitation and preparation quality enhancement.

## Learning activities

*Quantitative data*: Unearthed a robust correlation among questions with a Cronbach's alpha of 0.80.

*Qualitative data*: Highlighted the utilisation of Thinking Maps® for summarising pivotal information, embodying a form of metacognitive reflection.

## Evaluation

*Quantitative data*: Reflected good internal consistency with a Cronbach's alpha of 0.75.

*Qualitative data*: Participants felt proficient in this domain.

## Interpersonal skills

*Quantitative data*: Revealed a strong cohesion in questions with a Cronbach's alpha of 0.81.

*Qualitative data*: Participants reported a surge in creativity and a heightened ability to delineate similarities and differences.

Integrating the Thinking Maps® teaching strategy has notably enriched students' SDL skills across the board, as both quantitative and qualitative analyses corroborate. This pedagogical approach is instrumental in fostering improved student organisation, comprehension and reflection. Nonetheless, it is pertinent to underline the importance of ongoing refinement and adaptation based on evaluative feedback to optimise the potential benefits of this teaching methodology.

# Recommendations

It has been proposed that pre-service teacher training focus on Thinking Maps® to help develop teachers' specialised modes of thinking and skills. Additionally, specific mental practices will support teachers in utilising and adapting their prior knowledge to embrace new information. Finally, to further encourage the use of SDL, it is suggested that the Thinking Maps® strategy be integrated into the existing BEd curriculum.

# Limitations

It is important to emphasise that this study is not without limitations. One significant limitation is that the research was conducted at only one of the North-West University's three campuses and focused on just one of the schools within the Faculty of Education. As a result, potential observers may view the findings as biased and not representative of pre-service teachers across South Africa. However, these data support and expand upon findings from large-scale research conducted in South Africa and elsewhere. Given that the initial SDL levels of the student participants were reported to be high, it took time to determine whether there was a change in the post-test results.

# Conclusion

Using Thinking Maps® promotes several characteristics of effective learning, including active engagement, organisation of information, the development of thinking processes, and the ability for students to monitor their own learning. Students benefit from Thinking Maps® as they illustrate how to connect ideas and concepts. Thinking Maps® encourage students to express their thoughts on paper rather than keeping them in their minds. This approach helps students develop insights related to academic content that may not have been previously stimulated. All variables contribute statistically significant results to the model (with $p$-values for all regression coefficients below 0.05), and all correlations between constructs are practically significant (ranging from 0.45 to 0.92). Students' SDL improved during the Thinking Maps® intervention.

# Declaration

## Availability of data and materials

The datasets used in this study are available from the corresponding author upon reasonable request. The authors ensure all data support our published claims and comply with field standards.

Chapter 6

# Creating open educational resources: Approaches to enhance mathematical noticing in the 21st century

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## Abstract

This chapter reports on a pilot study (intervention) conducted at a higher education institution during the first semester. In higher education, students need a set of essential skills, including pattern recognition, reasoning, problem-solving, connection-making, reflection, self-directed learning and effective communication. These skills are particularly crucial in the 21st century. However, students often face challenges in the lecture hall where the lecturer's actions overshadow their knowledge (agency), skills (ability) and character (identity). High school education frequently limits these students' sense-making, engagement, discussions and deep understanding because of overloaded curricula. To address this issue, lecturers should create opportunities for students to exercise their agency, ability and identity, allowing them to express their ideas and engage with others in a self-directed manner. This chapter, situated within the realm of Mathematics education, explores how pre-service Mathematics students and lecturers can engage in ways that advance 21st-century skills related to the development of open educational resources (OERs) through mathematical noticing. Open educational resources provide a flexible and enriching learning environment for acquiring knowledge and skills. To address this topic, the intervention study – framed within a generic qualitative approach with elements of educational design research – will examine the analysis, development, implementation and evaluation of creating OERs. Although no data will be reported in this chapter, we have distilled principles for data collection to follow this intervention. We aim to share our experiences with pre-service Mathematics teachers and demonstrate how an engaging activity, such as the creation of OERs, can benefit future study endeavours.

## Introduction

In many countries, students have access to the Internet and a variety of digital resources, including open educational resources (OERs). Open educational resources are digitised materials made freely available for students, lecturers and others to use and reuse for teaching, learning and research. They encompass learning content, software tools for content development and distribution, and implementation resources released under open licenses (United Nations Educational, Scientific and

Cultural Organization [UNESCO] 2019). The presence of these resources has led to significant changes in higher education institutions (HEIs), impacting the nature of resources and how students interact with them (Pepin, Gueudet & Trouche 2013). As *users*, students now have new ways to search for materials, select and adapt them, use them during lectures, revise them and share them. As *designers*, students have newfound opportunities to create their own resources and publish them on the Internet as individuals or as part of communities or professional associations (Pepin et al. 2017). While recognising the distinction between *users* and *designers*, it is important to acknowledge that in our perspective, the processes of use and design are intertwined. Once edited, a resource's lifecycle does not end; each user can participate in redesigning or creating new resources, utilising OERs to enhance their own teaching materials (Trouche, Gueudet & Pepin 2018). Therefore, for the purpose of engaging with our observations from the intervention, we conducted a '*gedanken*' (thought) experiment as often used in physics and mathematics fields – strongly advocated for by pioneers like Albert Einstein. Hence, we entice the following notion: '*How can the development of OERs through mathematically noticing enhance the acquisition of 21st-century skills among pre-service Mathematics teachers in higher education?*' We invite the reader to undertake this journey with us and where possible, elaborate on our thoughts while engaging with our work.

## The 21st-century student

To initiate our discussion on Mathematics education, we will first explore the widely discussed concept of 21st-century skills, which hold significant importance in the public discourse on future-oriented education.

The term '21st-century skills' was initially coined by the 21st-century Skills Project (Battelle for Kids 2015), which served as a foundation for numerous subsequent projects. Voogt and Pareja (2010) conducted a review of various projects and found that these initiatives generally emphasise similar skill sets, such as critical thinking and the skills commonly associated with the term '21st-century skills'. This includes problem-solving, collaborative networking, agility and adaptability, initiative and entrepreneurialism, effective communication, information access and analysis, as well as curiosity and imagination (Gravemeijer et al. 2017; Wagner 2012). These skills are but a few that 21st-century students should be equipped with because real-life experiences are problem-driven, stepping away from transmitting knowledge to constructing knowledge (Gravemeijer et al. 2017). To cater for 21st-century students, lecturers need to harness the ability to facilitate whole class discussions, employing more probing questions and assigning tasks (such as the creation of OERs) which encourage students to reflect and expand their existing knowledge base. Consequently, there arises a need for awareness regarding the imperative of preparing students for their future in the digital society (Gravemeijer et al. 2017). This line of discussion prompts us to delve into the exploration of goals that extend beyond the general realm of 21st-century skills and specifically pertain to Mathematics education.

## Mathematics education in South Africa

It is estimated that between 100,000 and 200,000 new mathematical theorems were published in the last 40 years in mathematical journals around the world. In a rapid age of knowledge generation, it is possible that this number could have doubled in the past decade. Regardless, mathematics continues to grow, whether for practical reasons or in an abstract sense. Unfortunately, this rapid growth allows for mathematics education to fall behind, creating a rift between the world of mathematicians and education itself (Safitri et al. 2023). Furthermore, the transition from high school to the HEI is challenging for students, causing additional tension with implications for their futures (Di Martino, Gregorio & Iannone 2023).

In the context of a developing country such as South Africa, extreme economic and educational inequalities characterise the basic education and tertiary education sectors. Not only did the coronavirus disease 2019 (COVID-19) pandemic map additional pressures onto these social and educational inequalities but led teachers and lecturers to explore additional avenues concerning Mathematics teaching and learning (Vale & Graven 2023). The use of digital resources (not previously used on a regular basis by teachers in South Africa) sped up digital transformation for learners at the school level, as well as students and lecturers in higher education. According to Drijvers et al. (2013), incorporating digital technologies in teaching and learning is challenging, as some embrace the assimilation of these technologies into their teaching and learning, whereas others do not have the skill or confidence to do so. This leads to the need for innovative alternatives to Mathematics teaching and learning, such as invoking the idea of mathematical noticing when students create OERs as part of assessments.

## Mathematical noticing

It is necessary to point out that:

> Teachers' noticing refers to 'attending to particular events in an instructional setting and making sense of those events' (Sherin et al. 2010, p. 9). The [*definition*] of lecturers' noticing is similar to tenets of responsive teaching that emphasize attending to and responding to the substance

> of students' ideas (Coffey et al. 2011). We could [*therefore*] assume that there is a relationship between mathematics [*lecturers*'] ability to *notice* classroom events and their *responsive teaching practices*. (Hwang 2022, p. 9)

Although this chapter will address mathematical noticing, principles are provided which can be used across all disciplines.

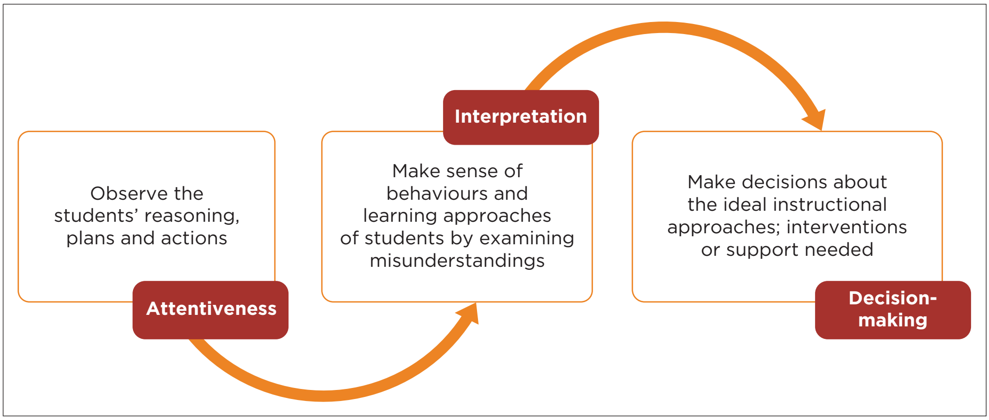
## The three interwoven processes of mathematical noticing

According to Robertson and Atkins Elliott (2020), responsive instruction places a premium on the lecturers' awareness of the students' thoughts. Lecturers are exposed to a variety of inputs from their students and should routinely practice pedagogical moments (Kavanagh, Conrad & Dagogo-Jack 2020). Because of the sophistication needed to make quick decisions about how to meaningfully exploit emerging student ideas, putting ambitious teaching into practice is difficult work (Lampert et al. 2010). Various researchers (Jensen & Skott 2022; Jonsson et al. 2022; Lithner 2000, 2004; Sherin, Jacobs & Philipp 2011) claim that there has been an increased emphasis on teaching strategies that are intended to improve conceptual comprehension and problem-solving abilities among lecturers and students. Teachers can analyse students' mathematical reasoning through written assignments and class discussions, video recordings, lesson studies, as well as through OERs.

Copur-Gencturk and Tolar (2022) defined:

> [*M*]athematics teaching expertise as the [*subject*-]specific knowledge for teaching, which includes [*the lecturers'*] own understanding of the [*subject,*] their pedagogical content knowledge (i.e. knowledge of students' mathematical thinking, their instructional practices, and the representations they use), and their [*capacity*] to [*identify*] content-related [*problems at*] the [*time*] of [*teaching*] mathematics. (p. 2)

According to researchers, experts in Mathematics education are conceptualised as possessing essential elements such as subject knowledge, pedagogical content knowledge, mathematical knowledge for teaching (MKT) and mathematical noticing (Russ, Sherin & Sherin 2011). According to Ball and Forzani (2009, p. 499), one of the most essential aspects of teaching mathematics is 'mathematical noticing', which involves paying close attention to both students and the subject. Included are the perceptions, responses and overall comprehension of educational activities by mathematics educators (Jacobs, Lamb & Philipp 2010; Mason 2002; Sherin & Van Es 2005). According to Mason (2002, p. 95), the discipline of Mathematical Noticing involves using a range of techniques to improve lecturers' perception and adaptability. It necessitates methodical reflection, the identification of options and alternatives, careful planning,




*Source*: Authors' own work adapted from Moss and Poling (2019).
**FIGURE 6.1:** Pedagogical moments in mathematical noticing.

close attention to likely results and teamwork in the form of regular peer observations, conversations and critical reflections. Students require assistance to recognise and assess their mathematical reasoning (Jacobs et al. 2007; Walkoe, Sherin & Elby 2020). Effective strategies for increasing students' level of thought include actively attending to and understanding students' mathematical reasoning (Sherin & Van Es 2003).

Mathematical noticing which integrates both cognitive and situated perspectives of lecturer competence is defined as lecturers' abilities to (1) pay attention (*attend*) to students' mathematical ideas and practice as it happens in an instructional setting, (2) analyse (*interpret*) these conceptions and practices and (3) based on this understanding, choose an effective instructional strategy (*decide*) (Jacobs et al. 2010, p. 172) as visualised in Figure 6.1. The act of *attending, interpreting* and *deciding* should be dynamically performed inside a mathematical interaction between lecturer and student and should lead to highly customised and flexible educational strategies.

1. *Attentiveness*: This phase involves closely observing what the student(s) do while working on a mathematics problem or task. It requires paying attention to their reasoning, plans and actions (Stockero 2014).
2. *Interpretation*: Making sense of the observed behaviours and learning approaches of the student(s) is the main objective here. It involves examining any mathematical misunderstandings they may have based on their thinking and reasoning. Through regular peer observations, conversations, and critical reflections, students' knowledge refers to how effectively lecturers connect students' strategies to their understanding (Jacobs et al. 2010).
3. *Decision-making*: Based on the observations and interpretations, the next most effective teaching steps can be determined. Making informed decisions about the ideal instructional approaches, interventions or

forms of support needed to address the student(s) mathematical understanding or misconceptions falls under this category. *Deciding* emphasises how to respond to students' understanding after making instructional choices on what they notice – either as anticipating a response to their activities or as proposing alternative instructional strategies (Kaiser et al. 2015).

It may be helpful to critically think about the kind of questions that might be posed to the student(s) to improve their comprehension when employing the 'attend' and 'interpret' methods. These questions ought to be designed to elicit information about their reasoning, justifications and understanding of pertinent mathematical ideas. This can present a unique opportunity to engage in teamwork and provide input, critique and feedback from peers.

## Why mathematical noticing?

Traditionally the educational curriculum's main objective has been to provide content information to pupils (learners/students). It has however become increasingly pertinent that students must practice using their knowledge and skills, as a knowledge-based education does not effectively prepare them for the workforce or the world of tomorrow, let alone today (Weise 2020). On tests that focus on foundational areas of mathematics, students who prepare solely by memorising arithmetic facts, definitions, rules and procedures may perform well. However, many of these students later realise that they cannot apply what they have learned to real-life situations.

We lament students' failure to apply what they have learned, yet we insist on the outdated idea that mathematics is merely a checklist of facts and abilities. There is a need for students to balance subject knowledge and understanding with the ability to apply that knowledge in the actual world. These traits promote motivation, resilience and social or emotional intelligence. Meta-learning practices assist students in becoming reflective, self-directed and expert learners (Kloppers & Grosser 2014, p. 422; Van Tonder, Kloppers & Grosser 2022) to 'be engaged in the sense-making of student conceptual and procedural knowledge' (Burger 2021).

Only when our students are actively engaged in the mathematics learning process – working on challenging problems, engaging in conversation, discussion and explanation, and paying attention to their own thought processes – do they acquire firm knowledge and a positive attitude towards the subject (Bekker, Rothmann & Kloppers 2023; Ozkal 2019). This allows for mathematical noticing, as students must apply their abilities and dispositions in the Mathematics classroom through their ability, agency and identity to make sense of mathematics and solve issues in real-life contexts.

Furthermore, we as lecturers improve upon our own teaching and learning practices and can act in a sense as role models for students. We should critically assess our curricula, tests and teaching strategies if we want youngsters to acquire future-beneficial mathematical habits. We should demonstrate to them that mathematics is more than just a body of knowledge, information, procedures and ideas.

To succeed in today's fast-paced, technologically-driven and globally competitive workplace, students in today's classrooms – the workers of tomorrow – must be able to reason, think and discover solutions to problems they have not yet encountered. If high school graduates only know algebra but lack essential 21st-century survival skills, they will not be prepared for life (Kloppers & Grosser 2014; Van Tonder et al. 2022).

## Underlying values of mathematical noticing

'21st-century skills' is a theme that appears frequently in educational disputes today. Followers refer to a new workforce reality that necessitates a new generation of students and professionals who are self-sufficient thinkers, problem solvers and decision-makers (Sharipova & Kongirotova 2022). It is neither an option nor an add-on to impart these increasingly relevant abilities. The best lecturers understand that without a foundational body of information, students cannot acquire and apply abilities. Finding and equipping lecturers to convey both content and skills successfully is a very serious human capital challenge in a system where unfortunately the least experienced and least trained instructors are frequently placed with the most vulnerable learners.

The ability to solve mathematical problems is one of mathematics' most fundamental aspects. Numerous professions, including educators, mathematicians and others, have struggled for decades to define what it means to engage in mathematical practice and thought, frequently employing phrases such as 'mathematical habits of mind' (Prasad 2020). Many explanations of mathematical habits of mind, thoughts, practices or processes centre around a person's ability to solve mathematical problems, especially those that go beyond basic word problems associated with recently learned techniques. Problem-solving requires the ability to articulate one's thought process and engage in fruitful discourse about a problem's underlying mathematics (Li & Schoenfeld 2019). Some mathematical habits of mind are based on more general intellectual habits such as tenacity, persistence, listening and communication, as well as metacognitive abilities like reflection and analysis. Only through application can mathematical concepts be thoroughly comprehended. A 'real' mathematician is one who acknowledges their mistakes, pauses, considers them, analyses them, regroups their thoughts and then continues.

Mathematical abilities include the ability to formulate hypotheses and generalisations, comprehend the structure of mathematics, account for mathematical relationships, and justify and explain mathematical solutions (Tambunan 2019). Also included is the ability to shift focus in and out of specific aspects of a problem, while also evaluating alternative methods for communicating mathematical concepts (Rahman 2019). Children of any age or grade level can be taught these mental habits, and they can begin to demonstrate them as early as their first encounters with mathematical concepts.

The National Research Council (NRC) suggests the following five abilities for mathematical success: conceptual knowledge, procedural fluency, strategic competence, the ability to design, represent and solve mathematical problems, and adaptive reasoning, which includes logical thought, reflection and explanation (Barham 2020). Integrating these practices would ensure that both lecturers and students view mathematics as a rich, potent and practical set of thinking and analytical tools that they can use to comprehend and solve a broad range of problems within and outside of mathematics. When rigorous mathematical thinking, reasoning and problem-solving can be measured and rewarded by high-stakes assessments, instructors may feel obligated to teach these skills to students.

## The advances of mathematical noticing

The skill of mathematical noticing, involving observing and comprehending students' mathematical thinking, is fundamental in effective mathematics teaching. To be able to 'notice professionally', a lecturer must be able to recognise the pertinent elements of a teaching situation, apply knowledge to understand the occurrences and draw connections between various facets of teaching and learning scenarios as well as more general teaching and learning principles and ideas (Mason 2002; Sherin, Jacobs & Philipp 2010). According to this interpretation of the term 'noticing', the lecturer can better interpret students' learning and make instructional decisions by identifying the mathematical components that are pertinent to the problem the students must solve and the possible solution they may come up with. Proficient mathematical noticing enables lecturers to achieve the following:

- *Identify students' misconceptions and areas of difficulty:* Attentive observation allows lecturers to discern students' misconceptions and areas where they encounter challenges. This information can then be utilised to design instruction that effectively addresses and rectifies these issues (Turnuklu 2014).

- *Build on students' prior knowledge and understanding:* By paying close attention to what students already know, lecturers can make use of their prior knowledge and understanding. As a result, instruction can be modified to fit the unique needs of each student.
- *Provide precise and helpful feedback:* Proficient mathematical noticing enables lecturers to accurately identify students' areas of strength and pinpoint areas where further assistance is needed. This enables them to provide feedback that is more meaningful and useful. Developing the skill of mathematical noticing takes time and practice. However, lecturers can employ several techniques to enhance their observational skills of students' mathematical thinking, such as reflecting on their own teaching, observing other lecturers and collaborating with colleagues.
- *Reflecting on their own teaching:* Through introspection, lecturers can gain valuable insights into their noticing skills by critically examining their previous interactions and responses to students' mathematical thinking (Choy 2013; Jacobs et al. 2010; Llinares 2013; Sherin et al. 2011).
- *Observing other lecturers:* Actively observing and analysing the interactions between fellow lecturers and students provides educators with valuable insights that can enhance their own noticing abilities.
- *Collaborating with colleagues:* Engaging in cooperative discussions with fellow lecturers allows for the exchange of ideas and perspectives, fostering growth in mathematical noticing skills. We frequently focus on what is lacking and overlook all the positive things that are taking place as students learn.

## How can we foster mathematical noticing?

It is well known that the effectiveness of a lesson depends on the lecturers' training, regardless of the quality of the textbooks or the students' knowledge of the subject. If the lecturer is not well trained, the educational goals will not be met (Liston, Borko & Whitcomb 2008, p. 112). Therefore, it is essential to provide theoretical, practical and professional training that meets modern requirements to achieve the quality and effectiveness of tertiary education. By constantly seeking new and better ways to learn, we can ensure that our students are prepared for the challenges of the 21st century (Sulistyaningsih et al. 2019).

Lecturers entering the higher education arena are encouraged by the Association of Mathematics Teacher Educators (AMTE) to ‘predict and attend to students’ thinking about Mathematics content’ (AMTE 2017, p. 6). Additionally, according to the National Council of Teachers of Mathematics (NCTM), ‘effective teaching of mathematics uses evidence of student thinking to assess progress toward mathematical understanding and to adjust instruction continuously in ways that support and extend learning’ (NCTM 2014, p. 10).

To help pre-service student teachers use this information to design and alter their instruction in their future classrooms, lecturers must give these pre-service teachers relevant experiences that let them examine how they (students) think about mathematics (Ball & Forzani 2009; Clements & Sarama 2014). Impactful and meaningful learning experiences should be created to inspire and to connect with multiple opportunities to participate, enhancing their knowledge of possible learner misconceptions. We should create extended opportunities for hands-on learning, incorporate more real-life applications into the curriculum, and teach students how to think critically and solve problems. These measures will ensure that our new generation of prospective teachers is well-equipped to provide high-quality education to learners and to promote self-directed action during learning (Van Tonder et al. 2022, p. 17).

However, mathematical noticing does not come naturally (Star & Strickland 2008), and although mathematical noticing can be learned (Star, Lynch & Perova 2011; Stockero 2014), prospective teachers have significant difficulty acquiring this skill (Peterson & Leatham 2009; Stockero 2008). Eliciting and using student thinking can be challenging for several reasons, according to Ball (2001) and Schifter (2001):

1. Student thinking is not always expressed clearly
2. Lecturers must deliberately ‘decenter’ in order to understand how students are thinking about situations
3. Lecturers must determine how students are thinking about concepts to support or extend their thinking
4. Lecturers frequently place more emphasis on pedagogical aspects of instruction than on students.

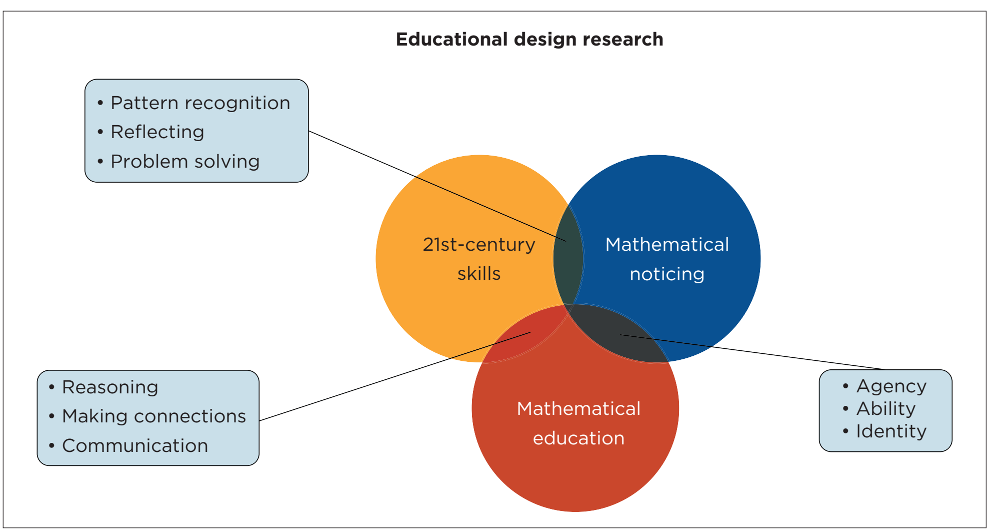
Additionally, Leatham et al. (2015, p. 89) hypothesised that because of the ‘complexity of recognizing and interpreting’ student thinking, lecturers could find it challenging to capitalise on students’ mathematical reasoning. Therefore, the opportunity exists that by viewing these barriers through the prism of noticing, we can start to understand why they exist and how to overcome them.

## Expanding the horizon

There is complexity in what we face within this rapidly changing world. These complexities are affecting students' and lecturers' lives on different levels. The winds of change have become fast and strong promoting volatility, uncertainty, complexity and ambiguity (VUCA) (Fadel & Groff 2019). Interwoven and essential to this study, agency, ability and identity can be viewed as a strong force behind the elements of this research, addressing VUCA in the following sense, and promoting Mathematical Noticing.

Figure 6.2 elicits that creative and innovative approaches are necessary when planning, designing and making content not only fit for purpose (to address outcomes of lessons or modules) but also to create resources (OERs). Mathematics (seen as a traditional discipline) can no longer be taught in a traditional sense but must be augmented by modern disciplines, including but not limited to entrepreneurship, robotics and OERs (Fadel & Groff 2019).

Interdisciplinarity is a strong binding force for traditional and modern disciplines relevant to tomorrow's world. The focus can no longer be 'what students/lecturers should know' but also 'how they understand it'. Numerous research studies in Mathematics education have indicated the relevancy of real-life problems and how students solve them. When students create OERs, we believe they integrate their own agency to make




*Source*: Authors' own work.
**FIGURE 6.2:** Interwoven conceptual framework.

the task more relevant to real life, addressing higher-order thinking skills, while showcasing what they understand and what they know.

Cobb, Gresalfi and Hodge (2009) emphasise the importance of ‘conceptual agency’, or the student’s capacity to operate independently and reach mathematical conclusions. It is vital to provide students with the tools they need to actively engage in problem-solving and decision-making processes, such as the selection of an appropriate approach to a mathematical problem while promoting a sense of ownership and autonomy in their pursuit of mathematical knowledge. Lecturers should encourage students’ ownership and autonomy in their mathematical education by giving them the tools they need to take an active role in problem-solving and decision-making (Schoenfeld 2014).

The use of activity prompts, responsive facilitation, normalising critical stances and positioning frameworks are important for supporting deeper engagement with ideas. This deeper engagement with ideas and practices is imperative for student agency, identity and ability. The extent to which students are given the opportunity to speculate, clarify, present mathematical arguments and build on one another’s ideas contributes to the development of their agency (the ability and willingness to engage mathematically) and ability (recognition for being mathematically sound), resulting in positive identities as math doers. Through this, teachers and learners are constructing new ideas while critiquing ones that already exist, allowing for mathematical noticing. Attending to agency, identity and ability in the classroom emphasises how decisions are made in learning and doing mathematics, and as a result, who has power and ownership over those decisions, ideas and related mathematical work. Student agency in mathematical learning is the ability to make decisions such as the ability to select a problem-solving strategy, referred to by Cobb et al. (2009, p. 45) as ‘conceptual agency’.

Rich and meaningful mathematics discourse should be planned. This discourse should promote equitable mathematics practices, centred on students’ mathematical ability, identity and ownership. This will in turn enhance conceptual understanding while assisting students to develop ability and identity in mathematics in the classroom. Furthermore, training in questioning, modelling and eliciting will assist all students in engaging in rich discourse, promoting students’ conceptual knowledge and mathematical identity and ability (Bennett 2014). The extent to which students are provided with opportunities to ‘walk the walk and talk the talk’ – that is, to participate in disciplinary discussions, build on the ideas of others and have others build on their ideas – in ways that support agency (the willingness to engage), ownership over the subject matter and positive identities as thinkers and learners.

## The intervention: Reflections on the pilot study reported on in this research

The third-year, first-semester Mathematics Education module for pre-service teachers deals with statistics and probability. An integrated approach is implemented, providing both content and didactics to all Bachelor of Education (BEd) students in their major modules. Students should also master strategies on how best to teach learners. During contact sessions, students were provided with real-life problems to master the content and apply knowledge through problem-solving activities.

Students were given the following assignment:

> Prepare two topics (one on probability and one on statistics) in groups of four. Prepare a complete lesson plan, with a real-life problem to be used to guide the construction of knowledge on statistics and probability in the presentation phase. The presentation phase should be interactive, with students assisting one another and working together to find the solution to the problem.
>
> The presentation phase of the lesson should be recorded and uploaded on an e-learning platform to serve as OERs. Students may make use of their cell phones, the One Button Studio or any other device to record their lessons.
>
> The aim of this task was two-fold: An opportunity in which pre-service teachers can teach in front of their peers was created through micro-lessons where students had an opportunity to present the 'presentation phase' of the lesson to their peers. The second aim was to have the recorded lessons as OERs which can be used to be assessed and improved on by other students or even teachers struggling to teach an unfamiliar topic.

## Research methodology

The intervention reported here was conceptualised within the framework of social constructivism as part of a broader qualitative study (Potgieter 2020). The general research methodology which was followed is educational design research (EDR) – as pioneered by McKenney and Reeves (2012, 2014). Educational design research is an approach to educational inquiry that focuses on the systematic and collaborative development of innovative solutions to real-world educational problems. It seeks to bridge the gap between theory and practice by applying rigorous research methodologies to design, implement and evaluate educational interventions in authentic learning settings. The key characteristics of EDR include:

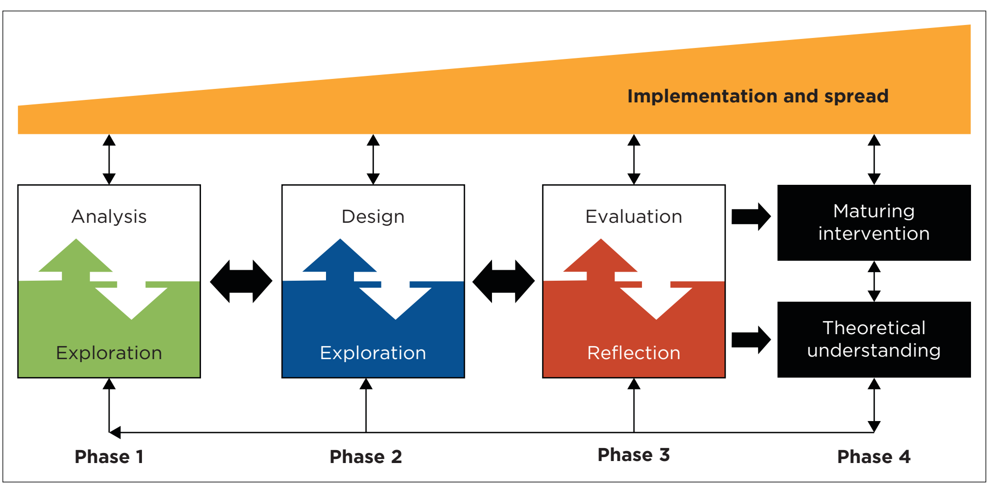
1. *Iterative design*: Educational design research involves multiple cycles of design, implementation and evaluation. It recognises that educational interventions often require refinement and improvement over time.
2. *Contextual sensitivity*: Educational design research acknowledges the importance of considering the unique context and characteristics of the

learning environment, including the needs and preferences of learners and educators.

3. *Collaboration*: Researchers, educators and stakeholders collaborate throughout the research process, ensuring that multiple perspectives are considered, and solutions are co-created.
4. *Educational praxis*: Educational design research aims to build and refine educational theory through practical applications. It emphasises the relevance of research findings for educational practitioners.
5. *Impact-orientedness*: The primary goal of EDR is to generate practical solutions that positively impact teaching and learning practices, educational policies and the overall learning experience.
6. *Mixed methods*: Educational design research often employs a combination of qualitative and quantitative research methods to gain a comprehensive understanding of the intervention's effectiveness and the underlying processes.
7. *Contribution to knowledge*: While focusing on practical solutions, EDR also contributes to the broader knowledge base in educational research by generating new insights and principles that can inform future research endeavours.

The overall aim of EDR is to facilitate continuous improvement in educational practices, foster innovation and enhance the overall quality of learning experiences for students and educators alike. It is a dynamic and evolving field that continues to influence educational research and practice and occurs according to the following phases as elicited in Figure 6.3.

These three qualities are represented by various shapes in the general model depicted in Figure 6.3. The three primary phases are depicted by the squares.




*Source*: Adapted from McKenney and Reeves (2012, p. 77).

**FIGURE 6.3:** Phases of educational design research.

The arrows separating the various components show that the process is *iterative* and *adaptable*. *Iteration* occurs because the outcomes of one element flow into another repetitively. Because some generic flow is indicated, it is *adaptable*. There were numerous possible routes. The rectangles emphasise both theory and practice, illustrating the practical and scientific outputs in that order. The model depicts a single, cohesive research and design process and shows signs of being use-inspired. The triangle reflects adoption and spread, demonstrating how dialogue with practice begins initially and broadens over time. Thus, vertical and horizontal growth occurs within EDR research. The dual-direction arrows illustrate that current events impact both the ongoing core procedures and the results, which are responsive to context, and vice versa (McKenny & Reeves 2014).

It is important to note that the intervention discussed in this chapter evolved around Phase 1, focusing on analysis and exploration. While it may appear that additional phases occurred during our intervention, we, as researchers, distilled key principles that will influence Phases 2–4.

## Phase 1: Analysis and exploration: Lessons learnt

Before the intervention, lecturers talked to one another to learn about the experience of the students on the module and to determine what an adequate teaching and learning strategy might be for the teaching and learning of statistics and probability, two new topics in the *Curriculum and Assessment Policy Statement* (CAPS), often left out by teachers. Lecturers realised that new practices are required because the current ones are insufficient or, at the very least, may be improved. Students can correctly do mathematical calculations on tests and answer straightforward questions, but they struggle to decide which reasoning and thinking strategies to utilise in real-world scenarios and interpret their answers and solutions. Students should be transformative with regard to how instruction is planned, carried out and evaluated, and the lecturers deemed it necessary to record micro-lessons that provide authentic opportunities for practising the selection and use of mathematical problem-solving in real-world contexts.

## Phase 2: Design and construction

The process of investigating prospective solutions during the design phase involves generating ideas, thoroughly studying each proposal, and evaluating the viability of the most promising concepts. This enables students to consider various options and develop designs to test in real educational environments.

While some students used the problems from textbooks, others were able to present lesson plans that incorporated real-world challenges to aid the problem-solving process. Peers had little to no opportunity to collaborate on the problem-solving process during the presentation phase. After receiving no feedback or cooperation from their peers, students delivered the lessons and provided their own solutions to the challenges. Students are unable to apply the knowledge of statistics and probability in ways where sense-making and conceptual knowledge are fostered (Burger 2021). There were no attempts by students or peers to engage in mathematical noticing. Additionally, there was no constructive discussion about the challenges underlying mathematics, as neither the students nor the speakers provided opportunities for mathematical noticing or deeper understanding of the topics (Li & Schoenfeld 2019).

Students lack experience in the classroom. They are not yet confident to grasp what they are in fact 'noticing' from their own and their peers' teaching practices. The confidence to critically analyse their own and their peer's practice is still developing. They are not making the connection between textbook problems, real-world applications and possible misconceptions. Pre-service teachers are looking at content one dimensionally, not having the foresight to identify possible flaws in their practice or predict from experience what to pay attention to. Their own insecurities about content knowledge limit their ability to 'think outside the box' and connect their knowledge to their teaching.

Students are not confident in communicating critique in a constructive manner. They either do not realise where there is something missing so that they can point it out, or they do not yet comprehend how it influences their own progression as prospective teachers. Students view the task of creating a lesson plan as a work product, rather than a process of evaluation and improvement. They use it as a place to do their own mathematics, not as the platform to get their future learners engaged in mathematics. Students use the lesson plan format as a checkbox with empty spaces, seldom able to connect various parts of the lesson to another. They lack the insight to distinguish between a theme, topics and lessons. Their insecurity around the topics, in this case, probability and statistics, limits their ability to connect their own knowledge to real-life experiences.

Students are aware of concessions made for learners with special needs. Many students made allowances for what they perceived to be misconceptions in the lesson they were to present. However, across multiple lesson plans and groups, students applied a 'cookie cutter' approach, indicating a narrow and limited exposure to real-life teaching and learning experiences.

## Phase 3: Evaluation and reflection

The results of this phase include a better understanding of the intervention, a determination of its applicability considering its goals, a description of how it was carried out and a review of the results it generates. Furthermore, design claims are implicitly assessed through the study of the intervention. The process of reflecting on the results helps to produce explanations for the findings as well as fresh or enhanced concepts for design components such as requirements, propositions, skeletal designs, detailed specifications and prototype solutions.

A person's sense of belonging to an educational experience (Maton et al. 2016; Rainey et al. 2018), as well as authentic learning experiences (Beier et al. 2019; Chi, Dorph & Reisman 2015; Wallace & Bodzin 2017), are factors that have been identified as being crucial to the development of identity. A sense of belonging and identity can be practised by paying attention to key details in a situation. The second step entails doing more than just paying attention to essential information, as Endsley (2000, p. 4) writes, 'but also integrating multiple pieces of information and determining their relevance to the person's goals'. Projecting from a circumstance to foresee what will happen next is the third stage. Therefore, in a visually complex and potentially perplexing classroom environment, these prospective teachers must selectively attend to, analyse and respond to noticed occurrences (Sherin et al. 2011) as well as to the different curriculum components as an integrated whole. When prospective teachers notice certain mathematical concepts, it emphasises the perceptual and cognitive thinking processes that underlie their 'in-the-moment' judgements and actions connected to learners' mathematical thinking and reasoning. Environments where prospective teachers focus on identifying errors in learners' responses and simply grading them based on these mistakes, rather than explaining and exploring how the students arrived at their conclusions, should be avoided.

Walker (2003) defines a reasonably straightforward curriculum that consists of three main planning components: content, goal and learning structure. Van den Akker (2007, p. 39) created a more elaborate and detailed list of components concerning the planning of student learning. Van den Akker envisioned the curriculum as an intricate web, with content, aims, objectives, assessment, time, location, materials, resources, the teacher's role and learning activities all interconnected like threads in a spider's web. This visualisation emphasised both the delicate balance of the system and the numerous connections between its components. All the components are crucial for the advancement of reasoning, understanding, creation of 21st-century skills and mathematical noticing.

Van den Akker (2007, p. 41) also exemplifies the adage that 'every chain is only as strong as its weakest link'. That sounds like yet another excellent educational metaphor, underscoring the difficulty of efforts to enhance the curriculum in a way that is fair, consistent and long-lasting.

It seems as if students need more experience in combining all the curriculum components with the important concept of mathematical noticing to address the demands of the 21st century. In presenting and recording lessons to be used as OERs, an environment with detailed reasoning, communication and mathematical noticing opportunities should be created. Mathematical noticing should be one of the components of student learning. Unless all the above are explicitly practised and taught, students will not include them in their lessons and will not be able to best equip their future learners with skills for noticing.

## Phase 4: Maturity

In this phase, design principles for the creation of OERs and the associated presentation and unfolding of content to enhance 21st-century skills are created. The value of the creation of OERs, as used for virtual or blended teaching and learning environments should not be underestimated. The view of the researchers is that OERs should carefully be planned to provide evidence and experience of mathematical noticing through facilitating learning and supporting teaching and not merely the transfer of knowledge. The aim should always be to reuse, revise, remix and redistribute. The teaching and learning of both content and pedagogy should feature in OERs where creative thinking and problem-solving opportunities are created for deeper understanding, reasoning and mathematical noticing. It is important that students should explicitly be taught the skill of mathematical noticing and that it should be modelled by lecturers. Students should be exposed to problem-solving and reasoning activities and not be given straightforward questions merely to 'master' mathematics. Students should take more responsibility for learning while effective, efficient and satisfying teaching and learning experiences are created. Lecturers and students need lessons and classes intentionally designed to take advantage of the possibilities and affordances that online open educational formats provide.

# Conclusion

This chapter presents an intervention conducted as part of an EDR approach to address the challenges faced by students in higher education, where the actions of lecturers often overshadow their agency, ability and identity.

Essential 21st-century skills such as pattern recognition, reasoning, problem-solving, connection-making, reflecting, self-directed learning and effective communication are vital for students in the modern educational landscape. However, overloaded curriculums in high school education can restrict students' sense-making, engagement, discussions and deep understanding, creating a need for innovative teaching approaches in higher education.

The chapter explored how pre-service Mathematics student teachers and lecturers can engage in ways that advance 21st-century skills through the development of OERs using mathematical noticing. Open educational resources offer a flexible and rich learning environment, enabling students to acquire knowledge and skills actively. The intervention study, framed within a generic qualitative approach with elements of EDR, focuses on the analysis, development, implementation and evaluation of the creation of OERs. Drawing from the experiences of Mathematics lecturers, this chapter emphasises the importance of fostering agency, ability and identity in higher education. By providing opportunities for students to express their ideas and engage with others, lecturers can create a transformative learning environment. Within this chapter, we advocate for a fluid and open-ended approach to mathematical noticing and the creation of OERs, embracing complexity and questioning whether it positively impacts the mathematics education landscape. By employing research endeavours across an EDR framework, we aim to expand our thought experiment. While this research is based on lecturers' experiences with their pre-service Mathematics student teachers, we intend to incorporate the students' voices as active participants in future research, rather than relying solely on their submitted assignments and OERs as mere artefacts.

Chapter 7

# Renewable game-based open educational resources as a tool for 21st-century History teachers

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## Abstract

This chapter examines the use of renewable, game-based open educational resources (OERs) as a tool for developing 21st-century skills in History education. The study involved 80 fourth-year Bachelor of Education (BEd) History students who engaged with OERs through game-based learning (GBL). A mixed-method design was employed, utilising the self-directed learning (SDL) instrument for quantitative data and open-ended questionnaires for qualitative data. The findings suggest that GBL can foster SDL, increase motivation and engagement, and promote collaboration and communication skills among students. This study highlights the potential of OERs to support student-centred, SDL in 21st-century educational settings.


## Introduction

Open educational resources (OERs):

> [*S*]upports a future where students and instructors have free access to a wide variety of high-quality educational resources that have been collaboratively developed, reviewed, revised, and shared across institutions. A future where educational resources can easily be adapted to fit within the context of specific courses and to meet the needs of specific students. A future where the cost of creation, use, and maintenance is much lower than the current rising costs of textbooks and other classroom resources. (Kipphut-Smith 2020, p. 9)

This has never been truer for a student studying History than during the coronavirus disease 2019 (COVID-19). For students who study History, the types of assessment used can be tailored to allow for open educational resource (OER) creation, specifically with a game-based learning (GBL) focus. The types of assessment normally used in the History modules are source-based or extended writing essay assessments. These assessments do not traditionally incorporate or allow for a cooperative game-based approach. Therefore, a renewable OER assessment approach is advocated to rectify this.

This research links with the literature using OERs in History. Therefore:

> Despite open resources' steadily growing presence in historical research and teaching, [*OERs*] still have a way to go before being accepted as a first-choice solution. I provide an overview of the unique opportunities for innovative pedagogy that have entered the history field with OER textbooks, informational and experiential websites, and interactive digital tools for scholarly research – while reviewing current challenges to their uptake. (Tsan 2021, p. 12)

This study links with the interactive digital tools section of Tsan's work. The primary research question for this chapter is, 'To what extent can an open game-based renewable assessment approach nurture self-directed learning (SDL) in a fourth-year Bachelor of Education (BEd) History module?'.

## Background

Self-directed learning is a major field of study for 21st-century educationalists and undeniably a critical skill in the future labour markets (Morris 2019, p. 637). The modern world of work demands that people have demonstrable abilities to self-manage their time and input. Employees who can be tasked to solve a problem without micro-management and can be relied upon to use their resources responsibly and sparingly are highly sought after (Bridgstock & Jackson 2019, p. 472).

Self-direction is a necessary skill in the world we prepare our students for (Morris 2019, p. 638). However, the classroom culture that has been inherited is not designed around self-direction, and tends more towards compliant consumption, an unflipped paradigm where students absorb what teachers say and regurgitate it via essays, assignments and tests to demonstrate comprehension. To combat this tendency, an OER approach is advocated (Hilton et al. 2019, p. 276; Olivier 2021, p. 96).

Olivier (2019) and Wiley & Hilton (2018, p. 134) posit that OER:

> [*S*]upports a future where students and instructors have free access to [various] high quality educational resources that have been collaboratively developed, reviewed, revised, and shared across institutions.

'A future where educational resources can be easily adapted to fit within the context of specific courses and to meet the needs of specific students' (Kipphut-Smith 2020).

## The need for self-directed learning

In its broadest meaning, SDL describes a process:

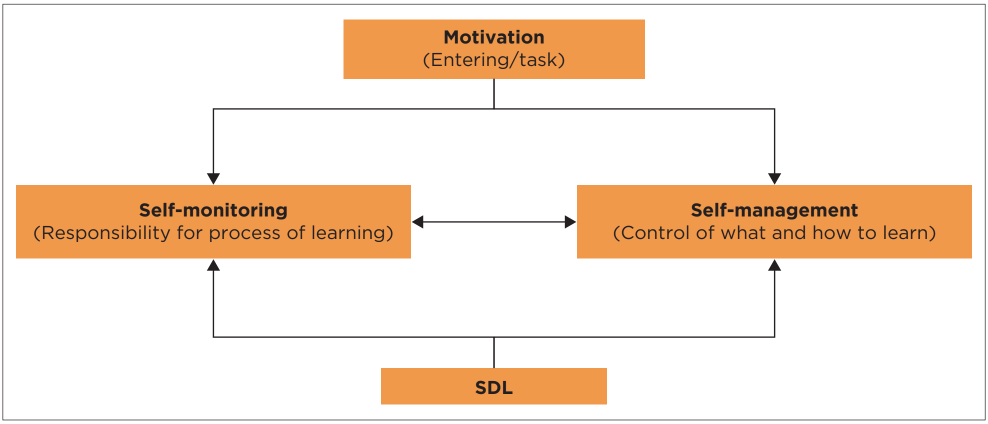
> [*I*]n which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes. (Knowles 1975, p. 18)

The characteristics of self-direction are:

1. Self-direction is the continuous exercise by the learner of authentic control over all decisions having to do with learning.
2. Self-direction is gaining access to and choosing from a full range of available and appropriate resources.

This project will incorporate the SDL model of Garrison (refer to Figure 7.1). They (1997) proposed an:

> SDL model which integrated external management (contextual control), internal monitoring (cognitive responsibility), and motivational (entering and task) factors associated with learning in an educational context. Garrison defined SDL as an approach where learners are motivated to assume personal responsibility




*Source*: Authors' own work based on Garrison, DR 1997, 'Self-directed learning: Toward a comprehensive model', *Adult Education Quarterly*, vol. 48, no. 1, pp. 18–33. https://doi.org/10.1177/074171369704800103
Key: SDL, self-directed learning.

**FIGURE 7.1:** Dimensions of self-directed learning.

> and collaborative control of the cognitive (self-monitoring) and contextual (self-management) processes in constructing and confirming meaningful and worthwhile learning outcomes. Garrison's collaborative perspective of SDL has the learner taking responsibility for constructing meaning (cognitive perspective) while including the participation of others in confirming worthwhile knowledge (social perspective). (p. 21)

## Open educational resources and renewable assessments as a means to develop self-directed learning

Open educational resources refer to:

> [*L* ]earning, teaching and research materials in any format and medium that reside in the public domain or are under copyright that have been released under an open licence, that permit no-cost access, re-use, re-purpose, adaptation and redistribution by others. (United Nations Educational, Scientific and Cultural Organization [UNESCO] 2019, p. 5)

Hence:

> [*Open educational resources*] is a phenomenon under the broader umbrella of openness, based on providing knowledge as a 'public good' and the idea that 'openness' can have a significant impact on education (Murphy 2013, p. 202; The William and Flora Hewlett Foundation 2013). With this spirit, in recent years, the OER movement [*intends*] to promote [*equalised*] access to knowledge and educational opportunities [*worldwide and to change*] educational practices through improving pedagogical approaches, promoting collaboration, and receiving support from several communities in different aspects. Renewable assignments, also called student-created OER, involve 'students' engagement in creating [*artefacts with*] personal meaning [*and sharing*] them publicly under the Creative Commons CC-BY [*licence*] (Ross 2018, p. 196; Wiley et al. 2017, p. 65). [*These artefacts*] with CC licences are students' OER assignments that

will be undertaken through a peer-reviewed process to ensure the high quality of OER content (Ross 2018, p. 197; Bentley 2021, p. 198)

For Wiley and Hilton (2018, p. 137), renewable assessments relate to 'assignments which both support an individual student's learning and result in new or improved OERs that provide a lasting benefit to the broader community of learners'.

## Twenty-first-century skills and the holistic development of pre-service teachers

The advent of the 21st century has presented education with novel requirements and obstacles, leading to an increasing acknowledgement of the need of cultivating 21st-century competencies in students. The aforementioned abilities include critical thinking, communication, teamwork, creativity, digital literacy and global awareness, as stated by Trilling and Fadel (2009). This research posits that the use of OER has significant potential as a means to cultivate the 21st-century abilities of pre-service History instructors. According to Hilton et al. (2019), the use of OER in History courses may facilitate the enhancement of critical thinking, creativity and digital literacy skills among pre-service teachers. This is achieved via the process of analysing, evaluating and adapting historical information to cater to a wide range of learning requirements. In addition, the process of disseminating their own OER among other educators and learners allows pre-service teachers to augment their abilities in communication and cooperation, while also making a valuable contribution to a worldwide community of practitioners in the field of history teaching (Wiley & Hilton 2018).

The primary objective of our research is to provide a valuable contribution to the comprehensive growth of pre-service teachers, enabling them to become proficient 21st-century educators capable of meeting the challenges posed by modern education. Through active participation with renewable OER, individuals preparing to become History teachers may effectively enhance their understanding of subject matter, refine their instructional techniques and cultivate essential competencies relevant to the 21st century. This method is in line with the concept of education for sustainable development (ESD), which stresses the incorporation of economic, social and environmental aspects of sustainability into educational practices (Mulder 2017; UNESCO 2019).

## Game-based learning and self-directed learning

Game-based learning is the use of gaming elements within an educational activity. In this classroom, students are engaged and motivated to learn through learning activities.[1] Point systems, badges, leader boards, discussion boards, quizzes and classroom response systems are just some of the elements of GBL (Toh & Kirschner 2020, p. 2). There may be academic benefits to accruing points, such as an additional week to submit an assignment after obtaining a particular number of points. Classroom response systems like Kahoot or Top Hat may be used to motivate students to participate by awarding badges if they meet specific standards.

The active learning method of using games to increase student learning is known as 'game-based learning' (Hartt, Hosseini & Mostafapour 2020, pp. 589–604). In this case, learning comes from playing the game, which encourages critical thinking and problem-solving. Game-based learning may be performed using digital or non-digital games and simulations, enabling students to experience the learning directly.

Games are well-suited for developing self-directed (incidental) learning in players and, by extension, students in an informal context because of their specific features, including a safe space for learners to experiment and fail without consequences and the autonomy that games provide (Toh & Kirschner 2020, p. 2; Bunt & Bunt 2022, p. 120). This allows learners to learn independently and receive immediate in-game feedback to develop their skills and competencies (Bunt 2019). Toh and Kirschner (2020, p. 2) developed a 'metalanguage for gameplay in the classroom to guide teachers in using video games for teaching and learning'. One example of digital play involves Minecraft, which has three key features – the ability to customise context, live through stories and assume roles in the virtual world – that can promote SDL in students (Faas & Lin 2017, p. 2569).

Zap and Code (2009, p. 738) conducted a review of self-regulated learning in video game environments. They explored a range of regulatory mechanisms underlying self-regulated learning, such as learners' self-efficacy, self-determination, self-awareness, interest, intentions, aptitude, motivation, goal and task orientation, metacognition and emotional self-regulation. In addition, they examined the design elements of game environments that foster self-regulated learning, particularly by highlighting the characteristics of authentic learning contexts. Firstly, these characteristics involve simulating real-world situations in which students can make decisions in a risk-free setting. Secondly, the students take part in genuine tasks within the simulated context, thereby acquiring skills that can be applied beyond the game environment. Thirdly, they learnt by observation and modelling. Fourthly, students occupied multiple roles to explore different ideas and learnt how to develop empathy. Finally, game

1. Parts of this section are based on the following published material: Toh, W & Kirschner, D 2020, 'Self-directed learning in video games, affordances and pedagogical implications for teaching and learning', *Computers & Education*, vol. 154, p. 103912. https://doi.org/10.1016/j.compedu.2020.103912

environments provided a space for the collaborative construction of knowledge and scaffolded coaching through (simulated) companions.

## Methodology

An embedded mixed-method experimental research design (Creswell & Plano Clark 2018, p. 409) is utilised within this study. A pragmatic research paradigm is used in the study. The researcher's methodological assumptions led them to adopt pragmatism as the guiding framework. Creswell and Plano Clark (2018, p. 410) describe pragmatism as the philosophical viewpoint that underlies mixed methods research. This perspective emphasises practical applications, including workable solutions to problems, through the collection of both quantitative and qualitative data (Creswell 2009, p. 102). The embedded mixed-method experimental research design has qualitative data embedded within an experimental design (Creswell & Plano Clark 2018, p. 411). The priority of the design is established by the quantitative, experimental methodology and a subservient qualitative dataset within the methodology (Creswell & Plano Clark 2018, p. 411). Quantitative pre- and post-test data ($n$ = 35) employing the self-directed learning instrument (SDLI) instrument, prior to and after the implementation of an intervention, were collected only concerning the students' perceptions of their SDL. Qualitative, descriptive observation data of students playing the OER games were gathered to examine the nature of SDL's development during the intervention's implementation.

The intervention entailed a four-month cooperative learning approach, in which groups of students designed a board game or card game on specific history topics. The students designed these games as OERs and uploaded them and their rules to OER repositories. Once completed, a peer-assessment approach was used, where the groups played each other's games. These games were then used again in the following year, where the new cohort of students could adapt and improve upon the previous year's students' games. Qualitative interview data were also collected after the intervention to follow up on the participants' experiences after completing the intervention.

### Quantitative strategy of enquiry: Quasi-experimental research

Quasi-experimental research aims to evaluate interventions but does not use randomisation to select participants. Quasi-experiments aim to demonstrate causality between an intervention and an outcome in non-randomly selected experimental and control groups (Creswell 2009, p. 2; Creswell & Plano Clark 2018, p. 411; Leedy & Ormrod 2019, p. 17; Maree & Pietersen 2020, p. 184).

Figure 7.2 indicates that a baseline assessment with the SDLI was followed by the open game-based renewable assessment approach, during

| Phase 1 Pre-test | | | | | Phase 2 | | | | | | | | | | | | | Phase 3 Post-test | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Baseline data before intervention | | | | | Intervention | | | | | | | | | | | | | Baseline data after intervention | | | | |
| 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 1 | 2 | 3 | 4 | 5 |

**Number of weeks**

*Source*: Authors' own work.

**FIGURE 7.2:** The quasi-experimental research design conducted over a number of weeks.

which observation data were collected. The SDLI was repeated as a post-test after the intervention to establish whether improvement occurred between the first and last baseline data collection.

Figure 7.2 illustrates that the experiment's data collection occurred in three stages: a quantitative pre- and post-test phase, as well as a qualitative phase conducted during the intervention.

## Qualitative strategy of enquiry: Interviews

The interviews were semi-structured and were conducted on an individual, one-on-one basis. Semi-structured interviews were worded more flexibly and used both closed and open-ended questions, although specific information was desired (Greeff 2009, p. 81). The central part of the interview was guided by questions, allowing the participants to explain their thoughts and opinions, thus allowing the researchers to ask follow-up questions when interesting aspects arose. Semi-structured, individual interviews were used to gain a detailed picture of participants' experiences (Greeff 2009, p. 82). The duration of the interviews was 30 minutes or until data saturation occurred.

The target population for this research was all BEd History students in South Africa. As it was not possible to do research with all these students, the study population only included BEd History students in the Faculty of Education at the North-West University (NWU), on the Vanderbijlpark Campus, within the School of Commerce and Social Studies in Education ($n$ = 35). As a result of time and logistical constraints, a non-probability, convenient and purposive sample of fourth-year BEd History students from NWU on the Vaal Triangle Campus was used. Non-probability sampling is a sampling technique where the samples are gathered in a process that does not give all the individuals in the population equal chances of being selected (Leedy & Ormrod 2019, p. 18; Strydom & Delport 2011, p. 390).

Purposive sampling involves selecting participants for a specific purpose (Campbell et al. 2020, p. 655; Leedy & Ormrod 2019, p. 18; Strydom & Delport 2011, p. 390). In the case of this study, the researchers purposively focused on fourth-year BEd History students. The sample could also be considered convenient, as the participants were located on the same site where the researcher works. The researcher, therefore, had easy access to the participants. Bachelor of Education students were selected to identify possible deficiencies and weaknesses in the development of SDL during their studies at the higher education level. Action plans to address these deficiencies and weaknesses were implemented during their four years of study before they completed their education and began their teaching careers.

### Quality criteria: Rigour, trustworthiness, validity and reliability

The reliability findings of previous pilot studies with the SDLI in the South African context were considered before employing the SDLI in the present study. Validity of the quantitative research design was ensured by adhering to criteria for internal, external, construct and statistical conclusion validity (McMillan & Schumacher 2006, p. 28).

According to Babbie and Mouton (2001, p. 201), the rigour of qualitative research can be ensured by enhancing trustworthiness, which implies adhering to criteria for credibility, transferability, dependability and conformability. All of these interview criteria will be adhered to in this study.

## Data analysis

In examining the SDLI test results, descriptive and non-parametric inferential statistics were utilised (Leedy & Ormrod 2019, p. 19). Calculations included frequencies, means, medians and percentages to assess fourth-year BEd participants' SDL application levels at both the beginning and end of the intervention. The Mann–Whitney U test compared the SDLI pre- and post-test scores (Pietersen & Maree 2020, p. 262), and the Wilcoxon signed-rank test evaluated differences between the total pre-test and post-test results.

For the interview data, an inductive and deductive content analysis process was followed, which involved extracting codes and themes (McMillan & Schumacher 2006, p. 28). Ultimately, the quantitative and qualitative data were synthesised to gain a clearer understanding of fostering SDL through an open game-based renewable assessment approach.

## Findings

### Quantitative data

The pre- and post-test data for the SDLI, developed by Cheng are reported in Tables 7.1–7.6. Both descriptive and inferential statistics are reported in order to gauge whether participants improved in terms of their SDL.

**TABLE 7.1:** Age of participants.

| | Age | *f* | % | Valid (%) | Cumulative (%) |
|---|---|---|---|---|---|
| Valid | 20 | 3 | 10.7 | 10.7 | 10.7 |
| | 21 | 7 | 25.1 | 25.1 | 35.8 |
| | 22 | 9 | 32.1 | 32.1 | 67.9 |
| | 23 > | 9 | 32.1 | 32.1 | 100.0 |
| **Total** | | **28** | **100.0** | **100.0** | - |

*Source*: Authors' own work.
Key: *f*, frequency; %, percentage.

**TABLE 7.2:** Home language of participants.

| | Home language | *f* | % | Valid (%) | Cumulative (%) |
|---|---|---|---|---|---|
| Valid | isiNdebele | 1 | 3.6 | 3.6 | 3.6 |
| | isiXhosa | 2 | 7.1 | 7.1 | 10.7 |
| | IsiZulu | 5 | 17.9 | 17.9 | 28.6 |
| | Sepedi | 3 | 10.7 | 10.7 | 39.3 |
| | Sesotho | 8 | 28.6 | 28.6 | 67.9 |
| | Setswana | 6 | 21.4 | 21.4 | 89.3 |
| | Xitsonga | 3 | 10.7 | 10.7 | 100.0 |
| **Total** | | **28** | **100.0** | **100.0** | - |

*Source*: Authors' own work.
Key: *f*, frequency; %, percentage.

**TABLE 7.3:** Gender of participants.

| | Gender | *f* | % | Valid (%) | Cumulative (%) |
|---|---|---|---|---|---|
| Valid | Woman | 17 | 60.7 | 60.7 | 60.7 |
| | Man | 11 | 39.3 | 39.3 | 100.0 |
| **Total** | | **28** | **100.0** | **100.0** | **-** |

*Source*: Authors' own work.
Key: *f*, frequency; %, percentage.

**TABLE 7.4:** Frequencies and means for self-directed learning instrument pre-test.

| No. | Statement | Strongly disagree | Disagree | Neutral | Agree | Strongly agree | M | SD |
|---|---|---|---|---|---|---|---|---|
| 1 | I know what I need to learn | 1 | 0 | 7 | 11 | 9 | 3.96 | 0.96 |
| 2 | Regardless of the results or effectiveness of my learning, I still like learning | 0 | 1 | 2 | 16 | 9 | 4.18 | 0.72 |
| 3 | I strongly hope to constantly improve and excel in my learning | 0 | 0 | 0 | 8 | 20 | 4.71 | 0.46 |
| 4 | My successes and failures inspire me to continue learning | 0 | 0 | 3 | 9 | 16 | 4.46 | 0.69 |
| 5 | I enjoy finding answers to questions | 0 | 0 | 2 | 9 | 17 | 4.54 | 0.64 |
| 6 | I will not give up learning because I face some difficulties | 0 | 0 | 10 | 18 | 0 | 4.64 | 0.49 |
| 7 | I can proactively establish my learning goals | 0 | 0 | 3 | 16 | 9 | 4.21 | 0.63 |

Table 7.4 continues on the next page→

**TABLE 7.4 (cont.):** Frequencies and means for self-directed learning instrument pre-test.

| No. | Statement | Strongly disagree | Disagree | Neutral | Agree | Strongly agree | M | SD |
|---|---|---|---|---|---|---|---|---|
| 8 | I know what learning strategies are appropriate for me in reaching my learning goals | 0 | 1 | 4 | 11 | 12 | 4.21 | 0.83 |
| 9 | I set the priorities of my learning | 0 | 1 | 3 | 17 | 7 | 4.07 | 0.72 |
| 10 | Whether in the clinical practicum, classroom or on my own, I am able to follow my own plan of learning | 0 | 0 | 5 | 14 | 9 | 4.14 | 0.71 |
| 11 | I am good at arranging and controlling my learning time | 0 | 2 | 10 | 12 | 4 | 3.64 | 0.83 |
| 12 | I know how to find resources for my learning | 0 | 0 | 4 | 18 | 6 | 4.07 | 0.6 |
| 13 | I can connect new knowledge with my own personal experiences | 0 | 1 | 2 | 16 | 9 | 4.18 | 0.72 |
| 14 | I understand the strengths and weaknesses of my learning | 0 | 0 | 0 | 17 | 11 | 4.39 | 0.5 |
| 15 | I can monitor my learning progress | 0 | 0 | 2 | 14 | 12 | 4.36 | 0.62 |
| 16 | I can evaluate on my own my learning outcomes. My interaction with others helps me plan for further learning. | 0 | 1 | 4 | 19 | 4 | 3.93 | 0.66 |
| 17 | I would like to learn the language and culture of those whom I frequently interact with | 0 | 0 | 1 | 9 | 18 | 4.61 | 0.57 |
| 18 | I am able to express messages effectively in oral presentations | 2 | 1 | 8 | 13 | 4 | 3.57 | 1.03 |
| 19 | I am able to communicate messages effectively in writing | 0 | 0 | 2 | 10 | 16 | 4.5 | 0.64 |

*Source*: Authors' own work.
Key: M, mean; SD, standard deviation.

**TABLE 7.5:** Reliability of factors.

| Factor | Questions | Cronbach's alpha | M | SD |
|---|---|---|---|---|
| Learning motivations | SDL_Pre1 to SDL_Pre6 | 0.63 | 4.42 | 0.40 |
| Planning and implementing | SDL_Pre7 to SDL_Pre12 | 0.75 | 4.06 | 0.48 |
| Self-monitoring | SDL_Pre13 to SDL_Pre16 | 0.68 | 4.21 | 0.45 |
| Interpersonal communication | SDL_Pre18 to SDL_Pre20 | 0.66 | 4.23 | 0.60 |
| **Total SDL** | | **0.86** | **4.23** | **0.37** |

*Source*: Authors' own work.
Key: SDL, self-directed learning; M, mean; SD, standard deviation.

Tables 7.1–7.6 report the biographical information obtained via the online questionnaire for $n$ = 28 participants.

Table 7.1 displays the various responses from participants relating to the 'age' biographical variable. Four options were allowed, ranging from 20 to 21, 22 or 23 and older.

**TABLE 7.6:** Pre- and post-test scores – Wilcoxon rank-sum test *p*-value and effect size.

| Participant | LM_Pre_mean | LM_Post_mean | PI_Pre_mean | PI_Post_mean | SM_Pre_mean | SM_Post_mean | IC_Pre_mean | IC_Post_mean | Total_Pre_mean | Total_Post_mean |
|---|---|---|---|---|---|---|---|---|---|---|
| P01 | 4.00 | 4.67 | 3.67 | 4.33 | 3.75 | 4.00 | 3.67 | 4.00 | **3.80** | **4.30** |
| P02 | 4.83 | 4.83 | 4.67 | 4.17 | 5.00 | 4.25 | 5.00 | 5.00 | **4.85** | **4.55** |
| P03 | 4.83 | 4.67 | 4.33 | 4.17 | 4.00 | 4.00 | 4.67 | 4.00 | **4.35** | **4.25** |
| P04 | 4.83 | 3.67 | 4.00 | 3.50 | 4.25 | 3.50 | 4.33 | 4.33 | **4.40** | **3.70** |
| P05 | 4.50 | 4.67 | 4.33 | 4.83 | 4.00 | 4.75 | 4.67 | 3.67 | **4.40** | **4.55** |

*Source*: Authors' own work.
Key: LM, learning motivations; SM, self-monitoring; IC, interpersonal communication; PI, planning and implementing.

Only three participants indicated that they are 20 years of age, seven indicated that they are 21 years old, and nine participants respectively indicated that they are 22 and 23 or older.

Table 7.2 displays the online questionnaire data relating to participants' home language biographical variables. Seven languages were chosen from those who participated. Only one isiNdebele speaker, two isiXhosa, three Sepedi and three Xitsonga students participated in the questionnaire. The largest group of students who participated were the Sesotho speakers, with eight participants, six Setswana and five isiZulu speakers participated. This is representative of the demographics at the specific campus where the data were collected. A diverse group took part. Notably, no English or Afrikaans-speaking students took part.

Table 7.3 displays results obtained from participants when selecting their gender. Most participants were women, with 17 identifying as such, while 11 identified as men. This results in a 60:40 gender split, reflecting the demographic of students pursuing this qualification.

Each of the 20 items on the SDLI test may be answered on a scale from 'strongly disagree' to 'strongly agree'. For each inquiry, we also provide the mean and standard deviation.

The participants' positive attitudes about self-direction are reflected in the data. All questions have mean scores more than 3.0, and the vast majority have mean scores greater than 4.0. The participants are highly driven to increase their learning, as seen by the highest mean score on SDL_Pre_3 ('I strongly hope to constantly improve and excel in my learning'). This aligns with the literature findings that the intrinsic drive to learn plays a significant role in independent study (Candy 1991, p. 250).

High mean scores on SDL_Pre_2 ('Regardless of the results or effectiveness of my learning, I still like learning') and SDL_Pre_4

(‘My successes and failures inspire me to continue learning’) show that the participants have a positive outlook on learning. Participants’ ability to bounce back from failures indicates their ability to learn independently, a trait shared with self-directed learners (Candy 1991, p. 58).

High mean scores on SDL_Pre_6 (‘I will not give up learning because I face some difficulties’), SDL_Pre_7 (‘I can proactively establish my learning goals’), and SDL_Pre_8 (‘I know what learning strategies are appropriate for me in reaching my goals’) suggest that the participants are also confident in their ability to self-direct their learning. This agrees with earlier studies that found that students who learnt independently were more confident in their abilities (Guglielmino 1977, p. 13).

The outcomes of using video games as a teaching tool are less specific. There are just two questions (SDL_Pre_19 and SDL_Pre_20) that have anything to do with GBL, and the average scores on both questions are relatively poor. The lowest average score is found for SDL_Pre_19 (‘I am able to express messages effectively in oral presentations’), suggesting that participants are least confident in their ability to communicate in this setting. These two questions do not measure the same structures; thus, it is important to consider that when comparing results to those for the rest of the SDLI questions.

The reported Cronbach alpha values (0.63–0.75) are above the guideline value of 0.7 or at least 0.5 (Field 2009, p. 17), indicating that the resulting factor is reliable. It should be noted, however, that Question 17 (Q17) has been omitted from the factor ‘Interpersonal Communication’ because it negatively impacts the reliability of the factor. Factor scores were calculated by taking the averages of the questions within each factor. The mean value of the resulting factor scores, 4.06 (SD = 0.48) to 4.42 (SD = 0.40), indicates that respondents, on average, agreed with the statements within these factors.

The data presented here pertain to a survey that assessed respondents’ SDL skills across four dimensions: Learning motivations (LM), planning and implementation, self-monitoring (SM) and interpersonal communication (IC). Internal consistency is satisfactory, as shown by Cronbach’s alpha values between 0.63 and 0.75 for each component.

Each factor’s mean score is above average, falling in the range of 4.06–4.42 out of 6. This indicates that people commonly consider themselves competent across all dimensions of SDL. The range of the standard deviations, however, from 0.37 to 0.60, indicates some variation in participants’ opinions.

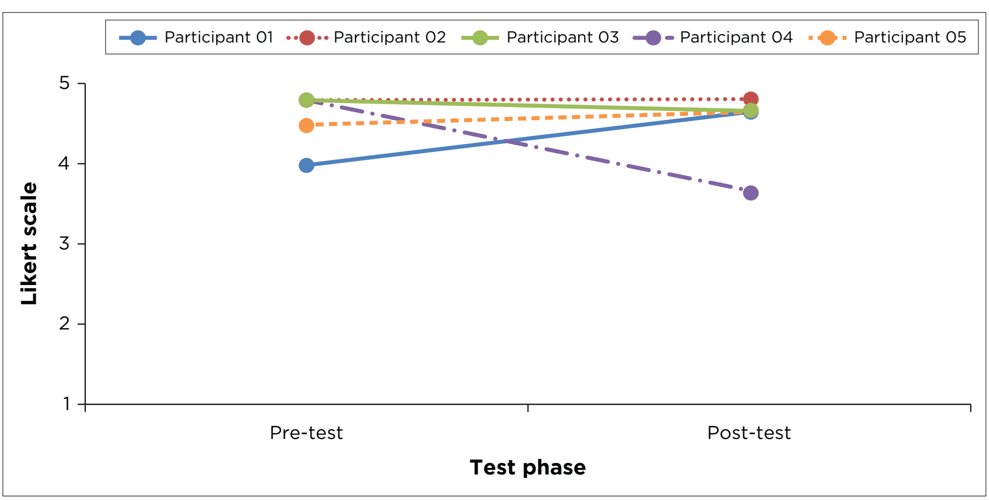
According to a literature review, GBL is an excellent method for fostering SDL skills. Self-efficacy and motivation are crucial elements of SDL, and one research indicates that GBL may boost both (Jiang & Gu 2017, p. 725). In addition, students may develop and use their own techniques for learning, practice SM and collaborate with their classmates via GBL (Papastergiou 2009, p. 11).

However, playing games alone might not be enough to help students acquire SDL skills. Metacognition refers to the cognitive ability to introspect and analyse one's own learning processes. Research has demonstrated that metacognition plays a beneficial role in facilitating SDL (Hase & Kenyon 2000). Therefore, it may be beneficial to further improve participants' SDL skills by incorporating metacognitive strategies into GBL activities.

Overall, participants' perceptions of their own competence across all SDL factors are high, and internal consistency is satisfactory, suggesting that GBL may have contributed to the development of these skills. However, combining GBL with metacognitive strategies may be an effective means of further improving SDL skills, which could be the subject of future study (refer to Figures 7.3–7.7).

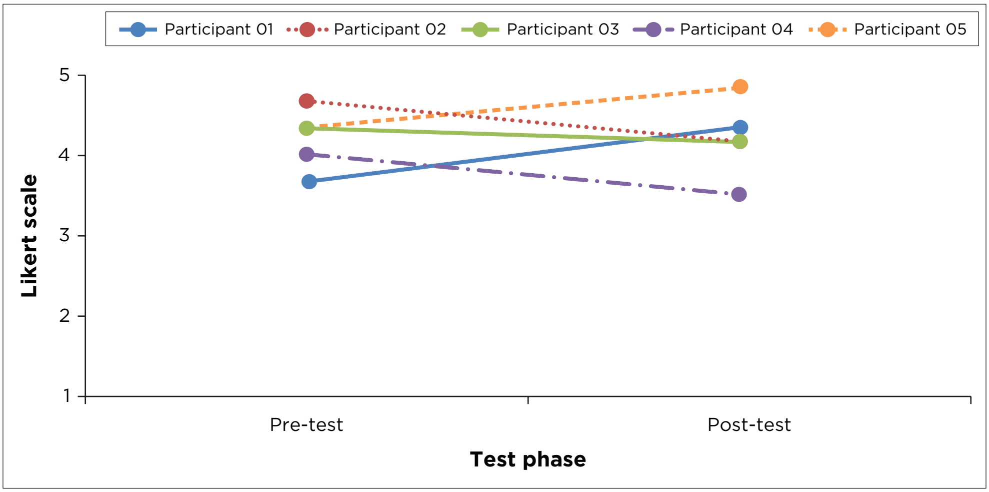
Figures 7.3–7.7 reflect the individual pre- and post-test scores of the five individuals who successfully matched the two datasets. The graphs are supplemented with the Wilcoxon signed-rank test *p*-value and effect size.

Based on the given data, we can see each participant's average scores on different learning measures before and after the intervention.



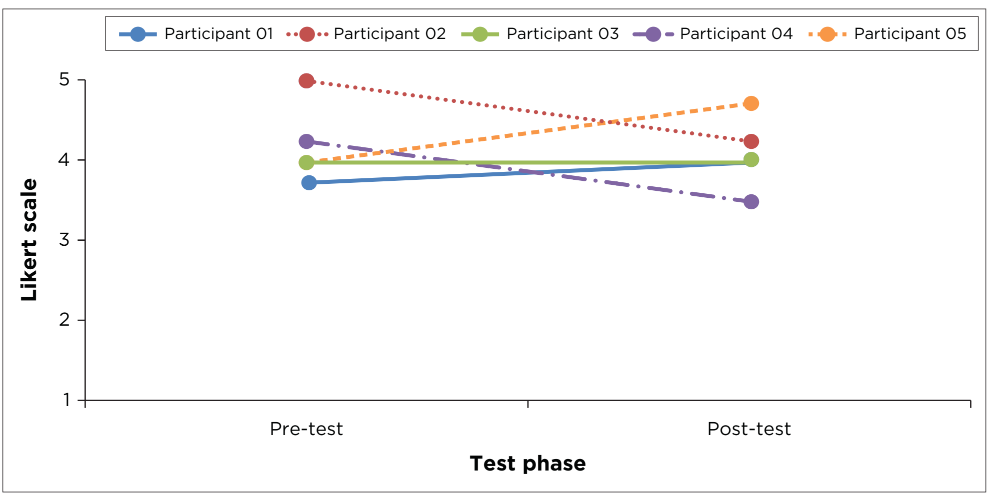

*Source*: Authors' own work.

**FIGURE 7.3:** Learning motivation.




*Source*: Authors' own work.

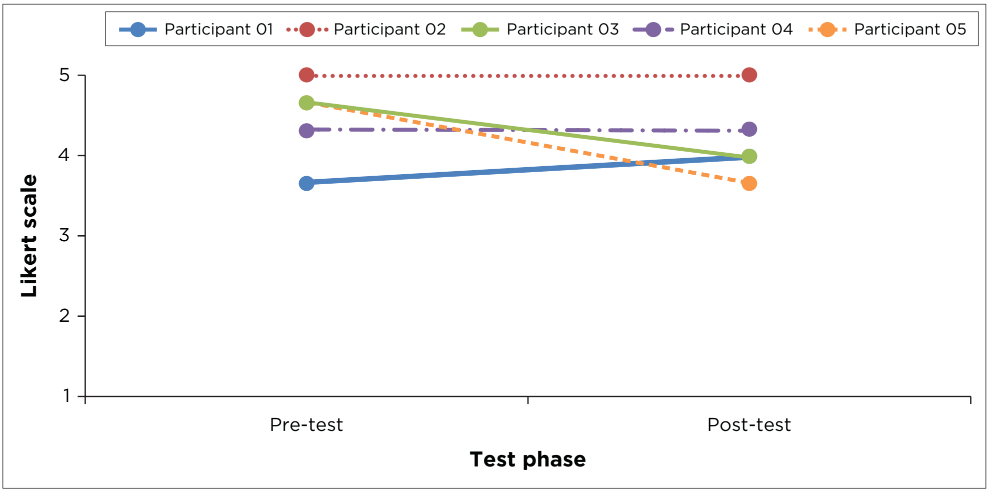
**FIGURE 7.4:** Planning and implementation.



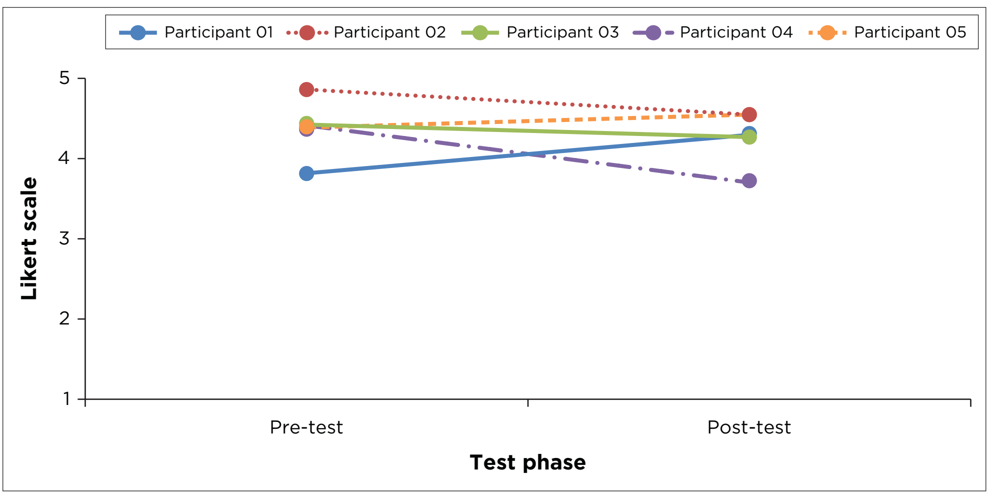

*Source*: Authors' own work.
*Note*: $p$-value = 0.71 and effect size = 0.17.

**FIGURE 7.5:** Self-monitoring.

Participant 01 shows an increase in LM from an initial average of 4 to a final average of 4.67, an increase in planning and implementing (PI) from 3.67 to 4.33, an increase in SM from 3.75 to 4, an increase in IC from 3.67 to 4 and an increase in total score from 3.8 to 4.3, showing an all-around improvement in terms of SDL perceptions. This finding is consistent with prior studies that indicate GBL has the potential to increase motivation and engagement (Gee 2003; Prensky 2001). According to Hung et al. (2014), the presence of enhanced LM, effective planning and




*Source*: Authors' own work.
*Note*: *p*-value = 0.29 and effect size = 0.48.
**FIGURE 7.6:** Interpersonal communication.




*Source*: Authors' own work.
*Note*: *p*-value = 0.69 and effect size = 0.18.
**FIGURE 7.7:** Overall self-directed learning.

implementation, SM and IC provides evidence for the potential of game-based educational tools to promote SDL.

Participant 02 has no change in LM, with an initial and final average of 4.83, a decrease in PI from 4.67 to 4.17, a slight decrease in SM from 5 to 4.25, an increase in IC from 5 to 5 and a slight decrease in total score from 4.85 to 4.55. The aforementioned observation suggests that the intervention had a limited influence on the participant's capacity for SDL. It is important to acknowledge that the efficiency of GBL can be influenced by individual characteristics and preferences (Sitzmann 2011). Additional investigation could be conducted to examine the elements that lead to the diverse outcomes observed among individuals.

Participant 03 has a slight decrease in LM from 4.83 to 4.67, a slight increase in PI from 4.33 to 4.17, no change in SM with an initial and final average of 4, a slight decrease in IC from 4.67 to 4 and a slight decrease in total score from 4.35 to 4.251. This implies that the intervention's effect on specific facets of SDL for this participant may have been constrained. The effectiveness of GBL treatments can be influenced by individual traits and learning styles (Connolly et al. 2012). Further research endeavours could be undertaken to explore the potential efficacy of varying instructional methodologies employed within game-based educational materials in order to more effectively cater to the diverse learning requirements of individuals.

Participant 04 has a decrease in LM from 4.83 to 3.67, a decrease in PI from 4 to 3.5, a decrease in SM from 4.25 to 3.5, no change in IC remaining at 4.33 and a decrease in total score from 4.4 to 3.7. The observed result is in opposition to the anticipated results, indicating that the game-based instructional tools employed in the research may not have been appropriate for this particular participant. When creating and executing game-based treatments, it is crucial to consider individual characteristics and preferences (Kiili 2005).

Participant 05 shows an increase in LM from 4.5 to 4.67, an increase in PI from 4.33 to 4.83, an increase in SM from 4 to 4.75, a slight decrease in IC from 4.67 to 3.67 and an increase in total score from 4.4 to 4.55. This finding is consistent with prior studies that emphasise the capacity of GBL to improve various dimensions of SDL (Barab et al. 2007; Papastergiou 2009). The results of this study provide evidence that game-based educational resources have the potential to effectively enhance the development of SDL skills in specific individuals.

For LM, we can see that the mean scores increased from the pre-test (M = 4) to the post-test (M = 4.67), indicating an improvement in LM.

For PI, we see a slight increase in mean scores from the pre-test (M = 3.67) to the post-test (M = 4.17), but the difference is not statistically significant ($p = 0.89$).

For SM, we see a slight increase in mean scores from pre-test (M = 3.75) to post-test (M = 4), but the difference is not statistically significant ($p = 0.71$).

The total mean score for IC increased from the pre-test (M = 3.8) to the post-test (M = 4.3), indicating an improvement in learning outcomes. However, the difference is not statistically significant ($p = 0.29$). It is worth noting that the sample size is small, and other factors could have influenced the results. Previous studies have shown that GBL can increase student motivation, engagement and SDL, and the findings from this data support these studies. Overall, there is an increase in post-test scores across different categories.

## Qualitative data

### Question 1: How did you experience the game-based learning (GBL) approach used in this module? Please explain in detail.

*Theme 1: Educational and fun* – 'The game was educational and thrilling at the same time', 'It was really fun to do this game especially because it's content related', 'I really enjoyed the game and it was very educational', 'It was a fun way to learn', 'It was educational and help in mastering the content', and 'The [GBL] was fun, simple and educating'.

*Theme 2: Learning experience* – 'I got to learn some of the aspects of World War [One]', 'It was fun, it tests deep knowledge and it is challenging', 'I've experienced a lot of things that I have to study hard, there is a lot of things that I don't know pertaining the content', 'It was more fun and allowed me to remember content more easily', 'It was a fun and interesting approach we got to see how differently each one thinks and also how to incorporate the history topics into a game made the entire ordeal more interesting', 'It was a very good learning approach, we got to engage in different study unit all at once', and 'The [*GBL*] was a good experience, I learnt a lot through participating in the GBL. I have played different games that cover different topics of our semester which have helped me to develop more interest and enthusiasm in history'.

*Theme 3: Collaboration and creativity* – 'When student come together to create something like this is fun', 'Creative minds coming together to create the content like game is important', 'It was a fun way to learn. It motivated me to want to do more in terms of learning because of the creativity we have to bring together to make the game successful', and 'We got different questions from different topics and groups which made it challenging because we had to think'.

*Theme 4: Recap of lecture topics* – 'It was exciting as we learnt more and recapped on the outcomes of study units, we learnt during lecture classes', and 'The [*GBL*] was fun and informative because we got to know minor details that will now be easy to recall because of the game'.

The responses provided by the students indicate that they enjoyed the GBL approach used in the module. The use of GBL has been found to have positive effects on student engagement, motivation and learning outcomes (Connolly et al. 2012, p. 663). The students in the responses enjoyed the educational and fun aspects of the game, and found it to be challenging and motivating. This is consistent with the findings of several studies that have shown that GBL can improve students' cognitive and affective engagement (Cardinot & Fairfield 2022, p. 788; Hainey et al. 2016, p. 205).

The responses also suggest that the GBL approach allows for SDL and creative thinking. Self-directed learning has been defined as the process of taking control of one's own learning, and is often associated with increased motivation and deeper learning (Knowles 1975, p. 18). The students in their responses have indicated that they had to study hard and engage in creative thinking to create the game. This is consistent with the findings of research on GBL that have highlighted the importance of autonomy and creativity in promoting SDL (Sailer et al. 2017, p. 373; Yukselturk & Bulut 2009, p. 14).

## ☐ Question 2: Do you believe that game-based learning (GBL) can develop self-directed learning? How?

*Theme 1: Learning through self-direction* – '[...] students finally design something on their own', '[...] it shows an individual how much of the content they know or understand', '[...] because you learn from the questions being asked', '[...] one can be able to learn on their own while playing the game', '[...] allows student to research more and to be independent when doing your content research', '[...] helping one to realize his or her strengths in the academic field and to also work on their weaknesses', '[...] develop self-directed learning because it makes learning to be more relevant, easy and fun', '[...] the game will help me to develop perceptive abilities', and '[...] requires you to study in order to successfully complete the game'.

*Theme 2: Engaging and motivating* – '[...] by challenging ones on ability and understanding', '[...] it reveals the real-life experiences', '[...] motivating students and increasing the learning interest', and '[...] not only exciting but also educative'.

*Theme 3: Learning through experience* – '[...] reveals the real-life experiences'.

The responses suggest that GBL can develop SDL by promoting independent learning, motivation and engagement. The respondents believe that GBL provides a platform for students to learn and have fun simultaneously by challenging themselves to complete the game. It is suggested that GBL creates a motivating and engaging environment where students can work on their strengths and weaknesses, and become more independent in their learning. Additionally, it has been mentioned that GBL encourages students to research and study more, allowing them to realise their own potential and become more self-directed in their learning. This aligns with the theory of SDL, which proposes that learners take control of their own learning process and set their own goals (Knowles 1975, p. 18). Game-based learning is seen as an effective tool for promoting SDL, as it provides opportunities for learners to engage in active and meaningful learning experiences (Hainey et al. 2016, p. 205).

According to Hainey et al. (2016, p. 205), GBL can be used to foster SDL by providing learners with opportunities to explore, experiment, and discover knowledge for themselves. The authors suggest that games can encourage learners to take ownership of their learning by allowing them to set their own goals, make decisions and solve problems independently. This, in turn, can promote self-regulated learning, as learners monitor their own progress and adjust their learning strategies accordingly (Zimmerman 2008, p. 170).

In addition, GBL can be used to develop higher-order thinking skills such as critical thinking, problem-solving and decision-making, which are essential for SDL (Dunleavy, Dede & Mitchell 2009, p. 11). Game-based learning allows learners to engage in complex and challenging tasks that require them to think critically and creatively and make decisions based on their own knowledge and understanding.

In other words, the responses suggest that GBL can develop SDL by promoting independent learning, motivation, engagement, higher-order thinking skills and active learning experiences. Game-based learning has the potential to enhance learners' SDL abilities by providing them with opportunities to take control of their own learning and to explore, experiment and discover knowledge for themselves.

## Question 3: Did creating and playing the board or card game motivate you? Explain.

*Theme 1: Motivation to learn* – 'motivated me to study', 'motivating', and 'influenced me to study more'.

*Theme 2: Fun and educational* – 'fun and educational', 'created high intellectual questions', and 'make the content fun'.

*Theme 3: Increased interest in the topic* – 'more interest in [*World War Two*]', 'want to learn more about certain topics', and 'want to learn more about the topics we do in history'.

*Theme 4: Improved collaboration and communication skills* – 'develop and apply collaboration learning skills', 'participate with the fellow students', and 'opportunities for active engagement in learning'.

*Theme 5: Creative thinking and determination* – 'think outside the box', and 'be more determined to study'.

*Theme 6: Learning new information* – 'learnt other things that were not in my group', 'gave me insight of the content', and 'mastering the rise of Hitler content'.

The responses suggest that creating and playing the board or card game positively impacted students' motivation to learn. The GBL approach utilised in creating the game helped to enhance students' interest and engagement in the topic of World War II and the rise of Hitler, which are some of the content areas covered in the game. This finding is consistent with the literature on GBL, which suggests that games can enhance students' motivation and engagement in the learning process (Connolly et al. 2012, p. 665). The fun and educational nature of the game is also highlighted in the responses as a motivating factor for the students to learn. This aligns with the SDL theory, which creates an engaging and enjoyable learning environment (Knowles 1975, p. 18).

The responses also suggest that creating and playing the games helped students to develop collaborative and creative skills. This finding is consistent with the literature on GBL, which suggests that games can promote the development of various skills, such as critical thinking, problem-solving and collaboration (Dondlinger 2007, p. 24; Squire 2008, p. 19). The GBL approach used in creating and playing the board or card game allowed students to learn, facilitating their collaboration skills actively. The findings also suggest that the GBL approach helped students identify areas where they needed to improve their understanding of the content. This is consistent with the SDL theory, which suggests that learners should take responsibility for their learning and identify areas where they need to improve their understanding of the content (Knowles 1975, p. 18).

In conclusion, the findings suggest that creating and playing the board or card game positively impacted students' motivation to learn. The GBL approach used in creating the game helped to enhance students' interest and engagement in the learning process. The GBL approach also helped students develop collaboration, creativity and SDL skills. These findings underscore the importance of using GBL approaches to enhance students' motivation and engagement in the learning process.

## Question 4: Did working in the group to make the game lead to planning and organising effectively? Elaborate.

*Theme 1: Enjoyment of group work* – 'awesome', 'enjoying', 'fun', 'able to work together', 'enjoyed the assignment', 'more creative and effective', ‘able to divide responsibilities’, ‘got to know my classmates’, ‘able to share ideas’, and ‘ended up coming to a conclusion’.

*Theme 2: Benefits of group work* – ‘exchange ideas’, ‘able to work together’, ‘came with solutions easy’, ‘taught us’, ‘improved my time management and communication skills’, ‘able to set ground rules’, ‘one clear objective’, ‘communicate efficiently’, ‘specific role in organising’, and ‘made things easier for everyone’.

*Theme 3: Challenges with group work* – ‘never works for me’, ‘not prepared’, and ‘never put any effort’.

*Theme 4: Necessity of physical meetings* – ‘physically meet up’, and ‘do all the planning and organising before we could submit’.

*Theme 5: Game lead effectiveness* – ‘game lead made planning and organising in an effective manner’.

*Theme 6: Overcoming communication barriers* – ‘able to communicate with them because I was scared to talk to them in class and that made me not interested in attending classes’.

The findings suggest that engaging in collaborative activities during the game development process has facilitated effective planning and organisation among the students. Engaging in collaborative efforts enables students to facilitate the exchange of ideas and share responsibilities, thus fostering the cultivation of a well-defined objective and efficient communication. The process of planning and organising the game has facilitated students’ creativity and innovation, enhancing time management and communication skills. This is consistent with the principles of GBL, which prioritise the significance of collaboration, communication and problem-solving. Collaborative endeavours have the potential to cultivate SDL, as students assume responsibility for their own learning journey and actively engage in problem-solving activities. This discovery provides evidence that collaborative activities can be a valuable tool in fostering classroom planning, organisation and SDL.

## Question 5: Did you self-monitor your progress while designing the game? How did you do this?

*Theme 1: Self-monitoring and assessment* – ‘kept assessing my progress’, ‘checking on how the game is going’, ‘self-monitoring is important’, ‘constantly checking in’, ‘monitor my progress’, ‘monitoring my progress’, ‘checked and made some reflections’, ‘tracked how much knowledge I had acquired’, and ‘answering questions as much as I could’.

*Theme 2: Learning from others* – ‘got to learn from knowledge of others’, ‘checking whether I know what I’m doing’, ‘frequently communicating with my group members forming new ideas', and 'playing other people's games'.

*Theme 3: Creativity* – 'need to be creative'.

*Theme 4: Goal setting* – 'setting goals and rules'.

*Theme 5: Reflection* – 'reflection on where I made progress in terms of my learning in this module', and 'made some reflections on the topic I did not understand'.

*Theme 6: Topic understanding* – 'studying the topic that we were creating the game about'.

*Theme 7: Encouragement* – 'encouraged me in such a way of adding where need to be added in my studies'.

*Theme 8: Progress tracking* – 'changing my study schedule', and 'tracking of how much knowledge I had acquired'.

*Theme 9: Collaborative work* – 'forming new ideas with my group members'.

*Theme 10: Game development* – 'creating a game that will make sense', 'develop better understanding about the topic', and 'reach the lesson outcomes of our topic'.

The responses indicate that SM played a significant role in the participants' game-designing process. Respondents confirmed monitoring their progress by assessing their strengths and weaknesses, setting goals and rules, and checking if the game was enjoyable. These findings align with literature highlighting the role of SM in self-regulated learning (Zimmerman 2002, p. 66). By studying the topic, the respondents created a game that covered the necessary content and helped players develop a better understanding.

## Question 6: Did your interaction with others in the group help you plan better when designing the game? How?

*Theme 1: Collaboration and teamwork* – 'we were able to encourage one another', 'everyone came up and design questions', 'teamwork and unity', 'everyone was able to pitch their own ideas', 'by cooperating and planning', and 'we all worked together'.

*Theme 2: Creativity and innovation* – 'different ideas were shared', 'creative thinking was involved', and 'recognise and realise other people's ideas'.

*Theme 3: Learning and development* – 'exposed to new knowledge', 'learnt to be open to listening to other people's ideas', 'managed to rectify my mistakes', and 'inspire people to develop more interest and enthusiasm in the topic'.

*Theme 4: Productivity and completion of task* – ‘we complete the group task’, ‘our ideas are the ones that ensured that we complete the group task’, and ‘constructing the game’.

*Theme 5: Communication* – ‘we had meetings in person more than online’, ‘sharing ideas as a group’, and ‘discussed our ideas’.

The responses suggest that group interactions are effective in-game planning and design. Participants have shared knowledge and ideas, leading to creative game design. Group interactions provide opportunities for learning and generating new knowledge (Kagan & Bowman 1997, p. 83). Acknowledging others’ ideas encouraged collaboration and unity, leading to better planning and design, consistent with Johnson and Johnson’s findings (1994, p. 128). The participant’s ability to rectify mistakes highlights the importance of group interactions to ensure efficiency and quality. Overall, group interactions promote creative and relevant game design, improve problem-solving skills and ensure quality and efficiency in the design process.

## Question 7: Your game will become an open educational resource (OER) and be placed online in a repository. Other History students can interact with your game and potentially learn from it. What are your thoughts on this OER approach?

*Theme 1: Positive attitude and excitement* – ‘impressed’, ‘happy’, ‘amazing’, ‘great thing’, ‘interesting way’, ‘helpful’, and ‘enjoy’.

Educational value and impact: ‘help others gain knowledge’, ‘learners could really learn a lot’, ‘other students will definitely learn’, ‘going to learn more’, ‘help most learners to understand’, ‘confidence as I work will be meaningful and helpful to others’, ‘educative’, ‘help history student’, ‘help learners learn more and in different ways’, ‘make learning to look more fun and easy’, ‘develop more understanding’, and ‘help other students to become more creative and want to learn’.

*Theme 2: Accessibility* – ‘easily accessible’.

The responses indicate a generally positive attitude towards using OER to share educational materials. The participants have expressed enthusiasm and optimism about the potential impact of their game as an OER. Specifically, they believe it will help other students learn, clarify and understand the study unit and become more creative and engaged with the content. Furthermore, using OERs are perceived as a way of increasing the accessibility of educational materials, making learning more fun and enjoyable, and fostering a sense of confidence and meaning in the work produced. These findings are consistent with research on the benefits of OERs, which suggests that OERs can increase access to education, improve learning outcomes, and provide opportunities for collaboration and knowledge sharing.

The positive response to the OER approach also reflects the potential for using digital technologies in education. Digital games in particular have been found to enhance student engagement, motivation and learning outcomes. The participants' belief that their game will be an effective educational tool is consistent with these findings. Moreover, the fact that the game will be available online in a repository suggests the potential for wide dissemination and uptake by educators and learners.

## Conclusion

In conclusion, the data suggest that GBL can develop SDL. The responses highlight several key themes that support this notion:

- *Learning through self-direction*: Game-based learning allows students to take control of their learning process, research independently and identify their strengths and weaknesses. It encourages them to learn independently while enjoying the game, making learning more relevant, easy and fun.
- *Engaging and motivating*: Game-based learning challenges students and motivates them to explore real-life experiences, increasing their interest and excitement in learning.
- *Learning through experience*: Game-based learning provides opportunities for active and experiential learning, fostering critical thinking, problem-solving and decision-making skills.

The findings align with SDL theory, where learners take ownership of their learning, set their own goals and adjust their strategies accordingly. Game-based learning can promote SDL by encouraging learners to explore, experiment and discover knowledge for themselves. It also helps develop higher-order thinking skills, such as critical thinking and problem-solving, which are essential for SDL.

From a theoretical standpoint, these results extend our understanding of how GBL aligns with self-determination theory (SDT) (Deci & Ryan 2000). Students' expressions of enjoyment and volition in game design activities suggest increased perceptions of autonomy, competence and relatedness – three key dimensions of SDT. Autonomy emerged as students chose their game format and learning approach, competence was bolstered through iterative problem-solving, and relatedness was supported by the collaborative process of co-constructing knowledge with peers.

Moreover, the emphasis on experiential learning (Kolb 1984) was evident as students engaged actively in real-world-like decision-making and iterative design. This hands-on, reflective practice allowed learners to cycle through concrete experiences, reflective observation, abstract conceptualisation and active experimentation – critical stages that deepen conceptual understanding and support higher-order thinking.

The role of social constructivism (Vygotsky 1978) also becomes evident in the collaborative creation of board or card games. Students' group interactions functioned as a ZPD, where peer support and shared dialogues facilitated the co-construction of new ideas and strategies. This aligns with research suggesting that cooperative tasks can amplify SDL by enabling learners to exchange feedback, refine their thinking and ultimately become more self-directed in future tasks.

Additionally, the decision to release the final projects as OER broadens the theoretical implications to include connectivist principles (Siemens 2005). By making their creative work publicly available, students situate themselves in a wider learning community, extending their SDL beyond the classroom and encouraging continuous feedback and knowledge exchange. This connects practical, hands-on learning with broader networked learning theories, highlighting how open-access materials can perpetuate iterative learning cycles and collaborative knowledge-building.

Moreover, creating and playing the board or card game positively impacted students' motivation to learn. The game's fun and educational nature, increased interest in the topic, and improved collaboration and communication skills contributed to the students' enhanced motivation and engagement.

Furthermore, group work in making the game has helped students plan and organise effectively. Collaborating with others allowed them to exchange ideas, share responsibilities and work towards a common objective, promoting effective planning and organisation. Interactions with group members significantly contributed to better game planning and design. Collaborative teamwork facilitated creative thinking, leading to task completion with increased efficiency and quality.

The participants have demonstrated SM throughout the game design process. They have continuously assessed their progress, reflected on their learning and learnt from others' knowledge, leading to a well-developed and influential game design.

The students have expressed excitement and positivity regarding the game becoming an OER. They believe that sharing their game as an OER will have educational value, allowing other learners to gain knowledge and develop a deeper understanding of the content. The accessibility of the

OER is also seen as a benefit, making it readily available for others to learn and engage with.

Overall, the data indicate that GBL has the potential to foster SDL and enhance students' motivation and engagement in the learning process. Moreover, collaborative group work, SM and using OERs contribute to a more effective and enjoyable learning experience. Implementing GBL and utilising OERs can be valuable strategies to promote student-centred, SDL in educational settings.

Chapter 8

# Reshaping today’s Sesotho teaching and learning through social media

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## Abstract

Teachers and learners can attain 21st-century skills but only by those who are willing to learn, unlearn and relearn new teaching and learning approaches in Sesotho lessons. The contemporary social media platforms TikTok, Instagram and YouTube offer ideal environments for 21st-century Sesotho teachers and learners to adopt crucial digital skills and competencies. Learners can use these platforms to apply their taught digital critical thinking, communication, collaboration and creativity (4Cs) 21st-century skills. A qualitative research method was employed, with these three social media platforms purposively selected to conduct a desktop study. Utilising an interpretive research design, it was found that TikTok, Instagram and YouTube can help learners solve real-life problems using critical thinking, collaboration, creativity and effective communication skills, while also instilling skills in the learning areas such as listening and speaking as well as reading and viewing, as outlined in the *Curriculum and Assessment Policy Statement* (CAPS).

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## Introduction

One of Dewey's famous quotes states, 'Teaching today's learners as we were taught yesterday is to rob them of tomorrow'. The teaching and learning of Sesotho in South Africa is far from a straightforward exercise, as Sesotho is one of the eleven official languages taught in schools from primary to tertiary level. According to Sebotsa and Koele (2020), albeit the existence of transformation:

> [*F*]rom the industrial age towards the information age, tools and methods [*used for teaching*] and [*learning of*] Sesotho have not [*been reformed*] to meet the [*needs*] of modern learners. A teacher is still leading teaching and learning process as there is little [*modern*] interactive digital approaches utilised to replace him/her in such a manner that the learner gains a certain amount of autonomy. (p. 116)

They emphasised that Sesotho textbooks have not yet been revised in a manner that would accommodate learners in the 21st century.

Teachers and learners should unlearn the old teaching and learning methods and relearn how to teach and learn in a new way that will benefit them in the 21st century. According to a Battelle for Kids report (2019), learners who are ready for complex life, as well as working environment, possess the four skills (4Cs): Creativity and innovation, critical thinking and problem-solving, communication and collaboration. All four skills cannot be attained by learners if the educators are aversed to relearn and abandoning some old teaching styles that do not drive learners towards the four 21st-century learning and innovation skills. Using social media for teaching and learning, as a vehicle that drives learners to attain critical thinking, communication, collaboration and creativity (4Cs) can be beneficial as it promotes collaboration, interaction, creativity as well as enables learners to solve real-life problems using critical thinking skills. In their study, Purwanto, Fahmi and Cahyono (2023) affirm by saying that the benefit of social media applications is that they foster teamwork; based on the fact that they give teachers and learners a destination where they can bring their thoughts together, they can be used as an important educational tool capable of enriching the learning experience.

Based on the identified problems regarding the teaching and learning of Sesotho as well as the benefits of social media platforms, this chapter suggests that social media platforms can be used to teach one of the *Curriculum and Assessment Policy Statement* (CAPS)-based language skills, which are listening, speaking, reading and viewing. According to '21st-century teaching and learning report: Educating for a rapidly changing world' (2019, p. 49), the main goal of CAPS is to:

- develop learners who can identify and use their critical thinking skills to solve problems
- work individually as well as in collaboration with other learners
- take responsibility for organising oneself as well as their activities
- collect, analyse, organise and critically evaluate information
- communicate effectively using visual, symbolic and language skills in different models
- utilise science and technology effectively and critically, showing responsibility towards the environment and health of others
- show comprehension of the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation.

All these skills have been identified as part of the 21st-century skills that fall under the 4Cs, according to Joynes, Rossignoli and Amonoo-Kufi (2019):

> [*T*]he 4Cs model is based on the [*assertation*] that 21st-century challenges will demand a broad set of skills [*emphasise*] the individual's capabilities in core subject skills, social and cross-cultural skills, proficiency in [*language*] and understanding of the economic and political forces that affect societies. (p. 12)

The author found it necessary to identify social media platforms that can be used effectively in Sesotho classrooms to promote collaboration, problem-solving and critical thinking skills, creativity as well as communication among learners. The author believes that using social media as a technological tool for teaching and learning Sesotho will increase learner's enthusiasm compared to traditional textbook-based methods.

TikTok, Instagram and YouTube have been identified by the author for effective teaching and learning of listening and speaking as well as reading and viewing activities in Sesotho classrooms. These platforms selected because of their popularity among learners as well as looking at their features, which can aid as an alternative method of completing certain tasks in the teaching and learning of Sesotho. The author believes that because of their distinctive features these social media platforms while used effectively in Sesotho lessons, can equip learners with 21st-century skills by promoting flexible learning, critical thinking skills and problem-solving, creativity, collaboration, interaction and student-centred activities. Each suggested social media platform's features will be discussed in this chapter and indicate how each can be used and for which Sesotho activities. The author found it necessary to opt for social media platforms that are commonly used by learners so that their learning becomes easy.

# Statistics of Instagram, TikTok and YouTube users

Huang and Su (2018) affirm that:

> Instagram is currently the most popular social media app among young people around the world. More than 70% of people between the ages of 12 and 24 are Instagram users. (Chen & Xiao 2022, p. 1)

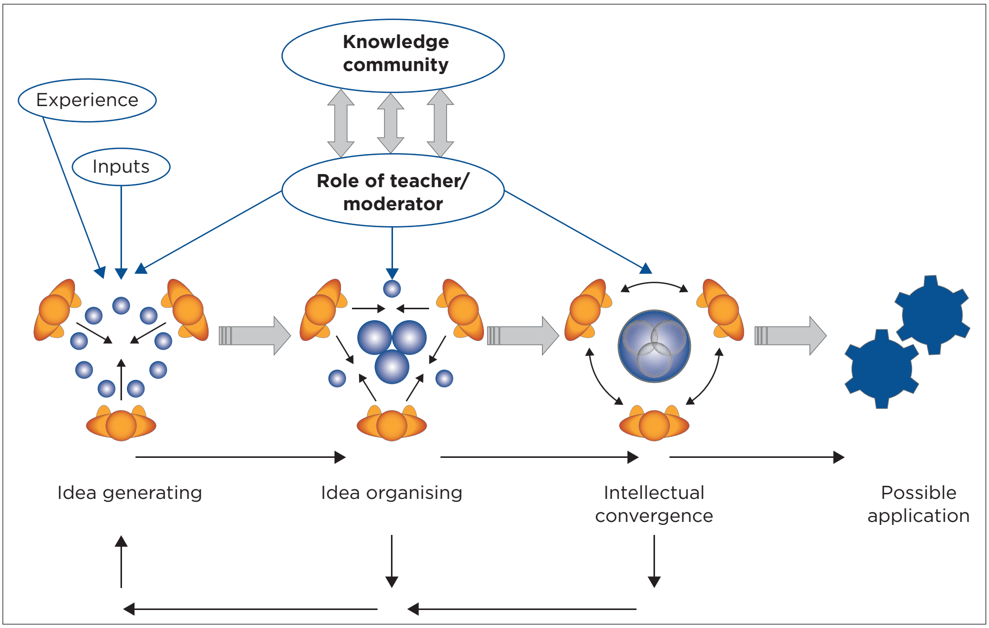
Uslu (2022) added by indicating that the most emphasised social media sites 'in the literature are Twitter, Instagram, Facebook, TikTok, Snapchat, LinkedIn, and YouTube'. In their article, Chen and Xiao (2022) indicated that the utilisation of social media is incomparably on the surge among learners because of 'globalized forms of communication and the post-pandemic rush to use multiple social media platforms for education in different fields of study'. Alhabash and Ma (2017) further indicated that learners spend most of 'their time on Instagram, followed by Snapchat, Facebook, and Twitter respectively [*and they prefer to use*] Facebook, TikTok and Snapchat for building social interactions and other social' purposes. Fan and Hemans (2022) affirm by pointing out that among the social media platforms mentioned above TikTok has become prevalent among learners as an alternative social media platform which provides services to its users such as watching, creating and sharing videos.

# Theoretical framework

## Online collaborative learning

This chapter is guided by online collaborative learning theory (OCL), which, according to Picciano (2017), was originally proposed by Linda Harasim. He further indicated that this theory places its focus on the amenities of the Internet to grant learning spaces that allow collaboration and knowledge building (refer to Figure 8.1). Picciano (2017) said that Harasim describes OCL theory as a theory of learning that puts more focus on three factors: collaborative learning, knowledge building and Internet use to reshape different kinds of education (formal or/and informal education). It consists of three segments of knowledge construction through discourse in a group:

1. *Idea generating*: The brainstorming phase, where different ideas are amassed. (Where students will be given a task and then allowed to share ideas among themselves or within the group, allowing each to gain new knowledge and ideas from one another.) Problem-solving and critical thinking skills are enabled here to allow learners to be as creative as possible depending on the task given.
2. *Idea organising*: The phase where ideas are compared, analysed and categorised through discussion and argument. Harasim (2012) quoted




*Source*: Adapted from Harasim, L 2012, *Learning theory and online technologies*, Walsworth Publishing Company, Marceline, Missouri, p. 95.

**FIGURE 8.1:** Online collaborative learning theory.

by Mnkandla and Minnaar (2017) affirms that this stage is mainly concerned with intellectual progress, and a shift towards the convergence of ideas to cluster them according to their strengths and relationships. Learners share ideas and they compare, analyse and categorise them depending on their arguments or discussion. The author believes that this is a stage where learners are enabled to communicate effectively arrange their ideas and think about how they are going to be presented. This is a stage where the learner figures out how to solve a problem or think about the strategies to do or perform a task given.

3. *Intellectual convergence*: According to Bates (2015), the final stage is where learners reach a level of intellectual synthesis, comprehension and accord. He further notes that learners can 'agree to disagree' at this stage. Communication skills are also enhanced, as reaching a common conclusion requires learners to effectively share ideas and negotiate their understanding to produce a final outcome.

In her study, Gaad (2022) indicated that OCL theory is derived from social constructivism, in which learners are encouraged to work collaboratively to solve problems through discussions. Moreover:

> Another important element of the Online Collaborative Learning model depicted above is the role of the teacher. Here, the teacher serves as a facilitator of the discussion to move [*learners*] through the process of generating, organising,

> and synthesizing ideas (Bates 2015). The concept of 'teacher' as 'facilitator' is a hallmark of learner-centred, online learning (Trietiak n.d., p. 34)

The author found the OCL theory suitable for this chapter because TikTok, YouTube and Instagram are social media platforms that require the use of the Internet to offer learning spaces that allow collaborations and knowledge building. It is the author's belief that teachers and learners can use these social media platforms effectively to facilitate collaborations between teachers and learners, learners and learners, teachers, learners and parents, or individually, depending on the task at hand. Teachers can upload or post challenging tasks as well as learning content or materials for learners so that they can develop new ideas by critically thinking about how to solve the presented problems by their teachers. After brainstorming their ideas, they can arrange them orderly to come up with a final product as an answer to the tasks given and lastly come to a conclusion if the final product or answer is correct or wrong. The relationship between this theory and 21st-century skills is collaboration that leads to effective communication skills needed for creative thinking skills so that learners can share their ideas in order to solve a problem for a positive outcome, product or answer. Laal, Laal and Kermanshahi (2012, pp. 1–2) affirm by indicating that through shared learning, learners can engage in discussion, become responsible for their own learning and thus become critical thinkers.

## ■ Literature review

The introduction of social media as a teaching and learning tool has aroused numerous researchers' curiosity. There are studies that researched the type of social media platforms that can be utilised for teaching and learning based on their different structures. Some researchers focused on how popular the social media platforms are among learners, and the time spent on each social media platform by learners. The literature reviewed by the author highlights the effectiveness of using social media platforms for learning a foreign language, emphasising that WhatsApp, Facebook and YouTube enables learners to interact directly with mother-tongue English speakers, thereby enhancing their vocabulary acquisition. It does not address how learners can be equipped with 21st-century skills using social media platforms.

In their study, Eltigami and Ahmed (2020) indicated that social media has increased the interaction of millions of people, and this can benefit the education sector in different ways. The education sector can benefit from social media platforms by using them for distance and blended learning, and more interaction of learners and their teachers. They emphasised that the use of social media platforms can benefit the teaching and learning of new languages. They chose social media platforms such as WhatsApp, Facebook and YouTube as the best social media platforms that can be used by instructors to aid learners get greater competency in language learning and use. They believe that using social media platforms allows learners to engage meaningfully with peers of higher cognitive levels, facilitating the rapid and easy sharing of knowledge and ideas. Their study indicates that such interactions make it easier for learners to acquire a foreign language from native speakers, while also enabling them to take charge of their own learning process.

Slim and Hafedh (2019) share the belief that Facebook can be utilised as a teaching and learning tool to assist learners in acquiring Sesotho vocabulary. Her study focused mainly on the field of Business Studies, and her main aim was to aid Business Studies learners to learn a language that is used in business communication. He made a comparative study by dividing learners into two groups, one group learned using the traditional method and the other group learned using Facebook. In her findings, there was no difference spotted in terms of achievement but the group that was using Facebook showed more enthusiasm and interaction while completing the task compared to the group that used the traditional method of learning.

Haque (2023) also focused on learning a foreign language through social media. She evaluated the efficacy of opting for social media as a pedagogical tool to aid learners learn foreign languages. His argument is based on the popularity of social media among the youth as a communication tool as well as an inspiration to people to learn more about the world. He believes that it can be the best tool for teaching writing skills and vocabulary, especially Facebook. The results of her study indicated that the participants bought the idea of integrating Facebook into language teaching and learning in formal education.

In addition, Nasution (2022) affirms that social media supports the teaching and learning of foreign languages, yielding positive outcomes by promoting effective reading, writing and vocabulary acquisition. She asserted that it does not only promote the mentioned skills but also boosts learners' motivation in learning. Even though she showed some positive impact that social media has towards teaching and learning of foreign languages, she picked up some challenges that it is still difficult to integrate social media with learning and giving learners assignments during learning.

In their study, Malik, Jarka and Asnur (2019) indicated that the vast number of learners using smartphones and social media contributes to vocabulary acquisition. Daily engagement with social media not only aids in acquiring Sesotho vocabulary but also facilitates an easy engagement between native speakers. They used foreign language songs as a strategy to teach foreign languages.

The consulted literature emphasised the use of social media for the benefit of mastering a foreign language (English) and allowing networking with native speakers of foreign languages. It does not give any idea of how social media can be used to enhance teaching and learning to equip learners with 21st-century skills. This chapter differs from the consulted literature in that it suggests YouTube, Instagram and TikTok as social media platforms that can be used for effective teaching and learning of necessary skills in the Sesotho classroom. Due to their unique features, the identified social media platforms can be affectively used for teaching and learning activities related to listening and speaking skills, language structures, as well as reading and viewing. The author suggested that learners can acquire the 4Cs of the 21st century through these platforms. By using these platforms, they can communicate effectively to solve real-life problems, employ creative thinking skills and collaborate with other learners, all while integrating Sesotho learning content from YouTube, Instagram and TikTok to complete the tasks assigned by their teacher.

## Methodology

According to Janelle, Brannan and Brannan (2022), qualitative research is a type of research that studies and gives a deeper understanding of real-world problems. Instead of gathering numerical data points or intervening or introducing treatments just like in quantitative research, qualitative research aids in making assumptions as well as further examining and comprehending quantitative data. Qualitative research collects participants' experiences, views and actions and answers the questions of how as well as why rather than how many and how much. This chapter used qualitative research methods because the author wanted to gather information about how TikTok, Instagram and YouTube can be used as teaching tools for Sesotho listening and speaking, as well as for reading and viewing activities. The chapter will later specify why the mentioned social media platforms had been found suitable for teaching and learning Sesotho, as well as explain further how they can aid learners in acquiring 21st-century skills, specifically the 4Cs.

## Research paradigm

This chapter adopted interpretivist research paradigm. According to Alharahsheh and Pius (2020, p. 39), the interpretivist paradigm grants researchers a chance to get into more depth by looking for experiences and insights into a certain social context. Pervin and Mokhtar (2022) affirm by saying that one of the positive characteristics of this paradigm is that interpretivist researchers can use their diverse views on a problem not only to give a description of objects, people or events but also to deeply comprehend them in their socio-cultural contexts because they think that they entail same belief systems in the society they are living in.

The interpretivist paradigm allowed the author to view the world through the experiences of the users of social media, examining which social media platforms are mostly used, their features, how they can help Sesotho learners develop the 4Cs of the 21st century and the age groups most actively using these platforms. The author utilised these experiences to suggest the idea that TikTok, Instagram and YouTube can be used for teaching and learning Sesotho because the majority of these social media users are learners.

> The use of social media is incomparably on the rise among learners, influenced by the globalized forms of communication and the post-pandemic rush to use multiple social media platforms for education in different fields of study. (Chen & Xiao 2022, p. 1)

## Sampling

The chapter adopted purposive sampling because it allows the researcher to select a certain group of individuals or units for analysis. Participants are selected on purpose for a particular reason or objective in mind when selecting the sample, based on the characteristics or qualities that the researcher is concerned with probing. Thereby:

> Purposive sampling strategies are different from move away from random form of sampling and are strategies to make sure that specific kinds of cases of those that could possibly be included are part of the final sample in the research study. The reasons for adopting a purposive strategy assume that, given the aims and objectives of the study, specific kinds of people may hold different and important views about the ideas and issues at question and therefore need to be included in the sample. (Campbell et al. 2020, p. 654)

The author made use of purposive sampling because she was able to choose YouTube, TikTok and Instagram looking at their popularity among learners as well as their distinctive features. After intensive research about these social media platforms, the author realised that they can be incorporated into Sesotho classroom activities to help learners attain the 4Cs of 21st-century skills.

## Data analysis

Drawing from one of Picasso's famous quotes: 'If there were only one truth, you could not paint a hundred canvases on the same theme' the author argues that it is appropriate to classify YouTube, TikTok and Instagram differently, as they do not fit neatly under traditional categories of texts and images. In their study, Zhang and Wildermuth (2009) indicated that content analysis allows a researcher to understand social realities in a subjective but scientific way. The reality in this study is that social media is used by an immense number of learners as discussed in the introduction and the researcher understands how each social media platform is being used hence why the researcher suggested how they can be used in the context of teaching and learning in the Sesotho classroom. The researcher found this definition as a justification to use content analysis to analyse how YouTube, Instagram and TikTok can be used to teach reading and viewing as well as listening and speaking skills in a way that learners will be equipped with the 4Cs of the 21st-century skills.

## TikTok as a teaching tool

The following overview is provided for TikTok within a media outlet description:

> TikTok is a video-sharing app that allows users to create and share short-form videos on any topic. It is mainly mobile based, although one can still watch TikTok videos using the web app. The platform allows users to get creative with their content using filters, stickers, voiceovers, sound effects, and background music. (*Malaya Business Insight* 2023)

Creators on the platform are getting extremely creative with their content, putting together funny sketches and informative videos.

> TikTok is a platform that, in addition to entertaining videos, gives a young and global audience access to a new format of short educational videos created by expert authors. This perspective presents several opportunities for the dissemination of knowledge in various fields of science concisely and effectively. TikTok is a video-sharing social networking service that is rapidly growing in popularity. It was the second most downloaded app in the app world in 2020. (Atinafu & Demelash 2023, p. 1)

Alkamel and Chouthaiwale (2018), in Felita and Jita (2023, p. 6), indicated that using resources such as images, animations, audio and video clips enhances the teaching and learning of language. Shrosbree (2008) affirms this by indicating that videos can be used to keep and evaluate learners' practical performance of a language. He further said it can be used to assess presentations and public speaking, as well as being applied to pair work and consortium discussion tasks.

Even though TikTok is meant for entertainment, there is plenty of educational content shared on this platform. Atinafu and Demelash (2023) affirm by saying that apart from allowing users to post their videos dancing and lip-synching as well as talent showoffs, there is a vast increase of users sharing vital knowledge because of initiatives such as #learn on TikTok. Through this platform, learners can create videos that will attract viewers in which they perform different tasks but in a creative way. According to

Young and Fluentize (2021), videos offer a real way to narrate stories. The author believes that through educational video the learner is motivated to feel ownership of their own learning and associate themselves with the course's stories.

This chapter suggests that TikTok can be used in Sesotho lessons that are aligned to the CAPS curriculum through the creation of model videos created by teachers to develop the following skills: listening and speaking as well as reading and viewing where learners will engage in TikTok reading challenges, language structures activities and the teacher can foster Sesotho reading activities by creating reading clubs on TikTok account. The author believes that it is through the teacher's scaffolding that learners will be motivated to perform well by being TikTok's creative content creators in relation to listening comprehension, reading, prepared speech as well as assisting learners with homework through TikTok live stream sessions.

## ☐ Listening comprehension through TikTok

TikTok can enhance learners' interest and participation in language learning, which can result in better communication skills. Gunawan, Taslim and Satrika (2023) indicated that the application of TikTok has significance in improving the learners' speaking skills in terms of fluency and accuracy. Under listening and speaking teachers can do listening comprehension with their learners using TikTok. This can be accomplished in the form of using Sesotho audio as well as short Sesotho video clips found on TikTok that will allow the learner to listen or watch three times. This application (app) allows the audio and video to repeat more than once and the role of the teacher in this activity will be to instruct the learners to stop the audio or video after it is played three times. Then the teacher can ask questions that will be answered orally by the learners. Because this activity is meant to equip learners with listening skills, using this platform for listening activity can increase learners' interest and capture their attention. Liu (2023, pp. 161–162) supports this by saying that using TikTok videos in the classroom engages learners' attention, increases their interest in learning and improves their comprehension. In this case, learners will listen attentively and follow all the necessary steps for listening, with the aid of the teacher being a facilitator. This will also help the teachers with classroom and time management. This activity does not only promote listening skills but also promotes creative thinking and communication skills because after listening there should be communication between learners and their teacher. The learners are supposed to think critically to answer questions based on the comprehension they listened to. They can work in groups or in isolation; it will depend on the instructions of the teacher in charge.

## Delivering prepared speech using TikTok

According to a Grand Canyon University report (2023), making a TikTok video may help learners develop their public speaking and presentation skills. TikTok can help learners rehearse their prepared speech to be delivered in class. Teachers can encourage learners to practise their three-minute speech using TikTok because it can give learners an opportunity to re-record the presentation in the form of a video until the learner is comfortable and confident enough to record and upload a final video. By rehearsing their speech using TikTok, learners' communication and time management skills will be developed, and their confidence will be boosted. When a learner presents with confidence, time can be saved because the learner will present within a given time frame as instructed by the teacher.

## Dialogue presentation using TikTok duet

The teacher can make use of TikTok duet as another option for dialogue presentations. This form of presentation can fascinate learners and perfect their communication skills. In their study, Zhen et al. (2022) indicated that after using the TikTok duet challenge to improve communication skills in Grade 4 English Second Language classroom, there was a progress in learners' conversation skills. He further affirms that challenges in TikTok have the potential to improve learners' ability to have meaningful conversations. In the Sesotho classroom, the teacher must be selective when they give learners tasks to present using a duet challenge. Oral presentations involving hands-on activity can be carried out through the TikTok duet challenge because they give learners an opportunity to lead their own learning and enjoy their tasks. Presentation done in pairs can be suitable for duet challenge, an example can be a presentation of Sesotho clan groups, where two learners are engaged in conversation. In this activity, one learner asks a question and the other one answers. The clan praises are done to see if one knows one's identity because in Sesotho one's pride lies in their own identity. Example:

'O tswa kae?'
'Ha mmantilatilane.'
'Wa ja eng?'
'Bohobe.'
'Wa futswela ka eng?'
'Ka metsi a pula.'
'Thella he!'

In this game-like presentation, which is a dialogue between two learners, the learner who answers will have to say his clan praise in full and he or she must be fluent when reciting the clan praise. This activity promotes good communication skills and collaboration, and it can be more interesting when done on the app rather than when learners present it in front of the classroom. Apart from clan praises, Sesotho oral advertisement can also be presented in pairs, as well as short drama or dialogue and oral interviews can be done using the TikTok duet challenge.

## Teaching Sesotho grammar and vocabulary through TikTok videos and audios

The author suggests that Sesotho grammar can be taught through TikTok using video and audio clips. Alvarez et al. (2024, p. 7) affirm by saying that, through the interviews, the results showed that more students confirmed that TikTok always aids them in rallying their grammatical skills in terms of discovering and comprehending new words, correcting and refining grammatical mistakes, and distinguishing proper and common nouns. The author suggests that the teacher can make use of the Sesotho video clips that are found on TikTok to teach Sesotho grammar. Some of Sesotho's video clips on TikTok involve body movement, especially when the presenter on the video shows different emotions. In this case, the teacher can adapt the total physical response method to teach Sesotho grammar using such videos. It will improve learners' critical thinking abilities by motivating them to examine and analyse the language used in the videos. According to Sanako (2023), total physical response can be deployed by teachers to assist their learners learn new vocabulary and to show understanding of words, phrases and sentences.

In their study, Alvarez et al. (2024, p. 9) indicated that TikTok contributes to increasing learners' vocabulary in an effective way because of its attractive features. The author suggests that teachers can use TikTok to help their learners learn new Sesotho vocabulary using TikTok videos and audio clips. They can do that by playing a video or audio clip and instructing their learners to indicate the new vocabulary they have learnt from the video clip and give learners vocabulary tasks based on the Sesotho video or audio clips they watched. This will create critical thinking skills as the teacher poses a challenge to learners to provide meaning in context. Another idea is the idea of the teacher using the translation option on TikTok, where the learner translates the song when the video clip plays. In this case, instead of translating, the teacher can provide synonyms of words from the Sesotho songs and video clips, giving learners an opportunity to acquire and instil more Sesotho vocabulary.

## Teaching reading through TikTok challenge

In their study, Bonifazi et al. (2022) define a TikTok challenge as a kind of competition that kicks off when a user uploads a video with certain actions and a specific hashtag and invites other users to partake in imitating the same video in their own way. Fan, Luo and Wang (2023) affirm by indicating that common challenge contagion can be measured through repetition reach, that is, the number of users posting videos of their participation in the challenges. Fan et al. (2023) indicated that the 'uniqueness of the TikTok platform where both challenge content and user preferences are evolving requires the combination of challenge and user representation'.

The author suggests that TikTok #teleprompterchallenge can be used as a strategy to promote effective reading in the Sesotho classroom. The teacher can create reading-aloud activities through #teleprompterchallenge to enhance effective reading in the Sesotho classroom. Using the teleprompter challenge for effective reading in the Sesotho classroom can enhance creativity, more participation, improve online learning and promote inclusivity. With a clear understanding of their applications, coupled with ethical considerations and an eye on the future, educators can harness the power of teleprompters to create more creative, engaging, effective and inclusive learning experiences for their learners. The author suggests that this activity can be more effective in the Sesotho classroom setting, as it promotes creativity and enthusiasm in learners. According to Brooks (2023), teleprompter challenge can help learners to be cautious about three things: Word recognition, fluency and language proficiency.

## Reading clubs through TikTok livestreams

The author suggests that TikTok livestreams can be used for reading clubs as they promote good communication skills and collaborations. Teachers can create a reading club TikTok profile for learners, using TikTok live sessions for interaction of learners, where they will meet at least once or twice a week to engage in reading activities. In these live sessions, the teacher will be the host; they will be able to control the live sessions by first setting the goals of what they want to achieve from the TikTok Sesotho reading club and then requesting learners to identify Sesotho texts they wish to read. Giving learners an opportunity to choose Sesotho literary texts that may be aligned with their interests, e.g. *Mamello* by Lebohang Jeanet Pheko (Tafelberg 2017) will help increase their interest and engagement in Sesotho reading activities.

## Using TikTok live streams for homework assistance

According to Langreo (2022), a study conducted in the United States of America (USA) regarding the use of TikTok revealed that a general survey of TikTok users in the USA found that 69% 'of those who use TikTok for educational purposes said it [*aided*] them [*to*] complete their homework'. She also stated that teachers can utilise TikTok to create short videos on specific subjects for students to watch. Edwards (2022) added that teachers 'can create a short and [*precise*] video that can be [*downloaded and*] watched multiple times so students are able to revisit the guidance when working on the task'.

The author suggests that homework questions and answers can be done through livestreams, allowing learners who do not understand the homework time to seek clarity from the teacher. Even if learners have not tuned in, teachers can go live and record themselves explaining the homework, so that learners who did not join the live can have access to the video either by downloading it or it being shared with them by other learners or the teacher.

Another useful feature is the ability to create a video responding to a specific comment. With this feature, the comment will be highlighted as an overlay in the teacher's original video. This is a perfect way to answer questions, clear up any doubts and follow learners' requests. Here the teacher can answer learners' questions regarding the previous video he/she presented about a certain topic or try to explain homework, or an assignment given to students so that they may not encounter some problems when they are supposed to write. Because some learners come from families of illiterate parents or caretakers, and it is not always easy for them to understand the instructions in the classroom; hence, teachers may have to make a follow-up by creating content for an assignment explanation to cater for learners at risk.

In support of this information, Oden (2020, p. 5) posited that some students may not complete homework because they simply do not know how to do it, as a result, teachers can use this platform to help them. This method is straightforward as the answer goes directly to the student who poses the question. It can benefit learners who are shy in class, and who are always quiet while they are supposed to ask some questions in the classroom. Here the learner can freely ask a question in the form of a comment text and the teacher will quickly answer the question using a video reply. Sometimes video replies can be done by students themselves answering each other's questions.

## Instagram usage

According to Salehudin et al. (2019):

> [*B*]ased on the results of calculations and data analysis from [*the*] quasi-experimental study he did, it showed that the average learning outcomes in the experimental class that used creative learning assisted by social media Instagram [*was*] higher than the control class that used problem-based learning. (p. 860)

Instagram has fascinating and attractive image display features, easy uploading, visualisation and editing of images for better comprehension of the contents. It uses hashtags (#) and viral sound audios to help the posted content trend on the platform. Instagram automatically categorises the posted content according to its nature and recommends it to people who may be interested in it which makes it easier to get followers and exposure. Therefore, applying Instagram to enhance teaching and learning processes enhances these through its facile use, hashtags, as well as its ease in advancing visual topics which is balanced against its weaknesses such as passive learning and the necessity for staff to monitor its usage. Douglas et al. (2019) affirm by saying that 'creative learning [*done*] by social media Instagram for graphic design subject promotes a real effect in the development of concept [*application*] learning outcomes for' learners.

Because modernisation has impacted most of the indigenous knowledge, learners who are doing Sesotho as a subject face difficulty when it comes to learning about different Sesotho oral literature. There seems to be less interest when it comes to learning of Sesotho oral literature.

> In oral literature, teachers resort to calling upon language and cultural experts and the elderly. While this is not discouraged at all, it is believed that new digitised methods would render the learners more independent as the teacher would only serve as a facilitator, while students would be discovering language concepts on their own through assignments and other works they would be assigned. (Mosisili & Malefane 2020, p. 123)

'People use Instagram not only for communication but also for identity seeking and self-expression' (Jun 2022). For this reason, the author suggests that because of decreasing interest in learning Sesotho, oral literature Instagram can be used as the best tool for teaching Sesotho oral literature, allowing learners to express themselves by engaging in different oral literature activities. Learners can express their different Sesotho identities through traditional attire, posting Sesotho indigenous houses, tools (domestic) as well as food. Teaching riddles will be included as part of oral literature.

In Chapter 13 of a Grade 10 Sesotho learner's book (p. 154), it states '*Tseba botjhaba le Bonono*' [Know your culture]. The learners are expected to know Sesotho indigenous clothing, utensils as well as games by looking at the blurry picture in the textbook. In a situation like this one, the author suggests that the teacher can use Instagram to teach the indigenous knowledge required in the textbook. In Chapter 13 of Mmampodi's Grade 11 Sesotho learner's book, the theme also focuses on Sesotho culture, stating: '*Botjhaba le Bonono*' [culture]. There are pictures of different Sesotho household utensils which learners are supposed to know. These kinds of activities can be done using Instagram by posting pictures displaying the different kinds of Sesotho indigenous household utensils and clothing. Sesotho indigenous food, utensils and clothes can be taught by offering visual information using Instagram.

Instagram's visual nature possibly extricates it from social media that are relatively more text-based, and this can motivate teachers to use it as visuals. According to Sieber and Hatcher (2012, p. 6), teaching with images is a powerful way to support learning and the skill of classification, which improves learners' development of higher-level reasoning and assessment abilities. It augments students' sensory literacy, allowing them to develop the competence to get evidence through sight and to analyse and articulate that evidence. Yeboah, Asante and Opoku-Asare (2016) indicated that it 'offers latitude for shaping lessons to students' interests and needs, thereby enhancing the potential of these strategies to be realised in the classroom'.

While helping learners complete this task, teachers can take advantage of Instagram by creating hands-on activities where students are instructed to wear their different Sesotho traditional attire, create household utensils using grass or clay and showcase their work, which will be captured in the form of a photo which will be uploaded on Instagram as a story. The posted images will help learners to know the different groups of Basotho's dress codes, as well as household utensils. By sharing the information on Instagram not only those learners will be educated but the whole Basotho community at large. The pictures may always serve as a referral for learners who need knowledge regarding Sesotho traditional attire and household utensils.

Outcomes in the prescribed Grade 10–12 Sesotho learners' books emphasise research into indigenous traditional cultural expectations, particularly regarding the roles and development of adolescent boys and girls up to the stage of marriage. The author proposes that learners interrelate with these concepts through role-play activities, such as enacting Sesotho marriage rituals, which can be captured as Instagram reels. This approach holds pedagogical value by combining indigenous knowledge with active, participatory learning, encouraging collaboration and leveraging digital platforms (here, Instagram as mentioned above) to make traditional content, such as learner's books, stimulating and relevant to present-day learners. 'Gen Z has grown up with faster flows of communication than any generation before them. They've been conditioned to expect information quickly, conveniently [...]' (Vuso 2025). Users (in this case, learners) can reaccess reels on and save them as bookmarks to look up later or to ask questions or further explanation amongst the post's users and content creator (in this case, the teacher) who receive notifications. The teacher can clarify the questions or comments on the post when convenient, promoting flexibility while teaching and learning. Learners can bilaterally engage with the content in the learner's books and those on the #Sesotho Instagram reels and acquire new knowledge, while also attaining the 4Cs.

Learners can be engaged by dividing them into groups of five and assigning each group to cook a different Sesotho indigenous food, and the teacher will be a facilitator. The learners will go live on Instagram with their indigenous food preparation allowing instant interaction between them and their viewers. The Instagram Live will include a food presentation in which the learners will present the name of the food they are preparing, and the ingredients used and show step-by-step how each is prepared. All learners will strive to make their food appealing knowing that they are on social media. This method sounds better than when a teacher comes with a textbook and reads or narrates to learners about Sesotho indigenous food.

When teachers design activities that unlock the power of hands-on learning, they amass practical experience and nurture new skills by letting students explore, experiment and discover. As a result, learners will be excited that their work will be posted on Instagram, motivating them to ensure that everything they prepare is organised perfectly. This kind of activity can motivate learners to be careful while working on their projects and enable active learning, which will allow them to remember every detail of the activities they have done. Teachers can use the hashtag #Sesotho to create visual reels on social media, showcasing photographs, illustrations, videos or clips that complement Sesotho lessons, stimulating learners' interest, fostering the 4Cs.

## Teaching visual literacy through Instagram

Supsakova (2020) reports a substantial increase in c, with current figures reaching approximately 53 million. In their study, Hapsari, Januarsa and Resmisari (2020) indicated that Instagram as social media demonstrates its capability to upsurge learners' impetus in attaining learning goals. Learners are taught visual literacy so that they can be able to analyse and provide meaning to information presented in the form of an image and to allow them to communicate their own thoughts via the principles of design and interpret visuals through their own messages. In his study, Supsakova (2020) affirmed by saying that visual literacy is the learnt ability to exactly infer visual messages and to establish such messages. He added that the interpretation and ability to create can be categorised similarly to reading and writing hard copy texts. Visual literacy relates to a significant aspect of acquired skills, such as the ability to comprehend.

Given Instagram's potential as a learning tool, the author proposes that teachers can leverage the platform in Sesotho classrooms to develop learners' visual literacy, particularly through analysing cartoons and advertisements. For cartoon analysis, the teacher can upload images to a dedicated Sesotho Instagram account managed by the teacher as the administrator. Learners can engage with the content in one of two ways: Students may log in to the classroom Instagram account on their available smart devices to view and analyse the cartoons independently, or the teacher can remain logged in and digitally project the cartoon onto a screen, guiding the analysis for the whole class if individual devices are unavailable. In either scenario, Instagram features, such as image captions, comments and story highlights, can be used to prompt critical thinking, discussion and collaborative interpretation, allowing learners to interact with visual subject content in ways that mirror authentic social media engagement.

The author believes that this kind of activity can bring a feeling of excitement to learners because of the quality of the display of the cartoon, which is far different from the common one of having a cartoon in the textbook. Jun (2022) affirms by saying that Instagram allows users to upload digital images that can be edited with filters, and it focuses on an image-oriented communication method. Because of its nature of allowing the user to edit the pictures in an attractive way, it can give the learners an eye-catching version of the cartoon they have to analyse, which will increase their interest and creative thinking skills that will allow them to analyse the cartoon properly.

In addition to cartoon analysis, the advertisement can also be taught through Instagram as a creative writing task. The teacher can give learners a task to write an advertisement and upload it to the Instagram handle. Using this method will allow the learners to be as creative as they want because of the Instagram effects that allow the user to create attractive pictures. They can either do the task in pairs or individually, hence allowing the learners to collaborate and communicate effectively while working together.

## Teaching Sesotho riddles using Instagram carousels

According to Meech (2024), an Instagram carousel, also referred to as a carousel post, is a versatile format that allows users to include up to 10 images or videos in a single, swipeable post. Because of the Instagram carousel system, teaching riddles can be done in the form of an Instagram story. A teacher can create an activity using a question sticker which allows students to interact with the question and give answers in the answer space. Another alternative is to post an answer to the riddle as a picture on the first carousel and let the learner write an answer to the posted image on the second carousel. On the other hand, the teacher can use a story to display a question, and the second story may be where the student can write and the third story an answer to the riddle. This kind of activity may serve as a game to students because after writing their answers, they are curious to know if they are right or wrong, and they are in a hurry to view the third story, which has the correct answer. It is like using cue cards, but it is more interactive and triggers learners' curiosity to see the answer in the hidden story.

### YouTube

Using YouTube for teaching and learning Sesotho can be beneficial in different ways. In their study, Husna et al. (2019, p. 224) affirm by saying that YouTube promotes critical thinking skills in learners because they are given an opportunity to appraise, test, query, object and analyse one another's work through the comment feature. The author suggests that YouTube should be used for uploading learners' videos where they present Sesotho indigenous games, different types of Sesotho songs and praises. This will allow learners to work collaboratively with each other, and develop communication skills as they share and delegate tasks among themselves. Creativity can be promoted as well as they will have to be creative in their different performances. Such activities form part of presentation skills within listening and speaking, as DBE-prescribed in CAPS-based Sesotho learner's books under the theme 'Know your culture'.

### Using YouTube as a teaching tool for teaching a novel and drama

It can again be used to upload teachers' novels or drama analysis videos. The teacher can record themselves analysing a literary text and then upload the video onto YouTube for learners to access it. This will replace a common method of listening to literary text analysis presented on radio stations. Another way is to give learners instruction for role-play based on the DBE-prescribed Sesotho novel or drama that they are reading in class and then upload it on YouTube. According to Boumediene, Berrahal and Bouakkaz (2019), the integration of YouTube in teaching and learning literature is helpful, vital and rousing, and exposes learners to a better comprehension of the novel and its plot, which perfectly contributes to upgrading their accomplishments in literature classes.

## Conclusion

Being hailed by researchers and educators as crucial skills, the 4Cs of the 21st century are lifetime skills that learners will carry with them beyond the classroom. Students should recognise that collaboration teaches them how to work with and accommodate others, acknowledging that people have different ideas. It is important to understand that learning occurs through sharing one's ideas with others. They must know that communication skills will aid them beyond the classroom as it will help them know how to articulate themselves perfectly in different situations of life, while critical thinking skills will play an important role in discovering as well as working through scepticism. Lastly, creativity is essential for thinking outside the box in everything they do. To develop these skills, Sesotho teachers must find more engaging ways to teach by incorporating what is in learners' best interests into their daily classroom activities. A majority of researchers have proven that social media is a platform widely used by learners. The author suggests that integrating it into Sesotho classroom activities will stimulate the learning process and make each session engaging and worthwhile.

This chapter offers suggestions for using TikTok in Sesotho classrooms. The author recommends using TikTok challenges, live streams, videos and audio plays to enhance teaching and learning in areas such as listening comprehension, real-life situation-based oral presentations, homework assistance, and vocabulary and language structure instruction. In her discussion, it was evident that integrating TikTok into Sesotho classrooms helps learners become creative thinkers by producing content, such as oral presentations and teleprompter reading challenges. It enables them to solve real-life problems and become effective communicators. Additionally, learners can collaborate effectively with their peers by participating in TikTok live stream question-and-answer (Q&A) sessions, while also learning vocabulary and language structures through video and audio clips.

Instagram has been suggested as a useful tool for promoting critical thinking skills by enabling learners to effectively analyse cartoons and present Sesotho indigenous knowledge activities through visual presentations. Additionally, Instagram can serve as a teaching tool that allows learners to engage in creative writing activities, such as giving directions or instructions for a specific recipe or any task that involves providing instructions. YouTube has been proposed as an effective teaching tool that promotes collaboration and creativity. It can be utilised for presenting Sesotho games and songs, as well as serving as an alternative method for teaching novel and drama analysis. The author argues that through the use of these social media platforms, learners will develop the 4Cs of 21st-century skills: communication, collaboration, creativity and critical thinking. When learners are well-equipped with these skills, they will be better prepared to apply them in their daily activities outside the classroom.

The author strongly recommends that Sesotho teachers incorporate social media platforms as teaching and learning tools. This integration can help learners use technology effectively, develop good communication skills, collaborate with peers, foster creativity and enhance critical thinking skills. It would be advisable for other Sesotho researchers to explore additional Sesotho activities and social media platforms that are not covered in this chapter and to propose their own suggestions for how these can be utilised to promote effective teaching and learning that benefits 21st-century learners. The author also urges other researchers to conduct further studies on how teachers can develop protection strategies while using social media as a tool for teaching and learning.

Chapter 9

# Utilising LEGO® to teach STOMP(I): Play-based pedagogy in Afrikaans Additional Language education

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## Abstract

In realising the need to align teacher training with teachers who can teach and function within a changing environment, the development of adaptive expertise has become essential to ensure 21st-century skilled teachers. The term *adaptive expertise* was first coined by Hatano and Inagaki (1986), who suggested adaptive expertise as opposed to routine expertise, which refers to 'performing a specific set of skills in response to familiar challenges'. In contrast to routine expertise, individuals with adaptive expertise can not only work efficiently but also demonstrate the ability to be flexible and innovative in their application of procedural knowledge. The diverse South African classroom requires teachers to be innovative, adaptive and critical thinkers.

This chapter focuses on the integration and development of adaptive expertise among pre-service teachers. It presents the findings of a research study that employed a combination of technology and play-based pedagogies to enhance these skills. The unique contribution of this chapter is its exploration of how technology and play-based pedagogies can foster and develop adaptive teaching expertise.

Practical examples will be provided to illustrate how the implementation of technology and play-based learning in the Afrikaans curriculum contributes to the development of pre-service teachers' adaptive expertise.

## Introduction

In the South African educational context, language instruction has always been a contentious subject, as South Africa has 12 official languages (Patrick & Bhengu 2023). The question of the teaching instruction of Home and First Additional Language, as prescribed subjects in South African education, has been the area of study of numerous research (Banda 2000, p. 51; De Klerk 2002, p. 30; Foley 2010). This, among other aspects of language education, creates inquiries into the challenges of accessing language tuition in schools for prescribed First and Second Languages, which often result in conflicts among teachers, pre-service teachers (students) and learners. The approaches used to teach these prescribed languages in Grades R–12 further contribute to such conflicts. In-service and pre-service teachers, in particular, struggle to teach a First or Second Additional Language in the Foundation Phase (Grades R–3), which forms the building block of language education and should result in learners' successful language skills to support them in the next school phases. (Mayaba, Ralarala & Angu 2018, p. 2; Songxaba, Coetzer & Molepo 2017, p. 1).

Acquisition of Afrikaans as a First or Second Additional Language is not the only factor that plays a part when Afrikaans is being taught, but also the pedagogy, and how teachers approach Additional Language teaching. The coronavirus disease 2019 (COVID-19) demonstrated that in-service and pre-service teachers must develop a deeper understanding of factors that may affect their approach to language education (Godber & Atkins 2021; Jandrić et al. 2022, p. 960; Zhao & Watterston 2021, p. 4). They must develop skills to teach effectively in different varied educational environments and adapt their method of instruction when needed. This is even more pertinent in a diverse society like South Africa that requires teachers to be equipped with 21st-century skills. In order to support pre-service teachers to function in such circumstances, an adaptive expertise development could be used.

Teachers' knowledge and skills play a vital role in successful Second Language acquisition (SLA) (Neeta & Klu 2017, p. 260). Being experts in teaching and being able to adapt to teach in diverse contexts, is essential in the teaching profession (Anthony, Hunter & Hunter 2015, p. 116; Mylopoulos, Kulasegaram & Woods 2017, p. 665). Teachers thus apply adaptive expertise in their profession. To effectively develop adaptive expertise, teachers should shift their focus from traditional learning environments and approaches to immersive holistic pedagogy and environments that are designed to provide a more complex understanding of their profession (Anthony et al. 2015, p. 109). This can be achieved through the use of strategies that are geared towards a more nuanced understanding of teaching and the epistemological orientation of students, especially in the South African context.

One point is clear: teachers and pre-service teachers must be able to adapt their teaching to the diverse South African educational context. In this chapter, the researchers argue that a play-based learning approach may develop adaptive expertise and aid teachers and pre-service teachers in their aim to teach Afrikaans First Additional Language. Using LEGO® Six Bricks® as a manipulative could not only aid learners' learning, but the adaptive way that pre-service teachers acquire Afrikaans syntax could shape adaptive pedagogical approaches and shape pre-service teachers' perceptions of language education. This is not necessarily the way that they have experienced teaching in the past, but a different approach.

This chapter aims to explore and answer the following research questions:

1. What do pre-service teachers know about STOMP(I)[1] as a tool to teach Afrikaans syntax to First and Second Additional Language learners?
2. What are pre-service teachers' perceptions about the use of LEGO® Six Bricks® as a manipulative to teach STOMP(I)?
3. To what extent does the use of LEGO® Six Bricks® facilitate pre-service teachers' adaptive expertise in the education environment?

# Literature review

## Adaptive expertise

The sudden emergence of the COVID-19 pandemic and its subsequent national lockdowns undoubtedly illustrated how in-service and pre-service teachers should be able to be flexible in tailoring their methods of instruction to differing contexts, such as online education and assessment, which had to be adapted during the pandemic period, and the diverse needs of learners. According to Granziera, Collie and Martin (2019):

> [*T*]eaching is characterised by constant change and occurs in a dynamic and unpredictable environment. Being able to adapt to meet the novel and changing situations that occur in these ever-changing environments is an important capacity for thriving and effective teachers (p. 60).

Not being able to adapt may lead to learners falling behind or struggling to learn. It can be argued that a critical factor of teaching should be the aim to move on from a traditional curriculum and teaching strategies. To move towards an environment that is aimed to give learners a space where they could participate in the learning process, and not just listen to the repetition of facts, or rewrite facts in their workbooks as a repetitive exercise. Engaging learners in the learning process compel in-service and pre-service teachers to be able to develop effective strategies and practices that aim to support the required learning process. This aligns with the argument that in-service and pre-service teachers should have adaptive expertise. Adaptive expertise was first used by Hatano and Inagaki (1986) in 1986. They focused on the skills that individuals develop in response to certain tasks and situations. It implied that a person who has adaptive expertise is a lifelong learner and can adapt their routine if needed. De Arment et al. (2013, p. 225) argue that 'an adaptive expert presents a more flexible orientation to problem[-*solving*] and knowledge construction, whereas a routine expert tends toward familiar approaches to new situations'.

1. STOMP(I) is an acronym used to teach sentence formation to Afrikaans First Additional Language learners. A full explanation of the acronym is provided on page 193. The components of the acronym are: Object, Manner, Place, Verb 2, and Infinitive. **S**ubject, Verb 1, **T**ime, **O**bject, **M**anner, **P**lace, Verb 2 and **I**nfinitive.

Bransford et al. (2005a, p. 22) argue that the teaching profession needs to develop a variety of strategies and practices that will empower teachers to improve the quality of teaching. According to Bransford et al. (2005b, p. 85), adaptive expertise should be seen as the standard for becoming a professional teacher. One important aspect that may influence teachers' effectiveness and approach to teaching, is their instructional environment (Hall & Kidman 2004, p. 331).

It is highly challenging for pre-service teachers to grasp the complexity of the process they undergo in developing effective pedagogical strategies. Many new teachers assume that they know how to teach because of their experience (Botha 2020, p. 60; Darling-Hammond 2006, p. 309; Lortie 1975). They also face various problems when it comes to learning how to use their knowledge and skills.

Bransford et al. (2005b, p. 85) state that being an adaptive expert translates to an individual who can select between routine, and adapting that approach, while being able to explain and justify their decisions. Adaptation should not be done without reason; it should have sound justification as part of the decision process.

The concept of adaptive expertise is a complex construct that is often used to describe the various skills that can be acquired through a combination of traditional and innovative practices (Mylopoulos & Regehr 2009). The skill is not one single skill, but rather a set of interconnected skills that can be used to achieve a different objective (Mylopoulos & Regehr 2009, p. 130). Although it may not always be possible for pre-service teachers to quickly identify and solve certain problems, adaptive expertise is the motivation that they need to seek, improve their skills constantly and not stagnate in a teaching approach or method. This will lead to them being a well-rounded teacher once they enter school. Granziera et al. (2019) emphasise that:

> [/]ntegrating targeted and specific strategies to promote adaptability, and a range of practical activities, may be effective ways for pre-service teachers to connect the theory of educational psychology to actual practice: 'Moreover, such strategies may not only be useful for preparing teachers to adapt to novel situations in their classrooms, but also to prepare them for the uncertainty that can arise when faced with situations not covered by university courses'. (p. 61)

The teaching environment expects pre-service teachers to be able to transfer their skills and knowledge to teach in different situations. In order to improve their teaching, adaptive expertise could give these pre-service teachers the confidence to adapt their routines and address problems that they may encounter, while they prepare to be teachers, and, subsequently, for the teaching profession itself. One of the most important skills that teachers need to develop to improve their performance is adaptability. This is because they often face unpredictable and challenging situations when working with students (Darling-Hammond 2006, p. 300, 2014, p. 555).

Adaptive expertise may not be something that pre-service teachers are comfortable with, or able to use efficiently. It is therefore important that their pedagogy is challenged by the way that they are being taught. In this chapter, we report on our aim to do just that to challenge their pedagogy on how second language learning, specifically in reference to Afrikaans sentence structure, should be taught.

## Afrikaans Second Language learning

Second language acquisition (SLA) refers to the process of learning a second language after the acquisition of the mother tongue or first language has been established. (Hoque 2017, p. 1). Second language acquisition is the process of learning other languages in addition to the native language, and it involves the systematic study of how people learn a language other than their mother tongue (Hoque 2017, p. 1). Ferreira and Kaiser (2022, p. 220) argue that differentiation between the terms 'second language' or 'foreign language' is crucial and dependent on the context, for instance, the mother tongue. In a context where the non-mother-tongue speaker is exposed to the target language daily, the term 'second language' is used. Whereas the term 'foreign language' is used in the context when the non-mother-tongue speaker is aiming to learn a language that he will be exposed to in the future (e.g. travelling to a foreign country). This chapter will focus on second language learning, as non-mother-tongue speakers are exposed to Afrikaans, one of South Africa's 12 official languages, on an almost daily basis. For the purposes of this chapter, it is also important to distinguish between 'language learning' and 'language acquisition'. 'Language learning' refers to the formal study of a language within the classroom, whereas 'language acquisition' involves acquiring a language with little or no formal instruction. (Hoque 2017):

> Learners acquire language through a subconscious process, where they are unaware of grammatical rules (Hoque 2017, p. 2). To acquire a language, they need a source of natural communication, which, for the first language, is usually the parents or caregivers (Hoque 2017, p. 2). Language learning, on the other hand, is the result of direct instruction in the rules of language (Hoque 2017, p. 2). Conscious language learning is accompanied by error correction and the presentation of explicit rules (Krashen 1981, p. 2). The learners are aware of the process, and what the desired outcome is. Hoque (2017, p. 2) explains further: Language learning is not an age-appropriate activity for very young children as learning presupposes that learners have a conscious knowledge of the new language and can talk about that knowledge. They usually have a basic knowledge of grammar. (p. 1)

Learners in South African Intermediate Phase classrooms engage in learning Afrikaans as a First Additional Language and are consciously aware of the process, as the Department of Basic Education (DBE) notes that learners may have no prior knowledge of the language upon entering school (DBE 2011). Teachers in public schools follow the DBE's *Curriculum and Assessment Policy Statement* (CAPS) *for Afrikaans First Additional Language for the Intermediate Phase Grades 4–6* [Afrikaans Eerste Addisionele Taal vir die Intermediêre Fase Graad 4–6], within the *National Curriculum Framework* (NCF). Accordingly, teaching is directed towards developing learners' proficiency in Afrikaans as the primary goal.

To develop learners' proficiency in Afrikaans as an additional language, the notion of communicative competence needs to be examined more closely (Van der Wal 2004, p. 7). The CAPS document for Afrikaans First Additional Language for the Intermediate Phase Grades 4–6 also states that this is the goal: In the first school years, the curriculum aims to develop the learner's ability to speak and understand the language, as well as basic interpersonal communication skills (DBE 2011, p. 9). The communicative approach is one of the language skills incorporated into the CAPS curriculum. This, however, does not mean that the goal is always reached. Van der Wal (2001, p. 8) found that 'conventional classes lack a meaningful exchange of information between communicants, [*which limits*] comprehension'.

> Since the teachers in conventional instructional settings know the answers to classroom questions, the learners are discouraged from formulating a new response. Thus, no real communication takes place in a traditional language classroom. (Van der Wal 2001, p. 8)

The teaching of Afrikaans as a First Additional Language is often carried out by teachers who are themselves second-language speakers of Afrikaans (Stander 2001, p. 107). The language used by these teachers often contains language errors and deviations, which are inevitably transmitted to their learners' own language use (Stander 2001, p. 107). Given the linguistic and cultural diversity in South African classrooms, it is imperative that that pre-service teachers, in particular, are exposed to the different languages within the contexts in which they will be teaching (Nomlomo & Desai 2014, p. 93).

Teachers often rely on interlanguage to communicate effectively with their learners. An interlanguage is described as a language form that exists between the first language and the second or additional language (Ellis 1985, p. 299) and is created by the second-language speaker as a strategy to facilitate second-language learning. Interlanguage develops through several stages, but the limited time that second-language speakers spend on Afrikaans as a prescribed subject is too insufficient to bridge the gap between a basic interlanguage level and a near-native level of proficiency (Stander 2001, p. 108).

Academic aspects are, however, not the only factors that may influence language learning. Language is a deeply personal and emotional subject, and emotions play an important role in the successful acquisition of an additional language (Kushkiev 2019, p. 1). 'Language classrooms are extremely complex microsystems of human interaction in a socially constructed reality' (Kushkiev 2019). Kushkiev (2019) explains that:

> [*L*]earning a second language is a unique mental process whose successful outcome is determined by a multitude of factors, many of which vary across individual learners and the specifics of the classrooms. (p. 6)

Therefore:

> Positive emotions lead to approaching behaviour and willingness to interact with others more openly and efficiently, and acquiring a second language is primarily the product of constructing knowledge in the social reality through human interaction, with more experienced peers or teachers. (p. 7)

Krashen identified affective factors to be a barrier to second language learning. Known as the 'affective filter', this concept refers to the impact of attitudes, emotions and feelings on the effectiveness of language learning (Krashen 1987, pp. 30–32; Krashen & Terrell 1995, pp. 37–39). Van der Wal (2004, p. 57) explains that learners whose attitudes are not optimal for SLA, are believed to have a high affective filter, and, as a result, tend to seek less input.

The word 'affect' refers to emotion or feeling (Hoque 2017, p. 10). Affective factors are the emotional side of human behaviour in the process of second language learning, and the development of affective states or feelings involves a variety of personality factors (Hoque 2017, p. 10). Feelings about ourselves, as well as those who we encounter, play a significant role (Hoque 2017, p. 10). 'Understanding how human beings feel, respond, believe, and value is an important aspect of a theory of second language acquisition' (Hoque 2017, p. 10).

Zhongganggao (2001, p. 329) also emphasises that the attitude and motivation of second language learners usually play an important role in the learning process. Learners:

> [*W*]ith a negative attitude [*towards*] a language, the cultural group speaking that language, or the target language environment, may not be willing to learn the target language, as they are not motivated to do so. (p. 29)

A play-based approach, where in-serve and pre-service teachers – as in the case of this study – develop the adaptive expertise to teach language in an effective and enjoyable manner, may contribute to successful pedagogy for language learning. Van der Wal (2004, p. 64) further states that, to learn Afrikaans as an additional language, the teacher, and by implication, the pre-service teacher, should take into account the learners' social and educational contexts. Only then can in-service and pre-service teachers make adaptive decisions that effectively facilitate language learning.

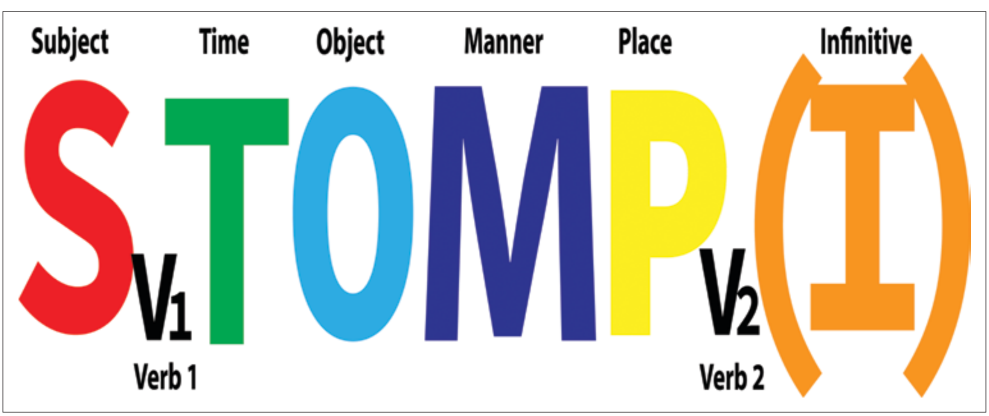
While there are many aspects that need to be taught within the Afrikaans First Additional Language classroom, a very important aspect is syntax. Syntax influences learners' ability to communicate in a foreign language.

For the purpose of this chapter, the researchers want to focus on the manner that sentence structure is being taught, or how these pre-service teachers may approach teaching Afrikaans syntax.

Afrikaans syntax is not always easy for foreign speakers. Sixteen references to '*woordorde*' [word order] and one reference to '*sinskonstruksie*' [syntax] can be found in the CAPS document for Intermediate Phase Afrikaans First Additional Language (Department of Basic Education 2011) indicating the correct use of the Afrikaans syntax as a clear outcome for Intermediate Phase Afrikaans First Additional Language learners. In order to support learners in this regard, the acronym STOMP(I) has become part of textbooks and support activity books as standard practice (Lutrin 1999). The STOMP(I) method is a popular technique adopted in the Afrikaans First Additional Language classroom to teach Afrikaans syntactic structure and word order; however, very little published research exists on this topic. Fouché-Karsten (2022) emphasises that STOMP(I) is not an official Afrikaans rule, but rather a method that can teachers can use to assess learners' word order in Afrikaans sentences.

This method entails using the acronym STOMP(I) to teach Afrikaans word order. The acronym uses the English terminology, which ensures that learners in the Afrikaans First Additional Language classroom can establish a clear link with prior knowledge from either their Home Language or using English as a *lingua franca*. The acronym can be unpacked as follows in Figure 9.1.

It is important to note that not all elements will necessarily be present in a sentence. *Verb 1* refers to the *primary verb* in sentences that do not contain an *auxiliary verb* (*Verb 2*). In sentences that include both Verb 1 and Verb 2, Verb 1 functions as a 'helping' verb, while Verb 2 serves as the primary verb. This formula is used to teach passive voice. However, the same formula can be applied to begin a sentence with any element other than the *object*, as long as the *verb* remains in the second position.




*Source*: Image created by author Elma Marais, published with permission from Elma Marais.

**FIGURE 9.1:** STOMP(I) method for language learning.

According to Lutrin (1999), a very common mistake that English-speaking learners make is that they tend to put the verb after the subject, irrespective of what they start with. The STOMP(I) method can help learners remember that no matter what the sentence starts with, the verb will always stay in the second position.

STOMP(I) is not without criticism. Although the acronym is used with the *infinitive* included in textbooks, and learners are expected to identify the infinitive in their formal examinations, Fouché-Karsten (2022) argues that the infinitive should not be included, because what is referred to as the infinitive in this context is in fact not an infinitive. Fouché-Karsten uses the example of '*om te onthou*', which will take the position of the infinitive if the STOMP(I) method is followed. However, only the word '*onthou*' is truly an infinitive, and to refer to the whole construction '*om te onthou*' as the infinitive, is in fact incorrect. For this reason, we are including the infinitive in brackets to address what pre-service teachers will be teaching.

In this chapter, we do not argue the validity of including the *infinitive* (I) in the acronym, but rather a way of teaching the language syntax and creating an environment where 21st-century pre-service teachers could develop adaptive expertise. They will not only adapt their method of instruction, but should the *infinitive* be excluded future DBE-prescribed Learning and Teaching Support Material (LTSM) textbooks, 21st-century teachers will have the ability to adapt their teaching strategies.

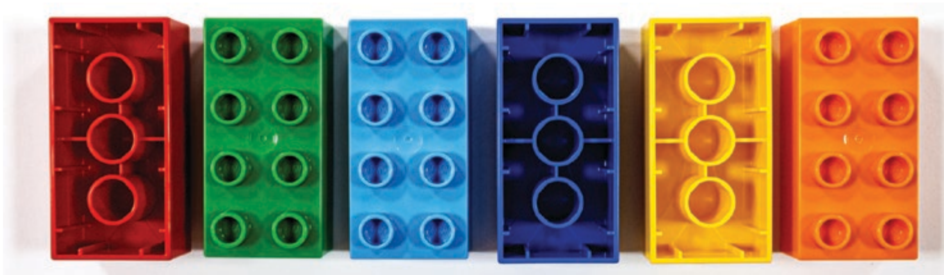
There are many ways to teach sentence structure; STOMP(I) is but one of them, and using LEGO® can be an added commodity to facilitate the teaching thereof.

## LEGO® as a manipulative to facilitate STOMP(I)

Most people think of LEGO® primarily as a creative construction toy made of interlocking bricks that allows children to build anything they can imagine. It is also an educational research that has been used in the school system for the last 30 years. According to the LEGO Group (2022), the word 'LEGO®' is an abbreviation of two Danish words '*leg godt*' which means 'play well'.

In the educational setting, the use of this toy has been expanded to include various subjects such as Science, Technology and prescribed languages. While there are numerous sets that are specifically designed for this purpose, most schools in the South African context do not have the financial means to purchase these sets. Within the South African context, the use of just Six Bricks® could not only address the social divide in South Africa but also open the door for all children to learn through play.

Brent Hutcheson designed the concept of the 'LEGO® Six Bricks®' as a manipulative to learn with. LEGO® Six Bricks® are six different coloured




*Source*: Image created by author Elma Marais, published with permission from Elma Marais. LEGO® is a registered trademark of the LEGO® Group.

**FIGURE 9.2:** LEGO® Six Bricks®.

LEGO DUPLO® bricks (see Figure 9.2) with activities that are designed to motivate and excite students. According to Care for Education, children should have the opportunity to explore and understand complicated concepts using concrete tools (Care for Education 2025). The goal of Six Bricks® is to teach in a manner where students can collaborate and solve problems. Where they could take something concrete and use it in a manipulative manner to remember concepts and explore those concepts further.

This project focused on Afrikaans First Additional Language pre-service teachers who will teach Afrikaans syntax as future teachers and during teaching practice. STOMP(I) was taught to them in their second year and during their formal schooling years. In the second semester, the teaching of STOMP(I) was modelled to them by using LEGO® Six Bricks®. Each aspect of STOMP(I) was associated with a colour brick, and students had the key questions they needed to ask for syntax, that they added to the side of the bricks with temporary adhesive.

The aim of approaching the teaching of STOMP(I) in this manner is twofold. On the one hand, to develop and support the pre-service teachers' knowledge regarding Afrikaans syntax, and on the other hand, to challenge their idea regarding the pedagogy on how to teach STOMP(I), developing their adaptive expertise. Rather than telling these pre-service teachers how to teach STOMP(I), the instructors showed them how, and let them do it themselves so that they experienced the learning activity hands-on. Using play pedagogy not only as a learning tool but also as a means to develop adaptive expertise in teaching.

Within our session, we associated each brick with one of each acronym descriptor. We added the concept (Figure 9.3) to the colour and guiding questions (Figure 9.4). The pre-service teachers had to organise the bricks and then add the concept to each brick. Thereafter, they had to add the guiding questions to the corresponding concept brick.


*Source*: Photo taken by author Florence Coertzen, published with permission from Florence Coertzen. LEGO® is a registered trademark of the LEGO® Group.

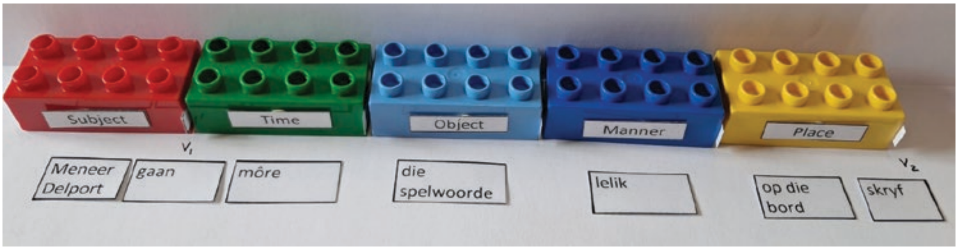
**FIGURE 9.3:** LEGO® Six Bricks® and STOMP(I).


*Source*: Photo taken by author Florence Coertzen, published with permission from Florence Coertzen. LEGO® is a registered trademark of the LEGO® Group.

**FIGURE 9.4:** LEGO® Six Bricks® with STOMP(I) reference and guiding questions.

The researchers' aim was to scaffold the pre-service teachers' unpacking of STOMP(I) and to support them in making connections not only with the acronym that they have learned in school and in their Afrikaans First Additional Language curriculum but to support them in constructing knowledge by unpacking the guiding questions that they can use to identify that particular word in the sentence.

Thereafter we gave the students sentences that were divided into phrases, and they had to add to the open side of the bricks in order to construct their sentences (Figure 9.5).




*Source*: Photo taken by author Florence Coertzen, published with permission from Florence Coertzen. LEGO® is a registered trademark of the LEGO® Group.

**FIGURE 9.5:** LEGO® Six Bricks® with STOMP(I) to construct a sentence.

Afrikaans second and third language learning is not always something that is enjoyed at school, and if play-pedagogy could be used, even for older children or pre-service teachers who are still studying, it may change some perceptions regarding the language as a school subject. The subject of Afrikaans as an additional language can become boring for learners if the focus is solely on listening and writing. By being more creative and adding the use of resources such as LEGO® Six Bricks®, learners are being creative and will enjoy the process of language learning much more. In this way, they learn without realising they are learning, because to them, it feels like playing.

# Methodology

## Research design[2]

In this research project, a case study research approach was used to explore and examine how LEGO® Six Bricks® may be utilised as a manipulative in the instruction of Afrikaans First Additional Language for pre-service teachers. A case study is a primary method used in qualitative research to gain a deep comprehension of a particular issue, event or phenomenon within its authentic, real-world setting (Creswell & Cresswell 2017; Crowe et al. 2011). Qualitative research aims to explore and understand participants' feelings towards and understanding of a particular concept (Butina 2015, p. 192; Creswell 2013; Creswell & Cresswell 2017; Creswell et al. 2007, p. 260; Dodgson 2017, p. 556).

Using a case study as part of a qualitative research design aims to delve deeply into a multifaceted, real-world problem (Crowe et al. 2011). The aim of this study of limited scope was not to generalise to a wider population as elucidated in the methodology, this study explored the lived experience

2. This section is based on the following published material by the author: Marais, E 2023, 'The development of digital competencies in pre-service teachers', *Research in Social Sciences and Technology*, vol. 8, no. 3, pp. 134–154. https://doi.org/10.46303/ressat.2023.28

and local knowledge of a small group of participants. Although this can be considered a limitation, the results can also be seen as an indication of the need for additional studies using a larger sample group.

## Participants and sampling[3]

This study, conducted in South Africa, used a purposive sampling method known as judgement sampling. It was conducted to identify individuals who have certain qualities. Purposeful sampling in qualitative research is aimed at pinpointing and selecting cases that are rich in information pertinent to the real-world scenario under investigation (Creswell & Cresswell 2017; Palinkas et al. 2015, p. 539). The aim was to understand a smaller group of participants' lived experiences. A purposeful sampling was used in order to use information-rich cases for an in-depth analysis of participants' narratives.

The study was conducted at a university that offers a Bachelor of Education (BEd) degree in the Intermediate Phase, where Afrikaans is taught as a First Additional Language. These pre-service teachers were chosen because they are studying toward becoming Afrikaans First Additional Language teachers, while not being Afrikaans Home Language speakers themselves.

The researchers include three lecturers: Two teach both Afrikaans Home Language and Afrikaans First Additional Language, while one teaches only Afrikaans Home Language.

Six pre-service teachers who are completing their second year of Afrikaans First Additional Language were selected to participate in the study. The pre-service teachers come from different backgrounds, but none of them are Afrikaans mother-tongue speakers. Participants indicated their consent by signing a consent form and handing it in with the second author. Participation in the research was voluntary, and any participant could withdraw at any moment without providing a reason. The authors applied for and obtained ethical clearance by the North-West University Education, Management and Economic Sciences, Law. Theology, Engineering and Natural Sciences Research Ethics Committee (NWU-NWU-EMELTEN-REC) in 2021 (ref. no. NWU-00003-21-A2).

## Data collection methods and procedure

The data collection procedure used in this study included reflective conversations, in-person surveys, and written reflections completed after the LEGO® Six Bricks® workshop.

3. This section is based on the following published material by the author: Marais, E 2023, 'The development of digital competencies in pre-service teachers', *Research in Social Sciences and Technology*, vol. 8, no. 3, pp. 134–154. https://doi.org/10.46303/ressat.2023.28

Data were collected through surveys and interviews conducted with pre-service teachers. These surveys and interviews were undertaken to understand their approach to teaching Afrikaans syntax and to explore their knowledge, methods and opinions regarding the use of the STOMP(I) acronym in this context. Questions included: 'Do you think the way STOMP(I) has been taught is functional and has helped you remember Afrikaans sentence structure? Please explain your answer.'

A professional workshop was presented by an approved and qualified trainer. The professional workshop was presented to the students, and this took the approach of mutual and supported learning together. Within the workshop environment, pre-service teachers used LEGO® Six Bricks® as indicators for the different components of an Afrikaans sentence. Different sentences were given to the group, and they had to build sentences with their LEGO® Six Bricks®. During this session, reflective conversations took place between the researchers and the pre-service teachers.

The pre-service teachers then completed their teaching practice in South African schools. They were encouraged to make use of the LEGO® Six Bricks® whereafter they had to complete a survey and write reflective narratives regarding their experiences. This survey was conducted to evaluate how this approach may have influenced their idea regarding pedagogy, especially in reference to teaching Afrikaans syntax with the acronym STOMP(I).

The reflective writing aimed to explore the pre-service teachers' approaches and experiences regarding the LEGO® Six Bricks® approach. The pre-service teachers were asked to write a one-page reflection on the process of teaching STOMP(I) and what their opinion is regarding using manipulatives like LEGO® Six Bricks® to facilitate the teaching and learning of Afrikaans syntax, both in a traditional manner and a play-based approach. The researchers motivated the pre-service teachers to take their LEGO® Six Bricks® with them to schools and reflect even further within the respective school environments where they needed to complete their teaching practice.

## Data analysis

The data analysis was conducted according to the guidelines provided by Erlingsson and Brysiewicz (2017, p. 97). The first step included the reading and re-reading of the information gathered during the survey, which included reflective conversations, and reflective writing that the pre-service teachers had to complete. This enabled the researchers to construct a sense of the whole. The information was then uploaded to a version of ATLAS.ti™ in order to identify themes, from which meaning could be deducted.

# Findings and discussion

It is clear from the literature that second language learning is not as straightforward as one might think. There are several factors that may play a role. From the data generated in this study, several important themes could be identified at different stages of the study. These include the participants' knowledge regarding STOMP(I), pre-service teachers' approach to teaching STOMP(I) and their perception of using LEGO® as a manipulative to teach STOMP(I).

## Pre-service teachers' knowledge regarding STOMP(I)

In the first cycle of the research, the pre-service teacher participants were asked to elaborate on their knowledge regarding Afrikaans syntax and its application of STOMP(I) in particular. While only one pre-service teacher was able to correctly use STOMP(I) to unpack a sentence, all the pre-service teachers who took part in the study indicated that they were very familiar with STOMP(I) and how to use it. All the pre-service teachers indicated that STOMP(I) has been used for teaching and learning while they attended formal primary and secondary schooling as non-mother-tongue Afrikaans speakers. All the pre-service teachers indicated that they were taught STOMP(I) at school and, with the exception of one pre-service teacher, indicated that they find it easy to understand.

Their comments included: '*I followed the STOMPI method which has been taught in school*' (Participant 03, line 1) and '*There is an acronym we use which aid the process in the word order. This acronym letters are composed of the first letter of each of the word order words*' (Participant 05, lines 1–2). While the comment from Participant 03 indicates that they remember STOMP(I), it could be argued that Participant 05 knew that there is an acronym to support Afrikaans syntax teaching, but they could not remember it.

One participant indicated that they struggled with STOMPI(I) and were not able to use it as a tool to facilitate Afrikaans syntax. Only two participants were able to name some of the concepts that are associated with the acronym.

STOMP(I) formed part of the formal instruction received by these pre-service teachers in their previous semester. When asked what their experience was during the instruction in the previous semester, the answers were overall positive. Comments included: '*I found it very helpful as I was able to refresh my memory on STOMPI*' (Participant 01, line 1); '*My experience* *was very informative an I enjoyed learning about it*' (Participant 04, line 1) and '*It rang a bell and I was able to remember and analyse it as the lesson proceeded*' (Participant 06, lines 2–3). One participant admitted that they did not understand STOMP(I) during their school years, but that the clarification of STOMP(I) in the previous semester helped them to understand the concept, as well as how to apply it and why it is important to grasp the concept.

With the previous information in mind, the participants were then given a sentence to put into the correct word order, using the STOMP(I) method. Only one of the participants got the sentence correct. It is very worrying that these participants, who will be teaching STOMP(I) and have used it in their own schooling, were not able to use it to correctly construct an Afrikaans sentence. This is also supported by the answers given when asked if they find the concept of STOMP(I) easy or hard to understand. Five of the six participants indicated that they found it easy, even though the sentence that they had to put into the correct word order proved that they had not yet mastered the concept. All the participants, apart from one, also indicated that STOMP(I) is easy to implement, which again, is in contrast to the actual sentence that they had to put into the correct word order. It may also demonstrate that while they think that they know what the acronyms stand for, they might be mistaken, or if they know the acronym, they struggle to apply it effectively.

This idea was proven, as the participants were asked to identify the letters and their meaning in the acronym, and several participants were not able to name them correctly. The infinitive, and what it refers to, proved to be the concept that most of them struggled to remember. It relates to the literature that it may need to be removed from the acronym as a guide, as the infinitive does not always form part of all sentences. The reality, unfortunately, is that STOMP(I) is included in most Afrikaans First and Second Additional Language textbooks that used in most schools, and when learners must write their Grade 12 examinations, they are expected identify the infinitive and use it correctly. The critical question, therefore, is how pre-service teachers should be trained to address this requirement, given that they must ensure their students are adequately prepared for national examinations.

Once the researchers started to discuss STOMP(I) with the participants, they jointly noted that they remember more of it. A focused question regarding STOMP(I) indicated that some participants could remember it if they were asked directly. Only one participant indicated that you need to take the verb into account when syntax is being used or taught.

One participant indicated that while the explanation of STOMP(I) is easy to understand, the implementation of it is difficult. The participant stated the following: '*When it was explained in class it was clear and a bit easy, however the application of it in tests was challenging*'. This supports the data from the first cycle, indicating that while the participants as pre-service teachers are familiar with the acronym, its practical implementation remains concerning.

It is essential for pre-service teachers to not only have good content knowledge, but experiential knowledge on how to teach that knowledge to learners. Not only will minimal knowledge and limited resources to apply it practically affect their own use of the language when teaching, but it will also limit their ability to share hands-on, experiential knowledge effectively with learners. This will furthermore impact pre-service teachers' ability to adapt their teaching for different learners and varying environments. Adaptive expertise will be easier for teachers to transfer and change if they feel comfortable with the content and their own skills.

## Pre-service teachers' approach to teaching STOMP(I)

None of the pre-service teachers who were participants of the study has ever had to teach sentence structure to learners as part of their teaching practice. When asked how they would explain it to learners, it was clear that these pre-service teachers drew from their own experiences on how they were taught. All of the pre-service teachers indicated that they would use STOMP(I) to teach sentence structure, even before they knew that the focus would be on teaching STOMP(I) specifically. This indicates that they were aware of the acronym, but their description of how to teach STOMP(I) focused on writing it out on the board and giving learners the concepts that are associated with the acronym. One pre-service student deviated from the norm in this regard and elaborated that they would not only explain it from one side but also have the learners identify it in a sentence as well. The pre-service teacher stated the following:

> 'I would do what I call the Flip method. I would explain what each of the letter (sic) in the word STOMPI stand for and entails. Then provide examples for my learners. Secondly, I would do the opposite. Write a sentence/sentences on the board and name the letters on each correct phrase. Eg Afternoon (T) The girl (S).' (Pre-service teacher 5, Lines 5–9)

Another pre-service teacher also indicated it would work well for learners to work in groups, and to engage with the sentences after the explanation of STOMP(I):

> 'To test them I would divide them into groups. And give each group scrambled papers with phrases and they will have to put the phrases in a correct order on their table.' (Pre-service teacher 5, lines 3–5)

This shows that these pre-service teachers mostly draw from the way that they have been taught, and do not have adaptive expertise. The reason for this could be that they just have not had the opportunity to see if it is the best way to teach STOMP(I) to learners, but one could argue because they themselves struggle with the concept, they should have the insight to evaluate why they themselves still struggle. They do not see the relevance between the way that they were taught in school, and their inability to use STOMP(I) to unpack Afrikaans sentence structure.

It is imperative that, as lecturers, we address students' perceptions of pedagogy. While they teach as they were taught, it is important that other teaching strategies are modelled for these pre-service teachers. Showing them how to teach STOMP(I) with LEGO® in a play-based pedagogy is not only to show them another way to teach the concept, but to change their perception of teaching so that they do not only rely on how they were taught, but so that they realise there may be more creative ways, and that they need to develop adaptive expertise so that they could adapt their teaching if and when needed.

## Pre-service teachers' perception regarding LEGO® as a manipulative for teaching STOMP(I)

After we had completed the expert workshop that focused on teaching STOMP(I) with LEGO®, we asked the pre-service teachers what they thought about this different approach, compared to what they were used to, to teach STOMP(I). The pre-service teachers indicated that they found it easier to work with the sentences when we introduced LEGO®. Pre-service teacher 4 (lines 6–8) stated the following:

> 'It made me remember it easier. Not only did the different colours of the LEGO® help but their association to STOMP(I) made it easier as well. The different sentences and certain elements missing made me think about STOMP(I) even more that made it easier.'

Having something concrete in their hand, that had the concept on the one side and the guiding questions in both Afrikaans and English on the two shorter sides, helped the pre-service teachers to 'build' the sentences, in a sense. They had to move the brick in the same sense as you need to move the words in a sentence.

It was interesting that before the LEGO® workshop when they worked with STOMP(I), the pre-service teachers preferred shorter sentences, as they indicated that it was less complicated. When they had longer sentences, they struggled to use the correct sequence. While we were working on exercises with different sentences with the LEGO® Six Bricks®, the pre-service teachers struggled with the shorter sentences, as they had something concrete, but when that aspect was not present in the sentence, they were not sure what to do. They did not have the confidence that what they did with the sentence was correct. In this regard, the blocks were of use once again. The pre-service teachers were asked to hold the colour brick up with a certain concept, and the corresponding word in that sentence. They indicated that the longer sentences were easier, as they were able to add each aspect to a certain colour of the bricks. When all aspects of a sentence were present, they simply had to place them in the correct space, but with sentences that only had a few elements, they had to critically think about where the phrases fit, which they found more difficult to do.

We went one step further and added two smaller DUPLO® bricks, 4×4 bricks, to represent the verbs. The pre-service teachers struggled to indicate where the verb needed to be within the sentence, and including the smaller blocks helped the pre-service teachers to manipulate the sentence. When they only write sentences in their books or on the board, it is not that easy to change them. Using a manipulative gave the pre-service teachers the ability to do and redo their work, without the fear of making a mistake that could not easily be corrected.

This translated to their perceptions on how to teach STOMP(I) to the learners that they will someday have to teach. We asked the pre-service teachers whether they feel that this may work in their schools, and what they think about teaching STOMP(I) in this manner. One of the pre-service teachers made the comment that using such a manipulative will never work in the school where he was during his last teaching practice. As a group we discussed it, and this led to the idea that children should be quiet and sit still in class, and that is the only way that learning takes place. The conversation led to a deeper conversation of how things have always been done in our classrooms or changing the narrative. Having the knowledge and skills to understand that the way things have always been done, is not always the way it should be done. As teachers, they should not be scared to explore and find new ways that children could learn. Addressing the pre-service teachers' concern, we as a group came to the conclusion that we need to think differently, and you cannot decide that something will not work, you first need to try it.

One of the key aspects when a first or second language is being learned is that emotion plays a central role, as indicated in the literature (see 9.2.2). When we asked the pre-service teachers if they enjoyed the approach, even these pre-service teachers who are well beyond school age, enjoyed it and indicated that exploring and working with something made it not feel like work, but something that they enjoyed and could explore as a group. This is a fundamental aspect to establish in the teaching of first and second language learning. Learning that is correct and enjoyable.

In the semester following the STOMP(I) workshop and training that was done, the pre-service teachers were given the opportunity to take the LEGO® Six Bricks® with them on their practical teaching period, known as TPRAC (Teaching Practice). The goal was to observe how they would utilise the LEGO® in their own environment, keeping in mind the adaptive expertise they had been taught.

All of the pre-service teachers were excited about the opportunities that the LEGO® Six Bricks® presented them with. When asked how eager they were to use the Six Bricks®, answers included: 'I was extremely excited as I had done the workshop last year and it was exciting to try and experiment and see how the learners will find the lesson' (Pre-service teacher 1, lines 1 and 2); and:

> 'I was eager to use the 6 bricks in the subject I was placed in due to the reason of my enthusiasm stemming from the versatility and potential of the as a hands on and interactive learning tool.' (Pre-service teacher 5, lines 1 and 2)

One pre-service teacher admitted that they were anxious because they had never presented a lesson using Six Bricks® as a manipulative, especially in a language that was not their mother tongue. They did, however, admit that they had an element of excitement, as they could not wait to challenge themselves with this new activity.

Two of the pre-service teachers indicated that their mentor teachers were interested, but also sceptical about the use of LEGO® Six Bricks®. Pre-service teacher 3 indicated that they first had to demonstrate the use of the Six Bricks® to their mentor teacher; only thereafter did the mentor teacher give permission for it to be used in the classroom. Pre-service teacher 7 admitted that their mentor teacher was surprised that they were able to complete the activity. Even though the mentor teacher knew about LEGO®, they had never done any activities using them as a manipulative. After the lessons, three of the pre-service teachers indicated that their mentor teachers were impressed by the lessons presented with the LEGO® Six Bricks® as a manipulative. One of the mentor teachers even asked if they could keep a packet of the LEGO® Six Bricks® so that she could incorporate it into future lessons that she presents.

Learners were also intrigued by the use of LEGO® Six Bricks® in the classroom. Pre-service teacher 2 said that the learners were very excited when they entered the classroom and saw a big box. They were even more excited to see that the box contained LEGO® blocks, and they were excited to learn by using instruments that they usually only use to play with. Pre-service teacher 7 indicated that the learners were apprehensive at first, but quickly got used to using the LEGO® Six Bricks®.

All of the pre-service teachers became creative with the use of the LEGO® Six Bricks® during their teaching practice. Pre-service teachers 1, 5 and 7 used it to explain STOMP(I), as was taught in the workshop. Pre-service teacher 5 also used it in the English Home Language to explain subjects, objects and verbs. Pre-service teacher 2 used the Six Bricks® in Mathematics with division. Pre-service teacher 4 used the Six Bricks® in Natural Sciences with the topic of the food chain, where each block represented an organism in the food chain, for example: primary source, primary consumer, secondary consumer, tertiary consumer, apex predator and decomposer.

The use and implementation of the LEGO® Six Bricks® also inspired the pre-service teachers to think of other ideas and uses where the blocks can be used. One pre-service teacher indicated that they would love to use LEGO® Six Bricks® to teach geographical features, where learners can create models and learn about the characteristics of elements such as mountains, rivers, deserts or plateaus, as well as the importance and impact that these elements have on the surrounding areas.

All of the pre-service teachers indicated that it is very likely that they will use LEGO® Six Bricks® in their lessons in the future. They even indicated in which subjects they will be using it in future. This supports the idea of adaptive expertise. They were exposed to the idea and the use of LEGO® Six Bricks® in the teaching of STOMP(I), and they feel confident enough about their skills to utilise the LEGO® Six Bricks® in other subjects and with other concepts. This also shows that the use of LEGO® Six Bricks® as a manipulative changed the way they think about teaching certain concepts. Before knowing about LEGO® Six Bricks®, they did not think about creative ways to teach, and they resorted to methods that their teachers modelled in school. After seeing what could be done with LEGO® Six Bricks® and being given the opportunity to experiment with the manipulative, the pre-service teachers showed that they gained adaptive expertise, as they thought of many other concepts and subjects that could be taught using LEGO® Six Bricks®.

## ■ Conclusion

In this study, we aimed to explore whether LEGO® Six Bricks® could be utilised to teach STOMP(I) to our pre-service teachers. Our goal was to challenge their pedagogy and help them develop adaptive expertise, enabling them to evaluate effective classroom practices and teach in ways that promote both learning and enjoyment for children. Using the same teaching principles, incorporating LEGO® as a concrete manipulative allowed the pre-service teachers to organise and reorganise sentences while engaging with the guiding questions. This approach supported them in unpacking and writing sentences independently. From our perspective, approaching our pre-service teachers in a play-based pedagogy created an environment that the students enjoyed and learned from. Modelling a different way of teaching opened the door for them to explore more and adapt to their circumstances. This is supported by the pre-service teachers themselves, as we asked them to indicate what they would do if they did not have LEGO®. Not one of the pre-service teachers went back to only writing sentences on the board and having their learners copy them into their books.

They adapted and came up with different ideas, from bottle caps and paper being folded to even just coloured papers, but having children work with the sentences rather than just copying them from the board. Having the pre-service teachers shift from solely writing on the board to using creative approaches has led to their adaptation of teaching strategies.

Adaptive expertise represents a critical asset for 21st-century educators, ensuring their empowerment in a changing educational environment. Rather than simply relying on routine expertise, which emphasises efficiency in well-practised areas, the development of adaptive expertise emphasises flexibility, innovation and the ability to approach teaching with creative problem-solving techniques as was the case in this study with the development of a play-based approach to sentence structure teaching.

This study has several limitations that should be acknowledged. Firstly, the scope of the research was confined to a specific educational context, which may limit the generalisability of the findings to broader or differently structured learning environments. Secondly, the study relied on qualitative data, which, while rich in detail, do not allow for large-scale statistical analysis that could provide more generalised conclusions. Another limitation lies in potential biases inherent in participant self-reporting, as responses may have been influenced by personal experiences or expectations. Finally, time constraints and resource availability may have impacted the depth of data collection and analysis, potentially leaving certain aspects underexplored.

Future research could expand on these findings by incorporating a mixed-methods approach, allowing for both qualitative insights and quantitative validation. Investigating similar educational settings across different regions or academic disciplines could enhance the applicability of the study's conclusions. Additionally, longitudinal studies would provide valuable data on how teaching strategies evolve over time and their long-term impact on student learning. Further exploration of technological integration in teaching, particularly in relation to digital tools and emerging pedagogical frameworks, could also provide new insights. Finally, comparative studies between novice and experienced educators may shed light on best practices and professional development needs within this context.

Chapter 10

# Soft skills for English language teachers to thrive in a VUCA world

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## Abstract

English language education, English teachers and English teacher training programmes play a pivotal role in South African education by preparing teachers to address the challenges of a 21st-century, post-coronavirus

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disease 2019 (COVID-19), multilingual context. Given these complex variables, the main question remains: What should teachers know and be able to do to effectively teach in a volatile, uncertain, complex and ambiguous (VUCA) world? Although much research has been conducted since the outbreak of the COVID-19 pandemic on the importance of soft skills for the survival and success of teachers in the 21st-century VUCA world, the specific soft skills needed to tackle the challenges associated with volatility, uncertainty, complexity and ambiguity in a multilingual context have not been adequately addressed. This chapter discusses a framework for identifying and effectively developing soft skills among English language teachers in South Africa. It includes a literature review of current research on soft skills for teachers and is supported by data from a qualitative study on the perceived requirements of newly qualified English teachers, as reported by experienced in-service English Heads of Department in the Senior and Further Education and Training Phases.

# ■ Introduction

As early as 1918, a research study conducted by the Carnegie Foundation, Harvard University, and the Stanford Research Center concluded that '85% of job success is determined by well-developed soft skills, and only 15% comes from hard skills' such as knowledge and technical skills. These statistics were extrapolated from a study in the field of Engineering Education by Mann (1918, pp. 106–107). In the early 20th century, long before the digital age and the onset of the Fourth Industrial Revolution and along with the emergence of the term VUCA (volatile, uncertain, complex and ambiguous), the importance of soft skills in education was already recognised. In the 21st century, Rodríguez (2020) asserts that 70% of teachers' professional development is influenced by soft skills.

Although this is not a new concept and appears in the literature of several disciplines, there is still no clear or established definition of soft skills, and it remains a 'trendy but fuzzy topic' (Matteson, Anderson & Boyden 2016, p. 71). It also seems that the concept has been explored and interrogated most within the field of psychology and specifically in terms of personality traits, but it has not been explored widely within the field of education and Whitehurst (2016) goes so far as to describe soft skills within the domain of education as:

> [*A*]bstract and general, meaning that they provide little of the specificity that is needed for the design of curriculum for students [...] or for the provision of useful feedback to teachers or students. (p. 1)

Therefore, to identify the soft skills required by English language teachers in VUCA South Africa, the researchers have set out to create a working definition of the concept in the 'Defining soft skills' section by referring to existing literature and definitions.

# Defining soft skills

The concept of soft skills has been defined using several visual constructs and analogies (refer to Table 10.1). Some researchers explain it by means of a continuum that stretches from concrete, easily observable behaviours (such as completing homework) to abstract dispositions or views (such as optimism and grit) (Whitehurst 2016, p. 2) or on a continuum of competence (from low to high) of base competencies that are linked with knowledge and values, and can be developed from basic to more advanced levels (Evers, Rush & Berdrow 1998).

Another way to define the concept is to distinguish it from other related concepts. An example of this is the definition of Matteson et al. (2016, p. 74) providing operational definitions of the following concepts associated with soft skills: skills, dispositions, beliefs, attitudes and values.

Researchers such as Peterson and Van Fleet (2004, pp. 1297–1308), and later Hurrell, Scholarios and Thompson (2013, pp. 161–182) acknowledge

**TABLE 10.1:** Summary of the conceptualisation of soft skills from literature.

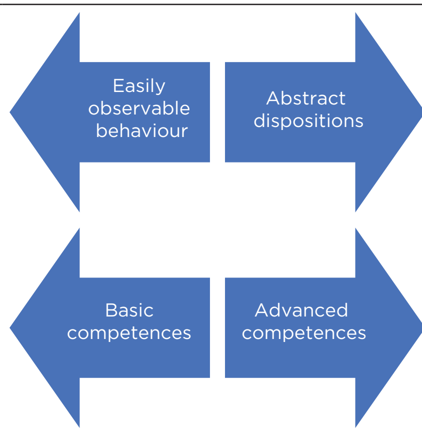
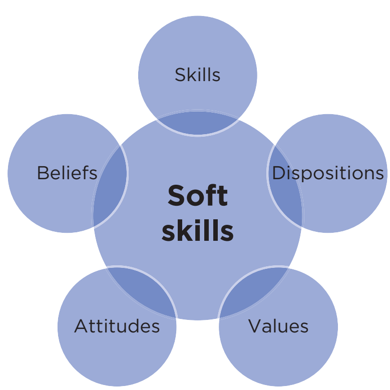
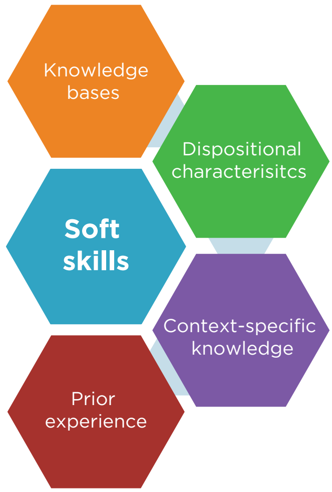
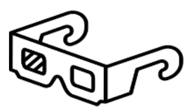
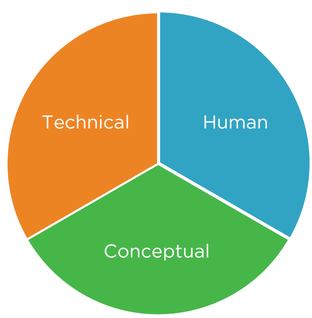
| Analogy/construct | Description | Source |
|---|---|---|
| Continua |   | Whitehurst (2016, p. 2)<br>Evers et al. (1998) |
| Linking and distinguishing soft skills from other concepts |   | Matteson et al. 2016 p. 74) |

Table 10.1 continues on the next page→

**TABLE 10.1 (cont.):** Summary of the conceptualisation of soft skills from literature.

| Analogy/construct | Description | Source |
|---|---|---|
| Different knowledge domains |  | Peterson & Van Fleet (2004, p. 1300) |
| Sociological lenses to view soft skills | Positivist<br>Ethnomethodologist<br>Constructionist<br>Marxist<br> | Attewell (1990, p. 442) |
| Typology |  | Katz (1955)<br>Analoui (2000, p. 219) |

*Source*: Authors' own work.

the complexity of the term and state that it involves four types of knowledge domains, namely 'cognition of knowledge bases, dispositional characteristics, context-specific knowledge, and prior experience'. Similarly, Tseng, Yi and Yeh (2019) and Garcia (2014) define soft skills within the domains of the emotional, attitudinal and behavioural, and according to Tabieh, Abuzagha and Al Ghoul (2021, p. 219), soft skills are drawn from each of these dimensions and 'are very important for the employability and adaptability of EFL teachers'.

In another attempt to define the concept, Attewell (1990, p. 442) highlights the sociological nature of skills and warns that preconceived ideas of researchers about the nature of soft skills affect the research in the field and he distinguishes between four lenses in viewing soft skills:

- A positivist lens where soft skills are treated as behaviour that can be quantitatively measured independently of the researcher or observer.
- An ethnomethodologist lens that does not necessarily equate the concept of skill to complexity but values those behaviours that are performed unconsciously or automatically and are very often labelled as 'unskilled' activities.
- A social constructionist lens that defines skills in terms of the social standing and the demand of an occupation and it, therefore explains skills in terms of market-based characteristics (supply and demand) and ideological factors associated with the standing of an occupation in society.
- And lastly, the Marxist lens focuses on the social standing and perceived skill of an occupation. When observing through a Marxist lens, the perceived skill is mainly determined by the power of the people performing the task and not by the complexity. This is similar to the positivist lens as both lenses favour intellect over manual work, but a Marxist lens views skill in terms of 'control over one's work process as well as by the complexity of the work'.

It is therefore important to acknowledge that the concept of 'soft skills can have larger social meanings, with much ambiguity across different contexts' (Matteson et al. 2016, p. 73).

In the 1950s, Katz did research on skills required for effective managers and he proposed a typology of skills which divided skills into three categories, namely technical, human and conceptual (Peterson & Van Fleet 2004, p. 1299). In his description of these categories, soft skills refer to human skills and conceptual skills. Analoui, Labbaf and Noorbakhsh (2000, p. 219) state that human-related skills 'are more difficult to acquire because interpersonal relations involve consideration of the differences in attitudes, emotions and cultural characteristics of peers, subordinates and superiors', while Peterson and Fleet (2004, p. 1300) define conceptual skills as individuals' ability to perceive and understand their workplace as a whole and to view themselves as part of a system and they further associate these skills with 'entrepreneurial' and 'systems' thinking which are not only relevant to managers but to teachers as well.

Based on the 'conceptualisation of soft skills from literature' and analysis of the varied definitions, and for the purposes of this chapter, the following definition of soft skills will be used:

> Teacher soft skills encompass human-related, conceptual skills evaluated through an ethnomethodologist lens that range from easily observable and quantifiable competencies to more innovative, abstract dispositional character traits essential for effective performance in a VUCA world.

All the aspects incorporated in this working definition will now be considered in a theoretical and empirical exploration of the specific soft skills needed to counter volatility, uncertainty, complexity and ambiguity in the world of English language teachers in South Africa.

## Soft skills in the VUCA world of teachers

With the outbreak of the coronavirus disease 2019 (COVID-19) pandemic, teachers all over the world became more aware of the demands of living in a VUCA world. Taskan, Junça-Silva and Caetano (2022, p. 13) conducted a systematic review of the current research on VUCA, and their results showed that in some studies uncertainty was connected to volatility, complexity and uncertainty, but in most studies, uncertainty was actually associated with ambiguity. This muddied the waters for the analysis, because when a research study refers to ambiguity, it might actually be referring to uncertainty, volatility or complexity, so Taskan et al. (2022, p. 3) came up with a conceptual map with meanings for each of the components of VUCA that do not overlap. The map shows that change is predominantly related to volatility, the unpredictability of a context is linked to uncertainty, the number of factors and how they are related is associated with complexity and the inability to make and interpret meaning is related to ambiguity.

Panthalookaran (2022, p. 236) also noted that there were some overlaps in the matrix representation of VUCA by Bennett and Lemoine (2014) that were based on two questions: '(1) How much do you know about the situation? (Plotted on the x-axis); and (2) How well can you predict the results of your actions? (Plotted on the y-axis)'. He, therefore, produced a refinement of that matrix portraying the quality of information (causality) on the x-axis and the quantity of information (ubiquity) on the y-axis and then continued to plot the 'salient features' (Panthalookaran 2022, p. 241) or soft skills to combat each of the four components of VUCA in the matrix.

Several studies were conducted during and after the pandemic and highlighted the need for effective soft skills for teachers (Aiello et al. 2023, pp. 357–374; Beteille et al. 2020, pp. 1–8; Da Silva Fernandes, Jardim & De Sousa Lopes 2021, pp. 1–13; Segura Rondan et al. 2022, pp. 64–73; Shehada et al. 2021, pp. 1199–1212; Tabieh et al. 2021, pp. 219–229). From these studies, several soft skills were identified that teachers applied or lacked in coping with a VUCA world.

For volatility to be countered by autonomous learning, teachers should have soft skills to enable them to deal with and manage constant or unstable changes in the education context. Apart from the rapid changes that have taken place since the COVID-19 pandemic, teachers in South Africa have had to cope with quite a number of changes in the education system since the fall of apartheid in 1994. These include changes in the conditions of service for teachers (Mahlangu & Pitso 2013, pp. 69–75), policy frameworks, teacher training curricula and quality assurance processes for teacher training (Jansen & Taylor 2003, pp. 1–51; Sayed 2002, pp. 381–395), school curricula and the role of the teacher in curriculum development and implementation (Carl 2005, pp. 223–228; Govender 2018, pp. S1–S12). There are even more demands on language teachers who have to adapt to significant changes in the views of language and language learning and the role of language in curriculum in the multicultural and multilingual context of South Africa (Hooijer & Fourie 2009, pp. 129–145; Jordaan 2011, pp. 79–85; Kamwangamalu 2003, pp. 225–242; Neeta & Klu 2013, pp. 255–262). In order to effectively learn from, deal with and embrace the changes, language teachers in South Africa need the soft skills of:

- *Adaptability* (Segura Rondan et al. 2022; Shehada et al. 2021; Tabieh et al. 2021), which is a skill needed to effectively navigate dynamic and diverse classroom environments and can be defined as the effective reaction and response in constructive ways to uncertain circumstances, situations and conditions in and around the classroom environment (Collie & Martin 2016, p. 3; Segura Rondan et al. 2022, p. 65). Adaptability is needed as teachers are responsible for providing differentiated teaching to meet identifiable elements of content, process and context in the classroom (Parsons, Ankrum & Morewood 2016, p. 254).
- *Intrinsic motivation* (Bukhari et al. 2023), which refers to participating in an activity purely for its intrinsic value, for the pleasure, challenge or interest (Oudeyer, Gottlieb & Lopes 2016, p. 257; Xuan 2022, p. 24) and not because of a certain external consequence. Intrinsic motivation thus becomes a sustainable and enduring force that keeps teachers dedicated to their occupation despite the challenges of a VUCA world.

To deal with unpredictability and the need to function when there is a lack of information or when some information is unknown, teachers will need to acquire the soft skills related to becoming lifelong learners. Because of the vast number of changes in policy in South Africa as mentioned in the previous point, literature has shown that there are gaps in terms of the support to teachers for the implementation of policies and new curricula in South Africa (Govender 2018, pp. S1–S12; Nel et al. 2016, pp. 1–14), and, especially since COVID-19, language teachers have had to use the following soft skills to fill those gaps themselves in order to address the specific needs and to promote inclusivity in their contexts:

- *Responsibility* (Aiello et al. 2023; Segura Rondan et al. 2022), which can be defined as the degree to which a teacher consciously makes decisions and takes action, demonstrating dedication and accepting the outcome of the decisions made (Segura Rondan et al. 2022, p. 65).

- *Integrity and ethical behaviour* (Shehada et al. 2021; Tabieh et al. 2021), which relies on the teacher's ability to maintain rules within the educational environment and, in turn, becoming moral examples when carrying out their tasks in and around the classroom (Kusumaningrum, Sumarsono & Gunawan 2019, pp. 612–613). Integrity for educators is the ability to be honest and to have unwavering morals and ethical principles when performing their professional duties, while taking responsibility for their own mistakes without blaming others (Shehada et al. 2021, p. 1202).
- *Awareness of vocational calling* (Aiello et al. 2023, p. 364), which is the teacher's ability to teach with distinctive commitment and a 'deep service ethic' (Bullough & Hall-Kenyon 2012, p. 8) despite adverse situations (Aiello et al. 2023, p. 364).

For complexity related to the chaos created by the quantity of and relationship between the number of factors that need to be addressed within their contexts, language teachers need the soft skills associated with venturesome learning. During the COVID-19 pandemic, language teachers all over the world had to find ways to improve their own teaching and to learn new skills to cope with economic pressures, digital competence, mental issues, feedback to and communication with learners (Situmorang, Pramusita & Nugroho 2021, pp. 53–56). In addition, South African English language teachers have to continuously improve their own language proficiency as the majority of teachers are not mother-tongue speakers (Krugel & Fourie 2014, pp. 219–228). The soft skills that were identified to promote lifelong learning are:

- *Problem-solving* (Segura Rondan et al. 2022; Shehada et al. 2021), which is an intellectual process that starts by determining the source of a problem and finding an effective solution promptly. This soft skill thus identifies the issue, and then analyses and evaluates the situation, before making timely, effective decisions to resolve the problem (Shehada et al. 2021, p. 1202). Problem-solving remains a critical skill to cope with in a VUCA world (Horstmeyer 2020, p. 746).
- *Innovation* (Aiello et al. 2023; Segura Rondan et al. 2022; Shehada et al. 2021; Tabieh et al. 2021), which is a skill needed by teachers to promote the quality and sustainability of their performance (Zhunussova, Baimanova & Naviy 2023, p. 107). Often used as a term in the context of transformation. Innovation is linked to creative thinking (Dou, Li & Jia 2021, p. 1) as it involves the creative and thoughtful application of new ideas, or the adaptation of methods, technologies and approaches to enhance the educational experience and outcomes for students (Kampylis & Berki 2014, p. 6; Kara 2020, p. 99).
- *Organisation skills* (Shehada et al. 2021; Tabieh et al. 2021), which are behavioural patterns used by the teacher to concentrate and manage various tasks effectively. This skill involves appropriate

decision-making, arranging priorities, and managing time and resources (which include, energy, strength and mental capacity) effectively to achieve the desired results within the educational context (Shehada et al. 2021, p. 1202).
- *Planning* (Shehada et al. 2021, p. 1201), which forms part of the daily task of a teacher, from selecting the educational aims and objectives based on the learning outcomes for a lesson to planning how to complete a curriculum for a whole year (Kyriacou 2018, p. 23). Thus, planning is seen as a fundamental cognitive skill that forms part of a teacher's functions. 'It is predicting, preparing and thinking about the future through prior knowledge of what should be done to carry-out a task or reach a specific goal' (Shehada et al. 2021, p. 1201).
- *Leadership* (Shehada et al. 2021, p. 1202), which is a skill that goes further than just teaching in the classroom as it is about knowledge of classroom interaction, setting priorities and directing behaviours and group processes to achieve goals and certain tasks (Leffler 2020, p. 641).

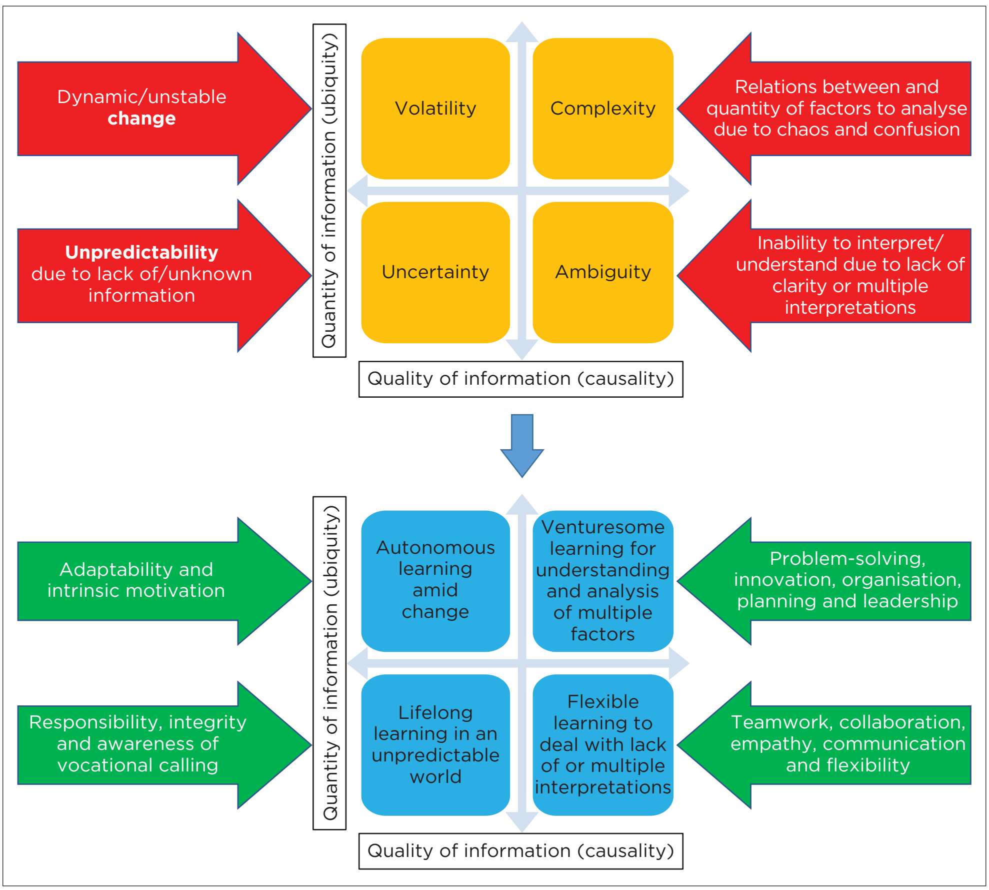
Lastly, language teachers need to employ soft skills too as part of flexible learning to develop their comprehension and interpretation skills in a world where there is often a lack of clarity or multiple interpretations. This is very relevant to language teachers as their beliefs about language, language learning and language in a multilingual multicultural context are continually challenged by contradicting views and findings in research, for example, the most effective ways to teach grammar, the four language skills and the best approaches to incorporating technology in language learning (Ferreira et al. 2013, pp. 389–404; Pelekani 2009, pp. 193–200; Supriadi, Nisa & Wulandari 2020, pp. 47–58; Zhang 2012, pp. 42–76). The soft skills identified to promote flexible learning are:

- *Teamwork and collaboration* (Shehada et al. 2021, p. 1201; Tabieh et al. 2021) which, in the education environment, includes collaboration with colleagues to achieve a common goal as effectively and efficiently as possible (Shehada 2021, p. 1201).
- *Empathy* (Aiello et al. 2023; Da Silva Fernandes et al. 2021, p. 9), which is described as the ability to listen with the intent to understand the emotions associated with a certain situation. Empathy enhances communication between teachers and learners, to promote classroom climate and encourage learning, as the teacher feels, experiences and understands what the learner feels, experiences and understands (Ulfah 2018, p. 171).
- *Communication* (Aiello et al. 2023; Beteille et al. 2020; Da Silva Fernandes et al. 2021; Segura Rondan et al. 2022; Shehada et al. 2021; Tabieh et al. 2021), which can be described as the ability of a teacher to transmit and receive new ideas and different information within the teaching context. Communication skills include listening, observing, mutual understanding

and sending clear messages to learners and colleagues (Segura Rondan et al. 2022, p. 65; Shehada 2021, p. 1201).

- *Flexibility* (Aiello et al. 2023; Shehada et al. 2021; Tabieh et al. 2021), which can be defined as the ability to change or reframe your way of doing or thinking (Houser et al. 2018, p. 1). Teachers need to be flexible to adapt their roles or use new skills according to the changing needs in the school environment (Da'as 2019, p. 289).

Figure 10.1 is based on Taskan et al.'s (2022, p. 213) conceptual map of VUCA and Panthalookaran's (2022, p. 236) matrix with salient features as well as the soft skills required from teachers that were identified in this study. The pressures and challenges of a VUCA world (in the top matrix)




*Source*: Adapted from Taskan, B, Junça-Silva, A & Caetano, A 2022, 'Clarifying the conceptual map of VUCA: A systematic review', *International Journal of Organizational Analysis*, vol. 30, no. 7, pp. 196–217. https://doi.org/10.1108/IJOA-02-2022-3136, conceptual map of VUCA and Panthalookaran, V 2022, 'Education in a VUCA-driven world: Salient features of an entrepreneurial pedagogy', *Higher Education for the Future*, vol. 9, no. 2, pp. 234–249. https://doi.org/10.1177/23476311221108808, matrix with salient features.

**FIGURE 10.1:** Soft skills required of teachers to move from a VUCA world to a world of autonomous, lifelong and venturesome flexible learning.

can be countered by salient features of different types of learning and the soft skills associated with those types of learning (as indicated in the bottom matrix).

## Implications for teacher education

Based on the importance of soft skills and the necessity of the development of these skills in a post-COVID-19 era, teacher education will have to adapt to prepare prospective teachers better for the VUCA world(s) that they will be facing in future (Da Silva Fernandes et al. 2021, p. 10; Darling-Hammond & Hyler 2020, p. 457). However, research has shown that a stand-alone module focusing solely on these skills is not as effective as an embedded model that incorporates the development of soft skills as part of an entire curriculum for teacher education (Kolesnik et al. 2023, p. 427; Tang et al. 2015, p. 130). The training in the acquisition and development of the specific soft skills identified to enable prospective language teachers to cope better in a VUCA world should, therefore, be incorporated into all the modules of a teacher education curricula.

This can be implemented in stages as proposed by Glazkova et al. (2022, p. 74) and by taking an entrepreneurial approach to pedagogy as proposed by Panthalookaran (2022, pp. 244–246). These stages are:

- *Motivational*, where students' curiosity is piqued, and awareness is created of the relevance of these skills to language teachers in South Africa. Panthalookaran (2022, p. 244) in his proposition of entrepreneurial pedagogy as a model for teacher training calls this stage, the stage of creation where a constructivist approach is taken to allow for individual discovery of students, which then becomes the seed for learning.
- *Procedural*, where students are scaffolded to make meaning of educational materials through 'reproduction of information, transference [...], creative application of knowledge and skills' (Glazkova 2022, p. 75). Panthalookaran (2022, p. 245) refers to this as the stage of challenge where students are supported to learn from their initial ideas by developing their soft skills.
- *Obtaining experience*, which is typically related to work-integrated learning, service learning and micro-teaching components of existing teacher education programmes. This stage allows students the opportunity to apply theoretical knowledge, improve their practical skills and solve real-life problems within the language teaching context of South Africa. Panthalookaran (2022, pp. 245–246) refers to this as the stage of collaboration.
- *Analytical and reflexive stage* which requires students to analyse and reflect on their learning activities for their personal and professional development.

## Research methodology

This chapter reports on a sub-project of a larger study that employed a sequential exploratory mixed-method approach to examine the competencies needed by English language teachers from multiple perspectives. The focus is not only on soft skills but also on all competencies required for English language teachers in a VUCA world.

A sequential design is characterised by the fact that qualitative and quantitative methods are implemented consecutively in time (Hall 2020, p. 85). This chapter will focus on the second phase of the qualitative phase of the bigger study, which includes a literature review and interviews with the English Heads of Department (HODs) in one of the school districts in the Gauteng province of South Africa.

## Sampling

Purposeful sampling was used in this study to investigate the specific soft skills required by English language teachers. Participants were selected based on their knowledge of or exposure to these soft skills, or the lack thereof, in beginner English language teachers. This approach was intended to ensure the rigour and trustworthiness of the data and the study's outcomes (Campbell et al. 2020, p. 653; Mweshi & Sakyi 2020, p. 191).

The population of the study consisted of the HODs of 48 secondary schools in the Sedibeng West District and 14 HODs from the population were willing to participate in interviews. The inclusion criteria required participants to have more than three years of teaching experience and to currently be the head of the language department of a high school that offers English as a Home Language or Additional Language. In terms of representation of the different schools in South Africa, nine of the participants were from former Model C schools (multicultural, highly diverse schools which receive state subsidies for staff salaries but charge additional school fees in addition to the funding received by the Department of Basic Education), two were from township schools (state schools that charge no additional fees and primarily admit black learners), one was from an independent school (privately governed schools) and two HODs were appointed at technical schools (vocational schools that prepare learners for a technical career). In addition, the years of experience of the participants were also varied. Five of the respondents had 3–5 years' experience, two of them had 6–8 years' experience and six of the participants had been HODs for more than 10 years. All these participants, therefore, had been HODs before, during and after COVID-19. Furthermore, all the participants had been teaching English for more than nine years when they were interviewed.

Although only fourteen participants might seem like a small sample size, Hennink and Kaiser (2022, p. 5) confirm that in a qualitative study, data saturation can be reached with a small number of respondents. Francis et al. (2010, pp. 8–10) propose an initial sample size of 10 interviews, with a stopping criterion of three. If no new themes emerge in three consecutive interviews, data saturation is considered to be reached. The researchers chose to include one additional interview to confirm that data saturation was achieved. The majority of the interviews were conducted online, and participants remained anonymous.

## Data collection and analysis

The generally accepted data collection procedures as identified by Creswell (2014, pp. 178–180) were used in this study. These steps included setting boundaries, collecting data through interviews and documents and following protocol for recording the needed information. Ethical clearance and permission from the relevant stakeholders were obtained as per the university guidelines and prerequisites for research projects. The primary approach for collecting data was in the form of online interviews. The key benefit of this data collection method is the ability to steadily record and store interviews without resorting to third-party software (Archibald et al. 2019, p. 2). All participants were initially contacted via an independent third party, who informed them of the purpose and assured them that their confidentiality and anonymity would be ensured throughout the study. One participant insisted on having an in-person interview and four participants had connectivity problems during their initial interviews. Those four interviews were concluded via WhatsApp.

At the outset of each interview, the interviewer confirmed that the participants understood the context of the study. Participants were supplied with a concise definition of a VUCA world, and the key terminology associated with the study and were requested to respond to the questions relating to the skills needed by *beginner* English educators in South Africa. These questions were focused on:

- the types of tasks that beginner teachers struggle with or cannot perform at all when they start teaching
- additional tasks, demands and skills that are required from English language teachers in the South African education system
- suggestions for the more effective training of pre-service teachers in education programmes
- their views on the innateness of skills or competencies of English language teachers
- additional demands on/requirements for teachers that became more evident/prominent post-COVID-19.

The data were transcribed and proofread by one of the researchers, providing a holistic view and a comprehensive understanding of the collected information (Creswell 2014, p. 189). ATLAS.ti (IBM, version 23.2.1, 2023) was used for automatic coding in the initial phase, which involved identifying words or phrases and labelling them with a term that summarises the content (Linneberg & Korsgaard 2019, p. 259). Subsequently, redundant codes were deleted, allowing for data analysis.

This chapter will discuss the data related to soft skills that emerged from the interviews, providing insight into the skills perceived by HODs as essential for beginner teachers to effectively function in a VUCA world.

# Findings

This chapter reports on a sub-project of a larger study, focusing solely on data from the broader dataset related to the conceptualisation and definition of soft skills as they pertain to this study. Data were extracted from the transcribed interviews of the fourteen participants, and the identified soft skills were then categorised according to the matrix proposed by Panthalookaran (2022, p. 236) and the soft skills illustrated in Figure 10.1. These are:

- Autonomous learning to deal with volatility
- Lifelong learning to deal with uncertainty
- Venturesome learning to deal with complexity
- Flexible learning to deal with ambiguity.

## Autonomous learning to deal with volatility

As previously discussed, to counteract volatility through autonomous learning, English teachers should have soft skills to cope with and manage changes in the education system in a multicultural and multilingual South African context. Head of Department 3 alludes to the fact that she feels 'South Africa ten years ago and South Africa now has drastically changed' (HOD 3, gender unknown, 2023). The soft skills identified as part of autonomous learning include adaptability and intrinsic motivation.

Head of Department 6 clarifies the importance of adaptability by stating 'If you struggle to adapt, teaching will forever be a problem for you' (HOD 6, gender unknown, 2023). Collie and Martin (2016, p. 2) assert that teaching activities involve novelty, change and uncertainty on a daily basis, and the ability to react successfully to this change is known as adaptability. Head of Department 11 reiterates this through the following statement: 'the competency to keep up with an ever-changing environment, to stay relevant and creative in order to encourage learning' (HOD 11, gender unknown, 2023). The importance of adaptability as a soft skill is also confirmed by the study of Malik and Mohan (2022, p. 245).

The lack of intrinsic motivation as part of autonomous learning was noted by HOD 13 who stated that 'if they manage to see the possibilities' that it would have a great impact on learning but 'they don't engage with the policies. I think it is too much work for them. They want it interpreted for them' (HOD 13, Gender unknown, 2023). The importance of this soft skill for teachers was also pointed out in the study by Bukhari et al. (2021, pp. 1–19).

## Lifelong learning to deal with uncertainty

As indicated earlier in the chapter, a VUCA world has a lack of information, or sometimes information is unknown. Therefore, the soft skills of responsibility, integrity and ethical behaviour and the awareness of vocational calling are necessary to function effectively, and these are all related to lifelong learning. Some of these soft skills were identified as necessary but lacking in beginner teachers when HODs responded to the interview questions.

Head of Department 2 felt that the beginner English teachers do not take *responsibility* as they should.

> 'Yeah, they don't take responsibility for the outcomes that the children have... learners struggle with English home language, but it is possible to get distinctions in matric and so on.'

So, it is possible to teach them; however, you need to take responsibility for the outcomes from Grade 8 and onwards. This expectation was also expressed by principals in the study by Cheng and Cheung (2004, p. 191) as important but not that evident in beginner teachers, but conducted during and post-COVID-19 indicated that teachers displayed a renewed sense of responsibility where they went above and beyond to ensure that teaching and learning took place while learning about new innovative ways to teach online (Aiello et al. 2023, pp. 365–367; Niemi & Kousa 2020, pp. 352–353; Situmorang et al. 2021, p. 53).

*Integrity and ethical behaviour* are part of the everyday activities of teachers, and Kusumaningrum et al. (2019, p. 611) state that it is a 'reference for teachers in carrying out their teaching duties and that the performance of teachers is influenced by ethics'. Head of Department 13 also refers to the quality of work being related to ethics:

> 'I'm not sure if that's just because they lack the knowledge or because they've got maybe they're just not ethical enough... they're definitely not precise and not meticulous in performing most tasks.'

The importance of ethical behaviour was also prioritised by the principals in the study by Cheng and Cheung (2004, p. 191), which they characterised under 'work attitude'.

There is a strong link between *vocational calling*, teacher hopefulness and commitment when teaching (Bullough & Hall-Kenyon 2012, p. 7). Head of Department 8 makes it clear that 'the quickest way to become part of a school is to commit fully'. The aspect of seeing teaching as a calling was not further alluded to by any of the HODs and may be an indication that even experienced HODs might underestimate the importance of vocational calling, and its significant influence on teaching and work engagement (Shang, Zhang & Wang 2022, p. 2). Bullough Jr and Hall-Kenyon also state that it is of utmost importance that emphasis be placed on cultivating career calling among pre-service teachers during their training, as it has a direct impact on individual career growth and learning engagement in general.

## Venturesome learning to deal with complexity

Panthalookaran (2022, p. 234) states that globalisation has made information widely accessible throughout the world, while digitalisation has reshaped the lives of beginner teachers as digital natives, reducing their reliance on certain cognitive tasks and thus 'making their own thinking processes partially redundant'. Head of Department 13 also alludes to the fact that beginner teachers are indecisive, and they cannot 'prioritise what is more important and less important and what to teach first and what not to teach first' (HOD 13, gender unknown, date unknown).

The development of soft skills as previously discussed becomes crucial to compensate for these potential gaps. Complexity in a VUCA world is related to the chaos created by the quantity of and relationship between a number of factors that need to be addressed within diverse teaching contexts, and language teachers need the soft skills associated with venturesome learning. These are problem-solving, innovation, organisational skills, planning and leadership skills.

Greiff et al. (2014, p. 74) underline the fact that globalisation and the growth of technology have led to dramatic changes in all areas of society and that many educational systems fall short of fully exploiting the cognitive potential of students to solve problems associated with these changes. Head of Department 5 addresses one of the areas that beginner teachers struggle to 'deal with more emotional and psychological problems of learners'. Because of the fact that schools promote inclusive education, learners with learning barriers and emotional/psychological problems are placed in one class. This is a huge challenge, especially for new teachers

(HOD 5, gender unknown, 2023). Problem-solving starts with identifying the issue, analysing and evaluating situations, linking information and then making a decision by choosing the best solution at the right time (Shehada et al. 2021, p. 1202). However, students seem to lack this quality, and HOD 5 even indicates that these skills need to be included during teacher training at university. 'Teachers find it difficult to deal with conflict in the workplace, with reference to colleagues and parents. Strategies could be taught at university level' (HOD 5, gender unknown, 2023). Tang et al. (2015, p. 129) similarly indicate that problem-solving skills were lacking in the skill sets of Malaysian teachers and had to be addressed more explicitly in teacher education programmes.

Innovation is a skill needed by teachers to improve and sustain their performance (Zhunussova et al. 2023, p. 107). Head of Department 4 underlines the importance of thinking of novel ways to assist in student understanding, as some of the learners in an [1]English Home Language (EHL) class are not EHL speakers, and also do not share the knowledge, background and context of English native speakers.

> 'It is not even a second language, a third or fourth language for some of them. And we have to look at that and how we can get that child to get to the same outcomes of what is expected in the home language and that they (beginner English educators) find it quite challenging.' (HOD 8, gender unknown, 2023)

The HOD adds that learners come from a different time and environments and thus as a teacher, one has to be innovative when one teaches.

> 'You have to take learners from a township school and teach Dorian Gray in Matric. How do you teach Dorian Gray? And there are only two novels, Life of Pie and Dorian Gray. And you have to teach that to a learner that has never had this type of life experience...if you don't demonstrate it to them visually, orally, all those ways, they really struggle to get to that.' (HOD 8, gender unknown, 2023)

The necessity for the development of innovation skills as part of formal teacher training was also reiterated by Malik and Mohan (2022, p. 245).

Three of the HODs include technology in their discussions as part of innovative thinking to aid in the teaching and learning process as confirmed by Kampylis and Berki (2014, p. 6) who found that the use of technology in the classroom requires educators to think innovatively about the use of technology to aid in teaching. Head of Department 4 explains that:

> '[*B*]ecause we are so used to living in our tiny little world, our little environment, we don't think of the bigger picture. We also need to realise that in that class

1. Under the current *South African Schools Act 84 of 1996* (Republic of South Africa [RSA] Presidency 1996), the school governing body determines which language is offered at Home Language and First Additional Language level, however regardless of the decision made by the governing body caregivers have a right to send their child to any school regardless of the child's competency in the LOLT, HL or FAL (Harmse & Evans 2017, p. 141).

> we're sitting with children whose parents travel, they've seen the world, they've done everything. But we're also sitting in that exact same class with somebody who's never left their hometown. So, we have to use technology as much as we can to actually expose the learners to these circumstances. Most of our new teachers, when they come in, they believe that these children just should automatically understand.'

The importance of digital competence and the effective use of technology to solve problems was prioritised as necessary skills for teachers in the study of Cheng and Cheung (2004, p. 192), which they described as 'technology competency'.

Organisation skills were found to be lacking in beginner teachers by some HODs (4 and 13), and they were of the opinion that this could possibly be an innate skill that cannot easily be taught or acquired externally. When HOD 4 was asked to discuss the skill that teachers are born with, the response was:

> '[*O*]rganisational skills, that is something that some people just have, a natural ability to think logically and to rationally, on how to organise, manage your time, etc. But that is a skill that can, over time, be learnt. But it is a very difficult skill to learn, especially for people who are not prone to organisation and time management.'

Associated with the skill of organising is the ability to plan (Parker & Doak 2012, p. 68).

According to Kyriacou (2018, p. 23), planning is part of the daily task of a teacher. Head of Department 5 states that 'in-depth planning is needed' (HOD 5, gender unknown, 2023) to achieve the outcomes. Furthermore, HODs 1 and 4 mentioned that beginner teachers struggle to manage and interpret the planning they received, 'they struggle sticking to the management plan because there is an overwhelming amount of work' (HOD 4, gender unknown, 2023), 'they are not used to an ATP (Annual teaching plan) and how to finish within a two-week cycle or anything like that' (HOD 1, gender unknown, 2023).

The last soft skill in the quadrant of venturesome learning is leadership, which is a skill that a teacher will use in and outside the classroom (Leffler 2020, p. 641). Heads of Departments 2 and 4 believed that some teachers are natural-born teachers and alluded to the leading of learners and being able to use the ability to lead and also maintain discipline. Head of Department 2 simply stated that 'some people are natural leaders', and HOD 4 reiterated this by stating that 'some are just natural leaders. They have a natural ability to guide learners. Some people just come across as authoritative'. The notion that leadership skills have an influence on discipline is supported by Ratnasih (2017, p. 127) who defines leadership as 'the ability of someone to direct, influence, encourage and control other people' to achieve certain goals.

## Flexible learning to deal with ambiguity

Lastly, but importantly, language teachers need to employ soft skills as part of their flexible learning to develop their comprehension and interpretation skills in a VUCA world where there is often a lack of clarity or multiple interpretations. One of the HODs mentioned during the interview that beginner English language teachers, firstly, 'can't prioritise what is more important and less important and what to teach first and what not to teach first. I mean, something that is logical for us' (HOD 13, gender unknown, 2023). This is important for language teachers as there are various approaches, such as those related to grammar instruction, teaching of language skills and integration of technology as part of language learning (Ferreira et al. 2013; Pelekani 2009; Supriadi et al. 2020; Zhang 2012).

Secondly, teamwork and collaboration have always been an important part of improving educational practice (Datnow 2018, p. 158). Head of Department 8 infers that beginner teachers often isolate themselves from others and do not collaborate often. Head of Department 08 states that, 'you have to look after yourself, but you are part of a team, and you need to give 100%. You are not an onlooker' (HOD 08, gender unknown, date unknown). Datnow also asserts that collaboration is a source of emotional support in times of change, as well as a 'vehicle for instructional improvement'. Hadar et al. (2020, p. 583) confirm that teamwork aided teachers during COVID-19 in managing the difficult circumstances.

According to Ulfah (2018, p. 171), interpersonal relationships are shaped by empathetic values. Head of Department 04 reveals empathy when they list the skills required by teachers.

> 'Children actually need to play whether they are 18 years old or eight years old. 18-year-olds have a lot of stress on their plates. And that's another thing that we need to remember. Our children that are sitting in front of us don't all come from a privileged home. Some of them have to go home, clean, cook, look after their siblings, fetch everyone. They are exhausted, they sit at ten, at night by candlelight because of load-shedding and they try to get through this work. And we have to sometimes consider that as well. We cannot reprimand the child for not always completing the homework.'

Ulfah (2018, p. 171) concludes the study on empathy with the statement that 'as a teacher, it is necessary that they become an early counsellor to overcome student problems, recognise and approach problematic students, guide and counsel them'.

Even though many studies note the importance of communication as a soft skill, it can be a complex concept in the classroom, as it includes verbal, and nonverbal components to mediate learner behaviour, while transmitting information effectively (Muste 2016, p. 430). None of the participants referred directly to the importance of communication for beginner teachers; however, HOD 11 alluded to the fact that beginner teachers struggled to communicate when they needed information.

> 'They all have the skills to use technology effectively but not necessarily the ability to teach or carry over the needed information or explain language rules, conventions and acquisitions of academic language for effective communication.' (HOD 11, gender unknown, date unknown)

As early as 2004, Cheng and Cheung (2004, p. 192) emphasised the importance of 'language proficiency'. However, it was ranked last among the soft skills they identified as necessary for teachers. Most studies conducted during and after COVID-19 indicate that language proficiency will become increasingly important in a 21st-century VUCA context (Aiello et al. 2023; Beteille et al. 2020; Da Silva Fernandes et al. 2021; Segura Rondan et al. 2022; Shehada et al. 2021; Tabieh et al. 2021).

Flexibility, similar to adaptability, is a much-needed skill in an educational environment that can never be stagnant (Da'as 2019, p. 289). When asked which skill is most needed by English teachers now, in comparison to 10 years ago the answer was: 'Flexibility: I think this is the biggest struggle for some teachers. A day never starts or ends the way you planned' (HOD 06, gender unknown, 2023).

The findings of this relatively small study indicate that the HODs of English departments are aware of the soft skills that are required for beginner teachers to survive and thrive in a VUCA world. Examples of the skills that were identified for all four quadrants in Figure 10.1 were highlighted and explained. Even though the participants might not have been aware or knowledgeable of the concepts of autonomous, lifelong, venturesome and flexible learning as necessary for beginner teachers, they were able to identify the soft skills related to these types of learning to address the challenges of teaching in a 21st-century South African VUCA world.

## ■ Limitations and recommendations

The study has limitations. The qualitative phase was based solely on interviews with HODs from the Sedibeng district. Therefore, it is recommended that the study be expanded to include interviews with HODs from additional districts across South Africa. The following recommendations can be made regarding teacher training:

- The English for Education subject group should address curriculum gaps based on the findings.
- Initial teacher education programmes should explicitly focus on the development of social-emotional competence and personality traits to support teachers' effectiveness.

## Conclusion

Soft skills are crucial for teachers to effectively teach and create inclusive learning environments in the face of challenges and disruptions. The findings of this study are aligned with several other studies that have identified soft skills as an area for development and demonstrate the necessity for targeted training in teacher education programmes (Kolesnik et al. 2023; Matteson et al. 2016; Segura Rondan et al. 2022; Tabieh et al. 2021).

Firstly, pre-service and in-service English teachers, HODs and English teacher educators need to recognise the importance of soft skills for beginner teachers to thrive in a VUCA world. Secondly, they must also develop a shared understanding of the concept of soft skills, defined in this chapter as human-related, conceptual skills that encompass both observable behaviours and abstract character traits.

In a VUCA world, teachers need to counter volatility, uncertainty, complexity and ambiguity with their ability to develop their autonomous, lifelong, venturesome and flexible learning by applying the soft skills of adaptability, innovation, intrinsic motivation, responsibility, integrity, awareness of vocational calling, problem-solving, organisation skills, the ability to plan, leadership, and communication, collaboration, flexibility and the ability to empathise. These skills help teachers navigate constant changes, embrace uncertainty, handle complexity and function in situations with limited information.

Even though the study has shown that the HODs were aware of the necessary soft skills that would enable beginner teachers to teach more effectively, they explained how most beginner teachers lack these soft skills. Therefore, teacher education programmes should incorporate the development of these soft skills to better prepare prospective teachers for the challenges they will face in the future. This cannot be achieved through a stand-alone module on soft skills; instead, it should be integrated into every module of the teacher education curriculum. This approach will enable pre-service teachers to become aware of, learn and practice these skills during the exploratory, motivational, procedural, experiential and reflective stages of their training.

Chapter 11

# A 21st-century perspective on reading instruction

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# Abstract

*The Action Plan to 2019 – Towards the Realisation of Schooling 2030* was developed as the Department of Basic Education's (DBE) response to studies that consistently highlighted the state of learners' literacy in South Africa. While the 2016 Progress in International Reading Literacy Study (PIRLS) reported that 78% of learners could not read with meaning, the 2021 PIRLS revealed that this figure had increased to 81%. This indicates that learner performance has worsened since the release of the action plan. Howie et al. (2017, p. 118) and the DBE (2023, p. 9) argue that to improve learners' literacy performance, better training for teachers is essential. Therefore, the purpose of this study was to explore how Grade 1 teachers could be supported in teaching reading in the 21st century.

The science of reading (SOR) and the reflective teaching model for reading comprehension (RTMRC) provided the theoretical framework for this study. A qualitative approach guided the research within a participatory and critical transformative paradigm. A participatory action learning and action research design was employed, allowing participants to collaborate with the researcher as co-researchers in an Action Learning Set (ALS). Data were collected through ALS discussions, reflective journals and fishbone analysis. To gain deeper insights into the research phenomenon, Grade 1 teachers were purposefully selected to reflect on the research questions. Braun and Clarke's (2006, p. 87) six-step thematic analysis was utilised to analyse the data. Herr and Anderson's (2015, p. 49) five quality indicators – outcome, process, democratic, catalytic and dialogue validity – ensured the integrity of the research. The Ethics Committee of North-West University, Vanderbijlpark, South Africa, along with the school board, provided the ethical clearance necessary to conduct this low-risk research project.

The findings revealed that challenges related to the reader, the reading task, the text, the reading strategy and the context were impacting reading instruction and learner performance. Within the ALS, co-researchers utilised the SOR and the RTMRC to explore ways to overcome these challenges. Contextually relevant corrective measures were developed for each factor of the reading event to enhance instruction and align it with a 21st-century perspective on reading. In summary, the findings indicate the need for a comprehensive approach to teaching reading that enables teachers to reflect on how the reader, the task, the text, the strategy and the context influence reading development. This approach empowers teachers to impart knowledge of reading theory and pedagogy while simultaneously enhancing their ability to navigate the complexities of 21st-century teaching through problem-solving, critical thinking and reflective practice.

## Introduction

On the backdrop of the 2021 Progress in International Reading Literacy Study (PIRLS) results, the South African Department of Basic Education (DBE) (DBE 2023, p. 9) recommended that South African universities rethink the way they prepare South African teachers for teaching reading. This recommendation arose from the study's finding that only 19% of Grade 4 South African learners were deemed capable of reading with meaning (Mullis et al. 2023, p. 23). Additionally, South Africa's status as the lowest-performing country among the 43 participants further underscored the need to reevaluate teacher training programmes (Mullis et al. 2023, p. 23). To address this gap, we (the authors) conducted a study to explore how Grade 1 teachers could be supported to teach reading in the 21st century. This chapter presents our findings.

With the *Action Plan to 2019 – Towards the Realisation of Schooling 2030*, the DBE (2015, p. 3) envisioned to improve learners' literacy performance by increasing the number of learners who master the minimum language requirements for Grade 3 by 2030. Unfortunately, the 2021 PIRLS results highlighted the unlikeliness of the goal being attained. The study revealed a decline of 3% in the number of learners who could read with meaning because the study was previously conducted in 2016 (Howie et al. 2017, p. 17; Mullis et al. 2023, p. 23). While the coronavirus disease 2019 (COVID-19) pandemic is considered to be a large contributor to this decline (Van Staden & Roux 2023, p. 10), the pre-COVID-19 statistics did not paint a promising picture that the 2030 goals would have been attained either. Spaull (2022, p. 8) argues that if we are to make an attempt at achieving the 2030 goal set out by the DBE (2015, p. 3), 'we are impelled to find new ways of improving faster'. It was a similar thought that ignited the birth of this study. As university lecturers, we (the authors) were deeply concerned and intrigued by the state of literacy in South Africa. We were guided by our responsibility towards our community, to use our academic positions to contribute to advancements in schools. We embarked on this study – guided by the primary research question 'How can Grade 1 teachers be supported to teach reading in the 21st century?'

The need for such research was further highlighted by the National Reading Panel, which conducted a university audit of pre-service teacher training programmes (Spaull 2022, p. 4). The report revealed that South African teacher training programmes lacked coherence around the fundamentals of teaching reading, that insufficient time was allocated to the practical elements of teaching reading and that universities were not effectively preparing incoming teachers to teach reading (Spaull 2022, p. 4). This was also seen in the 2016 PIRLS report, which stated that 70% of teachers had language testing as the focus of their formal education and training, while only 58% had been trained in reading pedagogy and 36% had been taught reading theory (Howie et al. 2017, p. 121). As such, we deduced that there were a significantly large number of teachers who were teaching reading, despite being insufficiently trained to do so. Considering that learners are highly dependent on their teachers to become effective readers (Pretorius & Klapwijk 2016, p. 2; Spaull & Jansen 2019, p. 151), this was deeply concerning.

The National Planning Commission (2011, p. 262) states that universities play a crucial role in developing nations by educating and training individuals with advanced skills, acting as key producers of new knowledge, and offering opportunities for social mobility. This is further highlighted in the 21st century, where the effects of globalisation and technology have raised the demand for universities to produce graduates equipped with the knowledge, skills and values necessary to succeed in an increasingly dynamic world. Twenty-first-century teachers are challenged to deal with the increased pressures of a radically changing environment while suitably preparing learners for life and work (Onebunne 2022, p. 26). Teachers have the responsibility of developing learners' critical and creative thinking and problem-solving skills to improve their capacity for future employment. Furthermore, the quality of instruction they provide has a significant impact on the economy, the extent to which community needs are met, and whether teaching contributes to creating a modern society, with equal opportunities and empowerment (Onebunne 2022, p. 28). Twenty-first-century teachers also need to equip learners with the tools they need to improve their own capacities to lessen their impact on the natural and social environment and to shape human behaviours that will preserve the present and future quality of life (United Nations Educational, Scientific and Cultural Organization 2021, p. 1). It is thus understandable that teachers should be better prepared to teach for the 21st century. As Spaull (2022, p. 21) argues – 'no education system can move beyond the quality of its teachers'.

Teaching reading in the 21st century is even more important because it is a fundamental skill for all people living in the 21st century (Shanahan 2020, p. 119). It serves as a foundation for learning, promotes the development of 21st-century skills (cognitive, intrapersonal, interpersonal and technical skills), supports the achievement of sustainable development, and predicts long-term academic and employment success, health outcomes and adaptive skills in adulthood (Burns, Duke & Cartwright 2023, p. 36; Geisinger 2016, p. 246; Moats 2020, p. 6; United Nations 2015). In this chapter, we report on how active and collaborative research with teachers offered insights into supporting them in teaching reading in the 21st century. In the subsequent sections, we (the authors) outline our theoretical framework, discuss our research methodology, and present our findings.

# Theoretical framework

Kivunja (2018, p. 46) defines a theoretical framework as a framework for theories that are used to inform all theoretical decisions in research. The framework guides the choice of design, the gathering and analysis of data, and provides a background to how the researcher defines the philosophical, epistemological, methodological and analytical aspects of the research (Adom, Hussein & Agyem 2018, p. 438). Considering the primary research question – 'How can Grade 1 teachers be supported to teach reading in the 21st century?' – the science of reading (SOR) and the reflective teaching model for reading comprehension (RTMRC) were used.

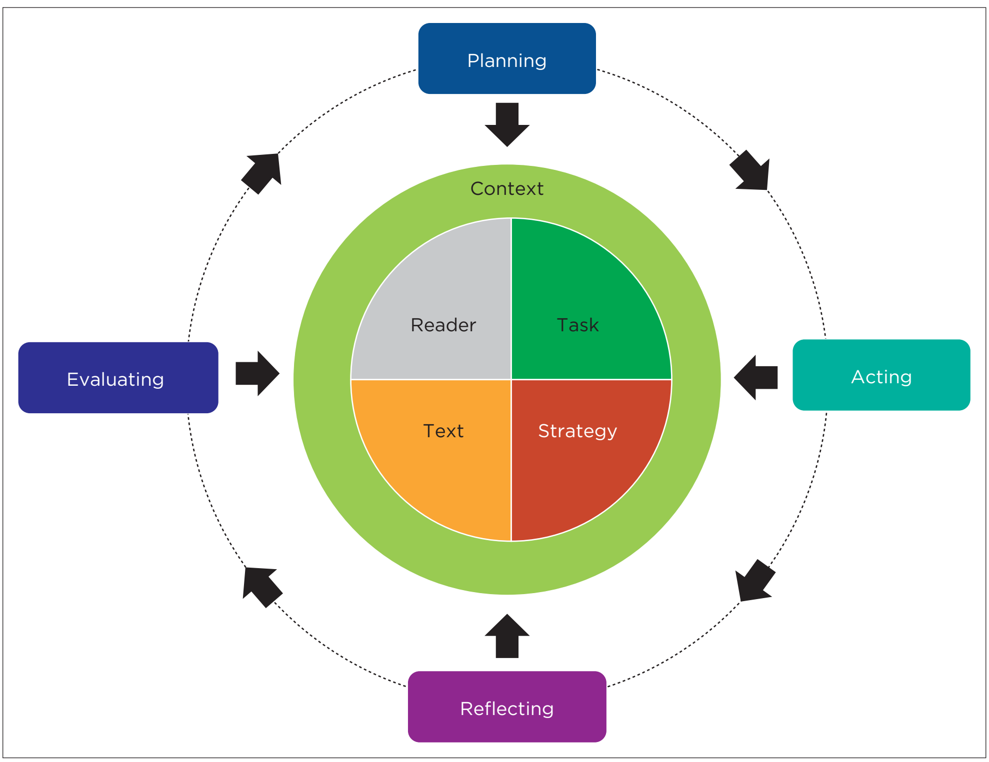
## The science of reading

The SOR is the term given to scientific research on reading done in various fields (including but not exclusive to education, cognitive psychology, developmental psychology and neuroscience) that helps educational stakeholders understand what reading is, how it develops and how it should be taught (Hanover Research 2022, p. 6; Jenner 2021, p. 1). Petscher et al. (2020, p. 268) explain that the SOR has significantly developed over the past decade – citing that more than 14,000 peer-reviewed articles about reading have been published in journals during this period. While the research collectively focuses on varying aspects of reading, when considered together, it provides a science that allows educational stakeholders across institutions to make informed decisions on educational practices and policies. While the SOR is yet to provide all the answers – it does provide an ongoing, multi-disciplinary, 21st-century perspective on how reading develops and how it should be taught. The SOR allows teachers to rely on research gathered from fields outside of education, to understand how reading develops. Researchers argue that when reading instruction is aligned with the SOR, learners are given the best opportunity to experience success with reading (Moats 2020, p. 23). Within the context of this study, the SOR provided a modern perspective on reading that was used to inform the researchers' (authors and teacher participants as co-researchers) actions and decisions throughout the research process.

## Reflective teaching model for reading comprehension

The RTMRC is a model for reading instruction that integrates the process of reflective practice and the various factors that influence reading comprehension during the reading event (Oo & Habók 2020, p. 133). Within the model, reflective practice is viewed as the intentional act of reflection performed by teachers to systematically evaluate their teaching practices to inform advancements in teaching with the purpose of making learning more effective (Kennedy-Clark et al. 2018, p. 43; Oo & Habók 2020, p. 130). The model illustrates how teachers need reflective practice to develop a high-level understanding of reading instruction and its impact on learners' reading comprehension. The factors within the reading event, on the other hand, refer to how the reader, task, strategy, text and context influence a learner's reading comprehension. Each of these is discussed later in this chapter. The model assumes a 21st-century perspective on education because it adopts a constructivist learner-centred approach to teaching reading (Oo & Habók 2020, p. 135). Additionally, by including the various factors within the reading event, the SOR is considered. Figure 11.1 illustrates the RTMRC, which includes the ongoing reflective practice processes of planning, acting, reflecting and evaluating; and the various factors involved in the reading process that impact a learner's reading comprehension.

Figure 11.1 highlights how the factors within the reading task are positioned within the reflective practice process. Oo and Habók (2020) do this to highlight the need for teachers to critically reflect on the impact that each factor has on learners' reading comprehension. Oo and Habók (2020, p. 136) argue that when reading instruction is aligned with the model,




*Source*: Authors' own work adapted from Oo, TZ & Habók, A 2020, 'The development of a reflective teaching model for reading comprehension in English language teaching', *International Electronic Journal of Elementary Education*, vol. 13, no. 1, pp. 127–138. https://doi.org/10.26822/iejee.2020.178.

**FIGURE 11.1:** Reflective teaching model for reading comprehension.

learners experience learning as more successful. Within the context of this study, the RTMRC provided a recent model for reading instruction that highlighted the need for reflection, problem-solving and critical thinking as requirements for 21st-century education.

## Methodology

Research methodology is defined as the art of doing research in a scientific manner to ensure that the research is thoroughly understood, planned and applied (Kapoor et al. 2022, p. 23; Patel & Patel 2019, p. 48). As a mode of inquiry, qualitative research provides insight into the experiences and social behaviours of people (Merriam & Grenier 2019, p. 3). Within this study, a qualitative approach allowed the researchers to investigate the experiences and social behaviours of two Grade 1 teachers, with the purpose of exploring their capacity for teaching reading in the 21st century. A participatory and critical transformative paradigm was used to actively and collaboratively explore the question – 'How can Grade 1 teachers be supported to teach reading in the 21st century'. The choice of paradigm was guided by the belief that community members are best positioned to address their needs and challenges because they understand all its contributing factors (Omodan 2020, p. 35). Participatory action learning and action research (PALAR) was used as a research design. This ensured that participants' knowledge and experiences were valued and that they were actively involved, as co-researchers, in the research process (Wood 2020, p. 8). Participatory action learning and action research encouraged the researchers to engage with one another as both observers and critical reflectors to ensure that positive interactions and relationship-building were guiding the exploration of the research questions (Wood 2020, p. 81). Participatory action learning and action research was valuable for investigating these research questions because it emphasised the need for reflection, critical self-reflection, communication and leadership (Wood 2020, pp. 32–34). These skills are also consistent with a 21st-century perspective on education. Furthermore, PALAR provided the initial platform for developing relationships, and it provided a framework for aligning the research to the community's needs (Pedro 2023, p. 55).

Purposive sampling was used to identify School Y as the research site. Because of executive and administrative challenges, eight participants withdrew from the study, and a new research site (School Z) was selected. School Z was purposefully identified in a semi-rural area in Sedibeng East, South Africa. Unfortunately, School Z only had two Grade 1 classrooms, so the sample group was limited to two teachers. The teachers worked alongside the primary researcher, as co-researchers to form an Action Learning Set (ALS). To overcome possible challenges that could have arisen from the small sample group, an ethical agreement was established within the ALS to outline that all three members had to be present for a session to proceed. Within the ALS, the researchers worked actively and collaboratively with one another as co-researchers in the research process to address complex issues (International NGO Training and Research Centre 2021, p. 1; Wood 2020, p. 66), which in this case was related to challenges experienced with reading instruction. Ten monthly sessions, lasting approximately an hour and a half each, enabled the ALS to deliberate on ways that they could be supported to teach reading in the 21st century.

Within the PALAR design – using the PALAR process as a framework (Wood 2020, p. 106) – the study ran over two cycles of action research. Similar to the RTMRC, both cycles involved the continuous phases of planning, acting, observing and reflecting (see Zuber-Skerritt & Perry 2002, p. 177). The first cycle comprised five recorded ALS sessions. During this cycle, ALS discussions were used to negotiate ethical issues (voluntary participation, consent and recognition) and unpack the lived experiences of participants. A fishbone analysis was used to collaboratively explore the challenges teachers experienced with reading instruction in their classrooms. As an art-based data-generating technique, the fishbone analysis allowed the ALS to collaboratively identify and explore challenges while expressing their creativity and critical thinking (Coccia 2017, p. 5). Cycle 2 comprised an additional five ALS sessions, where ALS discussions and reflective journal entries were used to explore reading and its instruction. The SOR and the RTMRC provided the blueprint for examining reading instruction. Reflective journals were used to advance participants' voices and the understanding of their personal experiences (Bashan & Holsblat 2017, p. 2) while extending the opportunity for critical reflection. Cycle 2 provided insight into the teachers' reading practices, and through collaboration and reflective practice, the ALS were able to develop and implement changes in instruction aligned with the SOR and the RTMRC.

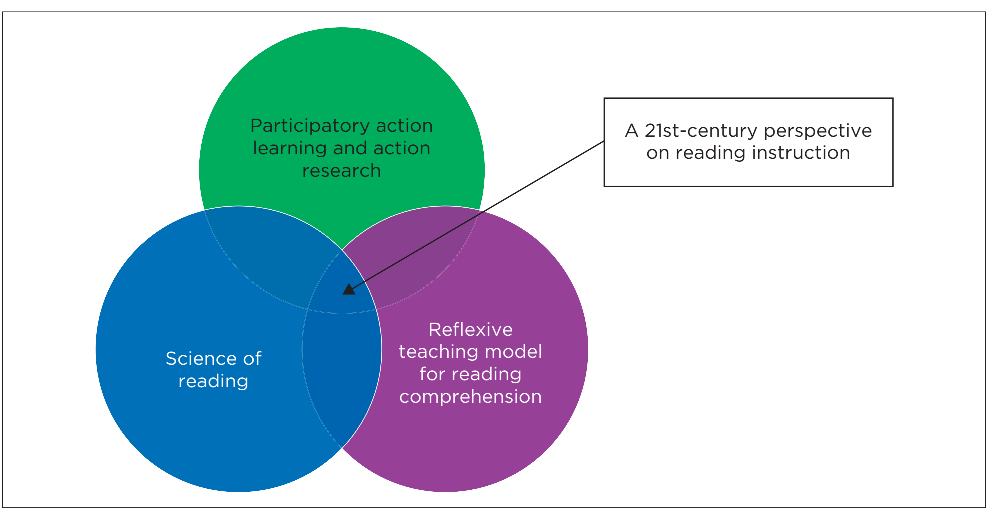
Typical with PALAR, data were analysed in two ways. Firstly, the ALS performed a practical analysis of the data by making use of critical reflection, dialogue and transformative learning opportunities. This allowed the co-researchers to collaboratively use reflective practice as an opportunity to gain insight into their understanding and experiences with teaching reading. This reflection was used to guide actions and decisions within the various phases of planning, acting, observing and reflecting in Cycle 2. Secondly, a theoretical analysis of the data was performed by the primary researcher (first author) using the six steps of a thematic analysis provided by Braun and Clarke (2006, p. 87). These steps included becoming familiar with the data, identifying initial codes, searching for themes, reviewing themes, defining and naming themes and lastly, producing a report with the findings. The credibility of the study was ensured by applying the five quality indicators as set out by Herr and

Anderson (2015, p. 49), namely outcome validity, process validity, democratic validity, catalytic validity and dialogue validity.

## Discussion of findings

In a manner consistent with the theoretical framework, in this section, we discuss and reflect on how teachers can be supported to teach reading in the 21st century. Figure 11.2 shows how PALAR, the SOR and the RTMRC together form a framework for identifying potential improvements.

Figure 11.2 illustrates how the research design and the theoretical framework aligned to provide an in-depth exploration, understanding and response to the research questions. Participatory action learning and action research provided its foundational principles (communication, commitment, competence, compromise, critical self-reflection, collaboration, coaching, relationships, reflection and recognition) and the requirement for the active and engaged participation of participants (Wood 2020, p. 30). Participatory action learning and action research provided a 21st-century approach to resolving challenges in schools because it encouraged action, collaboration and problem-solving. The PALAR approach was helpful, because, before the study, teachers did not have the platform or feel like they had the capacity to inform change in their own lives. After our interactions with the ALS, however, they realised and acted on their agency to inform change. The SOR provided insight into how reading should be viewed in the 21st century. It helped the ALS move past the simplistic view that decoding and reading are the same thing. The SOR helped the ALS understand reading as a complex process of combining information in a text with the reader's background, content and




*Source*: Authors' own work.

**FIGURE 11.2:** Integration of research design and theoretical framework to reflect on the research questions.

cultural knowledge to construct meaning (Duke & Cartwright 2021, p. 36; Jensen 2021, p. 70; Joubert 2019, p. 109; Spaull & Jansen 2019, p. 152; Westerveld, Armstrong & Barton 2020, p. 2). The SOR was helpful because, before the study, teachers were focused on reading as it is described by the curriculum – focused on a series of small daily 'disconnected' tasks that needed to be assessed – instead of focusing on how these daily tasks provide a holistic attempt at developing learners' reading proficiencies. The SOR provided insight into reading and the content and pedagogical knowledge that was needed to effectively transfer the complex skill to learners. The RTMRC provided the framework for using the reflective teaching process as a means for understanding how the reader, the task, the text, the strategy and the context should be considered when teaching reading. The model was valuable for the study because it provided a 21st-century framework for making decisions that positively impact reading instruction. Collectively, PALAR, the SOR and the RTMRC allowed the researchers to actively and collaboratively work with one another to understand how reading instruction could be improved in the 21st-century classroom. In this section, we break the RTMRC down, by looking at how the reflective teaching process informed changes within each of the factors in the reading event. We discuss what was found in School Z (and provide verbatim quotes) and use it to reflect on how reading instruction could be approached in the 21st century. Within the RTMRC, we used the SOR as a basis for understanding how reading is viewed, how it develops, and how it should be taught.

## The reflective practice process

The reflective teaching process involves the continuous actions of planning, acting, reflecting and evaluating while teaching (see the outer circle of the RTMRC in Figure 11.2) (Oo & Habók 2020, p. 133). For reading instruction, the reflective practice process informs that teachers plan reading experiences, implement them, reflect on the successes and/or failures thereof, and evaluate how they can be improved to maximise learner achievement. During the initial stages of this research, the participants demonstrated some insight into their capacity for reflective practice. They indicated that the learners in their classrooms were struggling with reading:

> 'But 30 grade ones in your class. And you've got let's say 18 of them struggling, really struggling with reading.' (P2)

By doing so, it revealed an attempt at the reflective teaching process. And while some reflection had taken place – the teachers did not use it to inform further inquiry. The reflection lacked depth in understanding reading and its development, and the need for reflective practice. Through our encounters, we realised that although teachers had the capacity to solve their own challenges because they understood all its contributing factors – they needed the skill of using reflective practice to understand how learner achievement with reading could be improved. Participatory action learning and action research thus allowed the participants the opportunity to collaboratively use and develop these skills. Within the ALS, we set out to identify and understand the challenges the participants experienced with teaching reading to use it as the basis for our reflections. The fishbone analysis revealed various factors that hindered the teachers' abilities to provide effective reading instruction, including a hindered well-being and a lack of support from stakeholders. With this chapter, however, we (the authors) focus on the challenges that were identified that were specific to reading instruction only. In the section 'The reader', we highlight how the RTMRC was used to adapt reading instruction for the 21st century. We break down the RTMRC and describe how reflective practice was used to inform changes within the reader, task, strategy, text and context.

## The reader

Oo and Habók (2020, p. 131) argue that a reader's understanding of a text is shaped by factors such as their age, motivation, learning strategies and style, and personal circumstances. This is understandable, given that text comprehension depends on the interactive relationship between the reader's background knowledge and the text itself (Nordin et al. 2013, p. 469). During Cycle 1, the participants expressed their awareness of the varying needs that learners had:

> 'Just my class, that was so different [...] other children that have [...] different needs, psychological needs, and physical needs [...] one also has behavioural disorders.' (P01, date unknown)
>
> 'We get a lot of children [that] weren't exposed to English.' (P02, date unknown)

And while there was an awareness of the learners' needs, there was a disconnect in understanding how it affected the learners as readers. There was also an acknowledgement that learners had little motivation to read and perhaps had even fewer opportunities to read:

> 'When COVID came, we weren't allowed to send books out.'
>
> 'But [... you] ask [*the learners*]: "Do you have storybooks at home?" "No." "Does Mommy read a book to you?" "No."' [... you]
>
> 'There's no motivation coming from the parents. So why should the children show an interest?' (P02, date unknown)

Using the reflective practice process, we considered how these varying needs influenced the learners as readers. We reflected on some of the learners' needs, planned for interventions, implemented them, reflected on them and evaluated their effectiveness. The purposeful inclusion of reflective practice ensured that teachers were critically analysing teaching and learning and continuously evaluating how these could be adjusted to accommodate learner needs to make learning more effective and culturally responsive. It was a crucial advancement because the 21st century has placed increased demands on teachers to accommodate diversity. Reflective practice saw teachers adapt reading instruction to have a better focus on the learners as readers, rather than just solely focusing on curriculum requirements:

> 'We're going to change our way of teaching [...] Kind of take it [...] easy on the reading, where they'll come read the sounds to us [...] instead of [...] a whole reading piece [in Term 1].' (P02, date unknown)

> 'Yes, because I think that can have like a domino effect [...] I feel like that spends more time on phonics or more detailed time on [...] phonics. Maybe that would have a better outcome.' (P01, date unknown)

> 'I think it's easy to forget that they [the learners] don't have the [*reading*] skills that we have [...] And that's the thing; they say a teacher has to be a lifelong learner – see your mistakes and say, you know what, try this; it might have a different outcome [...]' (P01, date unknown)

Successful adaptations that arose from reflective practice within this factor of the reading event included strategies for developing oral language as a precursor for reading, support materials with picture cues to develop vocabulary and sight word recognition, more opportunities for individualised, small-group and shared reading experiences in class to enhance motivation, and the addition of a reading corner to create more opportunities for increased motivation for reading. These interventions were informed by the SOR.

## ☐ The task

Oo and Habók (2020, p. 131) explain the task as any activity that the reader must engage in while reading. Higgs et al. (2023, p. 1) argue that reading is guided by a task and that the readers' awareness of the task has a significant impact on reading comprehension and task success. Within the context of this study, ALS discussions allowed the researchers to navigate across the various schooling terms to evaluate whether the tasks that were given to learners were aligned with learners' developmental levels, lesson objectives and curriculum expectations; and whether learners were aware of the task that was expected of them. Using reflective practice, the ALS were able to identify a few opportunities for improvement.

Firstly, teachers explained that the focus of reading instruction for the first term (first 3 months of the schooling year) was phonics instruction. The objective was to teach as many of the 26 letters of the English alphabet as possible, because 'that is what the curriculum required' (P2). However, an investigation of the curriculum revealed that teachers were expecting far beyond the curriculum requirements, and the task was not aligned with the curriculum, nor did it have the readers' (learners) level of development in mind. While the curriculum policy prescribes minimum requirements, and schools may choose to exceed or supplement these, if the reader (learners) was considered – this would have been seen to be more harmful than beneficial to learners reading development. Initially, teachers would spend 3 days teaching one letter, and then later in the term, they would teach up to three letters weekly, despite acknowledging that learners were not coping:

> 'I can guarantee work overload.' (P02, date unknown)
>
> 'I'm not spending enough time on these specific sounds.' (P01, date unknown)
>
> '[... *The*] first three letters they catch very quickly [...] but then the more letters we add, the more confused they become.' (P02, date unknown)

Secondly, the teachers identified the discrepancy between their teaching and learning and the assessment practices. For example, despite acknowledging that learners were not coping with the number of letters they were taught in the first term, learners were given decodable texts to read as the task for assessment. The solution they offered to compensate for the challenges learners experienced with the task, was to send the text home two weeks prior to the due date for learners to practice as a prepared reading task. Understandably, learners (and parents) resorted to 'parrot reading':

> 'This parrot reading – that they memorise a story. You give them prepared reading, it's a little paragraph, little reading piece and they come, they're looking in your eye and they say it.' (P02, date unknown)

The reflective practice allowed the ALS to investigate the misalignment between lesson objectives, curriculum standards, assessment practices and reading tasks. The ALS created the communicative space for us to reflect on how reading develops and how appropriate tasks could be included to align with this development. The ALS explored possibilities for tasks to ensure that they provided insight into learners' attainment of reading skills. Interventions within this factor saw the ALS develop a systematic and sequenced phonics plan that outlined the scaffolded progression of phonics through the year. The phonics plan was aligned to curriculum standards and resources (word cards, activity cards, worksheets and assessments) were developed to support the teaching, learning and assessment of the reading task. Assessments were aligned with the sequenced and systematic teaching of phonics and scaffolded assessments were developed to reflect the progression of reading skills across the four schooling terms. A further intervention within the task was the inclusion of more reading opportunities to allow learners to experience different reading tasks (e.g. reading for enjoyment or visualising the text). Shared, group-guided and individual reading opportunities were planned for, instead of only including prepared reading tasks. The inclusion of individualised reading experiences also allowed the teachers to align the task to each reader's reading capabilities more effectively. These interventions allowed the ALS to understand how the reading task should be aligned with the development of reading, as recommended by the SOR.

## ☐ The strategy

Reading strategies refer to a reader's use of specific, intentional, goal-directed mental processes or behaviours that support the reader's capacity to decode a text, understand its vocabulary and construct the meaning (Oo & Habók 2020, p. 131; Sun et al. 2021, p. 1). Research has found that a reader's use of reading strategies supports reading fluency and reading comprehension (Sun et al. 2021, p. 1). Within this study, ALS discussions and reflective journals were used to investigate how teachers were supporting learners to develop a collection of reading strategies that they could use to support comprehension while reading. The researchers explored strategies within each of the five essential components of literacy: phoneme (phonemic) awareness, phonics, vocabulary, fluency and comprehension. An important advancement that was made within this reading factor was that the ALS investigated what each component is and how each influenced the development of reading comprehension. A major finding here was that although the teachers were teaching aspects of each component, they did not understand the depth of its influence on the reading process, how the various components were connected and how each of the components should be consistently improved to enhance learners' capacity for comprehension:

> 'I can already see the mistakes I made in the beginning of the year […] there are things that I want to try [*to*] adjust […] I think sometimes, we [*teachers*] lack the knowledge, don't think about, okay, this could have an impact in the long run.' (P01, date unknown)

Reflective practice saw the teachers analyse and reflect on if and/or how their instruction was supporting the development of each component. Interventions within this factor for reading saw the ALS develop purposeful strategies to teach each reading component and to support learners with acquiring reading strategies within each. To enhance the attainment of phoneme awareness, explicit, systematic and sequenced instruction of phoneme awareness was emphasised. We discussed strategies to teach sound awareness and developed resources to emphasise sound and not just the sound-letter correspondences. This was an important consideration in this context because many of the learners did not have exposure to English prior to Grade 1, and this affected their ability to identify and produce the sounds of English. A valuable contribution to developing strategies for phoneme awareness was a play-based approach to identifying sounds, the scaffolded instruction of phoneme awareness and the explicit teaching of how the speech organs are used to produce each sound. To support phonics, the systematic and sequenced phonics plan was developed, and a list of words was associated with each rime (or word family) – to support learners with using the strategy of combining the onset and rimes in words to support reading fluency. To enhance vocabulary, explicit vocabulary instruction was catered for to account for the influence that vocabulary knowledge has on comprehension. The researchers discussed strategies for word learning and developing word consciousness. These included teaching word relationships, discussing the multiple meanings of words, developing learner-friendly definitions and allowing learners to use new words in context. Vocabulary development was integrated with phonics instruction and other subject areas, to enhance understanding across the curriculum. To account for fluency, the researchers included the teaching of onset and rimes to help learners identify patterns in words.

Furthermore, resources were developed to integrate instruction within the various language skills (listening, speaking, reading, writing and handwriting) and subjects to allow learners more exposure to and practice with vocabulary. With regard to reading fluency, the researchers discussed the importance of shared and group-guided reading experiences, and how they (and choral reading) should be used to support learners' attainment of reading with prosody, an appropriate reading rate and comprehension. To support comprehension, the researchers discussed multiple reading strategies (visualisation, summarising, looking for main ideas, inferring and predictions) and how shared and group guided reading opportunities provide teachers with the platform for modelling these strategies, which young learners can then later imitate. An important finding was the need for increased reading opportunities, the use of constant reflective practice to enhance learners' capacity for using reading strategies and purposeful, explicit and systematic instruction.

## ☐ The text

Krokou (2022, p. 979) states that texts are 'vehicles for knowledge acquisition' because the reader absorbs and conveys knowledge from the text. Most commonly in the early years, texts may take a narrative (e.g. fable and fairy tale), or informative (e.g. newspaper, textbook and dictionary) form. Considering the text is valuable for understanding how reading comprehension develops. Thus, there is a significant relationship between the text and reading comprehension. Krokou (2022, p. 980) explains that reading involves comprehending the text, developing and interpreting its meaning and applying the meaning gained to complete a specific task. There is thus constant interaction between the reader and the text (Gilbert 2017, p. 181; Lim et al. 2018, p. 146). With the ALS, we used reflective practice to analyse how the teachers' choice of texts was supporting learners' development of reading comprehension. The ALS reflected on whether the texts accounted for the variance in learners' reading skills across the four schooling terms, and whether the choice of texts was aligned with the various reading tasks required by curriculum standards. The researchers noted areas for improvement. Firstly, the importance of creating more reading opportunities and aligning the text to varying reading tasks was identified. To do this, the teachers approached the school management team and school governing body to request funding for additional reading materials and the request was granted:

> 'We got new readers, and they [the learners] were excited.' (P01, date unknown)

Secondly, the researchers considered how additional texts could be made available for supplementary reading at home:

> 'But if [...] ask these kids: "Do you have storybooks at home?" "No." "Does Mommy read a book to you?" "No." So, a lot of kids come and ask can they take a [...] book home so they have stories.' (P02, date unknown)

Thirdly, the researchers reflected on the importance of aligning the choice of texts to reading instruction within phoneme awareness, phonics, vocabulary, fluency and comprehension. We discussed the importance of choosing the text to align with instructional needs (and curriculum requirements), rather than using the text as an indication of what needs to be taught. This was important to consider, especially in the early stages of reading development, where learners have a limited repertoire of reading skills. The choice of text was also scaffolded to reflect the progression of reading development across the four schooling terms in Grade 1. Finally, the ALS also analysed the prescribed language workbooks and how the texts within them were used. The ALS noted that the texts in the workbooks did not provide an extension of the reading instruction provided within the components of reading. In response to this, the teachers used their knowledge and experience to write a series of decodable texts that were aligned with the phonics plan that the ALS had developed:

> 'We decided we [*were*] gonna [going to] make our own stories.' (P02, date unknown)

This ensured that the texts were aligned and provided an extension of the phonics and vocabulary instruction that was already provided. The researchers also recognised the importance of exposing learners to more reading texts and ensuring that these texts reflected the backgrounds and lived experiences of learners. Ultimately, the ALS created the space for the researchers to reflect on how the reading texts could be used to enhance and extend teaching and learning and provide support to learners as they become more proficient with reading.

## The context

While there are variations in understanding what is meant by the context as a factor in the reading process, we acknowledge the influence that both the socio-cultural context and the instructional context have on developing reading comprehension (Oo & Habók 2020, p. 131). Dehqan and Samar (2014, p. 405) describe how cognitive development cannot be separated from social and cultural experiences, because cognitive development is dependent on social interactions. With regard to reading, the socio-cultural context provides learners with background knowledge (content and cultural knowledge), literacy knowledge and even motivation for reading. The instructional context, on the other hand, refers to the influence that the teacher, learners, content and instructional activities have on teaching, learning and learner performance (Turner & Meyer 2000, p. 70). As stated earlier, the 21st century has placed an increased demand on teachers to accommodate learners living and learning within diverse contexts (Arya & Maul 2021, p. 273). The findings were no different at the research site of this study:

> 'Just my class, that was so different. You know, one very clever child, and one child that doesn't [*remember*] anything, got other children that have got different needs, psychological needs, and physical needs. And one needs to sit closer. The other one also has behavioural disorders […]' (P01, date unknown)

> 'Some children don't understand what you're reading to them […] They're not fluent in English and they don't speak English at home.' (P02, date unknown)

> 'We get a lot of children that come up from […] different schools. They weren't exposed to English.' (P02, date unknown)

The varying learner needs placed a significant demand on the teachers. They expressed their feelings of being overwhelmed, but also their desire to support the learners in their classrooms:

> 'You get to a point where you, you've got this child in your class, and you've tried everything […] I give up. I don't know how else to further help you […] And then it's, okay, you leave it for a while and then it's like, okay, now I feel too guilty – let's try something else.' (P02, date unknown)

Through reflective practice in the ALS, we analysed the challenges within the socio-cultural context and the instructional context to identify areas for improvement. An important discovery within this cycle of planning, acting, reflecting and evaluating was the value of adjusting reading instruction to the context. Improvements that were made within the context included understanding how language barriers influenced reading development and making conscious efforts to address them. This included explicit instruction in phoneme identification and production and vocabulary development. We considered how the instructional context was supporting (and/or hindering) reading development. Findings included how the workload was unsupportive of reading development, instructional practices were implicit, reading opportunities were limited, reading texts were not suitable for the learner's socio-cultural context and learners' language repertoires weren't considered. We also noted how the instructional context was influenced by the teachers' emotional and mental state and how their teacher training had a significant impact on reading. We realised the value of collegial support and the impact it has on teachers' wellbeing:

> 'I don't think we often get the spaces to, as teachers, to just share ideas and [...] I think that's been the advantage of this [*study*] [...] actually saying I'm taking time and I'm going to sit here and let's look at what we're doing and what can we [*do to*] fix it. Because usually, you would just be like: "Arg, I know there's a problem." But [*we just leave it*] [...].' (P02, date unknown)

## Reflecting on the reflective teaching model for reading comprehension

The use of the RTMRC provided a framework for ALS to analyse reading instruction at the research site. The model guided us to navigate between cycles of planning, acting, reflecting and evaluating, to gain critical insight into how the reader, task, strategy, text and context could be improved to support reading instruction guided by the SOR. Reflective journals and ALS discussions highlighted the need for reflective practice as they provided insight into the context and areas for improvement:

> 'I'm experiencing the same challenges [*as P02*], but I didn't even think about it [...] I've never thought: "Okay, this is actually a challenge. Oh, [...] this might be why [the learners are struggling]."' (P01, date unknown)

The experience allowed us to not only make improvements to the classroom but also support one another in developing critical 21st-century skills. These included problem-solving, creative thinking and critical reflection, as these were needed to develop our capacity to respond to context-specific needs:

> 'It's [reflecting on the challenges] just opened our eyes to realise, uh-oh. But I think we were looking at it like this [external challenges] instead of this [specific reading challenges that they have influence on].' (P02, date unknown)

Based on these findings, we argue that if teachers (in- and pre-service) are trained to think about reading and approach reading instruction in the same way, it would support them to experience more success with reading instruction in the 21st century. As Compton et al. (2014, p. 56) argue – interventions for reading should be informed by reading theory. We know that when teachers experience success with teaching, it has a direct influence on learner achievement. The takeaway from this study is that language teachers should not just be taught language rules during their training but reading theory and reading pedagogy too. Teachers should be trained to understand and integrate reading theory and pedagogy while developing their problem-solving, creative thinking, critical reflection and reflective practice skills to capacitate them as teachers in the 21st century. These skills should then be used to plan reading instruction that responds to the context-specific needs of learners to bridge the gap between where they are and where they need to be.

## Conclusion

The 2016 PIRLS results, along with the subsequent decline in Grade 4 learners' reading proficiency in the 2021 PIRLS, underscore the challenges faced in achieving educational goals in South Africa. This chapter's primary focus was to highlight how Grade 1 teachers could be supported to teach reading in the 21st century. The SOR and RTMRC provided the theoretical framework on which the research was conducted. The question of how to improve reading instruction formed the core research inquiry. Within a qualitative approach, a PALAR design was utilised to generate data by means of ALS discussions, reflective journals and a fishbone analysis.

The findings suggest that reflective practice plays a vital role in teachers' professional development, fostering continuous improvement while encouraging adaptability, responsiveness and effectiveness in their teaching. By engaging in PALAR, teachers developed reflective practices that supported them in addressing reading challenges holistically, contributing to effective reading instruction in 21st-century classrooms. Reflective practice also encouraged a deeper understanding of instructional methods, enabling teachers to refine approaches in their classrooms to respond to learner needs. By equipping teachers with this skill, they are better prepared to manage and respond to the increased pressures of a rapidly changing environment (Onebunne 2022, p. 26).

The findings highlight the importance of understanding current reading theory, 21st-century skills and selecting effective instructional strategies, methods and techniques to support reading development. Through continuous reflection and critical analysis of teaching practices and the impact on learners' reading, teachers can refine their approaches and ultimately enhance reading instruction and learner outcomes.

Although the study sample was small, only one research site was used, and learner performance was not tracked, the findings reveal improvements in teachers' experiences of reading instruction. Although the interventions that were developed were specific to the research site, the findings demonstrate that the RTMRC, when combined with the SOR, equips Grade 1 teachers with valuable insights and practical strategies to enhance reading instruction. This integrated approach not only deepens teachers' understanding of foundational literacy but also supports them in implementing evidence-based, reflective and contextually responsive teaching practices that align with the demands of 21st-century education.

Future research could be directed at exploring how university training programmes could equip pre-service teachers with the 21st-century skill of reflective practice and responding to diverse learner needs, despite having limited opportunities for being in practice.

Chapter 12

# Exploring factors influencing classroom environments for successful learning in Accounting[1]

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## Abstract

An explanatory mixed-method design was employed to investigate the conditions for Accounting classroom environments in the Senior and Further Education and Training Phases in South Africa. The first phase involved a

1. This chapter represents a substantial reworking (of more than 50%) per the minimum requirements of the Department of Higher Education and Training's *Research Outputs Policy of 2015* of Petzer, V 2019, PhD thesis in Learning and Teaching, titled A model towards creating positive Accounting classroom conditions that support successful learning at school, with Professor M Nel as supervisor and Professor MM Grosser as co-supervisor, North-West University, Potchefstroom, viewed 07 March 2025, <https://repository.nwu.ac.za/bitstream/handle/10394/33072/Petzer_V.pdf?isAllowed=&sequence=1>.

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descriptive survey research study with a heterogeneous group of Accounting learners and teachers. In this chapter, the qualitative phase utilised semi-structured individual interviews with learners and teachers, along with observations in the Accounting classroom, to gain a deeper understanding of the learning conditions, the factors influencing the classroom environment and the skills necessary for successful learning in Accounting.

The study explored factors that can support Accounting teachers and learners in achieving successful learning. The findings from the empirical research identified key considerations for Accounting teachers to enhance successful learning in their classrooms. The recommendations regarding these factors in this chapter will help 21st-century teachers create environments for all learners can thrive.

# Introduction

To promote successful learning in Accounting remains a huge challenge in South African schools. The problem could be solved by exploring the factors that influence the classroom environment to enhance the development of 21st-century skills and learning.

A key priority for improving teaching and learning in Accounting should focus on understanding the different factors influencing successful learning. The learner's involvement with the classroom environment, or their psychological connection to the context in which the learning occurs, is one of several aspects that influence learning success. The motivation and perception of relevance, which in turn are influenced by the learner's prior experiences, preferred learning techniques, and most significantly, the context and setting in which the learning occurs, all play a role in their level of engagement (Harvey & Jacobs 2010).

There are several factors that influence conditions for successful learning in the Accounting classroom as evidenced in numerous studies (e.g. Bonner 1999; Bratten et al. 2013; Phillips & Graeff 2014; Wu 2008). These studies have investigated the skills needed for being a good accountant, but no study as yet could be found on the importance of creating positive learning conditions in order to develop successful, competent and well-qualified accountants who are critical for the world of business (Ku Bahador & Haider 2012).

The way in which learners acquire 21st-century abilities is significantly influenced by the way that education is delivered. The way 21st-century skills are developed and tracked depends heavily on pedagogy, curriculum, school policies and atmosphere, evaluations and benchmarking skill acquisition. Thereby:

> The classroom is the primary environment where the aforementioned factors culminate to bring knowledge acquisition and skills development. Furthermore,

> the classroom is the space where learners observe the modelling of these skills by their teachers and can practice themselves. Therefore, it is equally important to prepare and train teachers in not only the acquisition of 21st-century skills but also the dissemination of these skills. Measuring the classroom processes and teacher practices that are enabling and supporting the development of 21st-century skills in the classroom can serve as an important first step. (Kim, Raza & Seidman 2019, p. 100)

It was consequently deemed essential to investigate the classroom-related factors that can contribute to providing Accounting learners with the necessary skills and learning conditions for successful learning.

According to Fisher (2005), teachers are the main people who develop opportunities and invite learners to engage in critical thought. Therefore, their attitudes, teaching methods and strategies will have a significant impact on how learners respond to these opportunities. Jackling (2005) asserts that the teacher-controlled components of the learning environment can have a positive impact on both how students approach their study of Accounting and the learning results they get.

Therefore:

> In the 21st century, the accountancy profession needs a new [*approach*] to respond to technological changes and developments in the process of digitalization and e-transformation so that the accounting profession is more effective. (Gulin, Hladika & Valenta 2019, p. 2)

As businesses strive to focus on upskilling and building the 21st-century workforce, individuals should be monitoring their professional development to keep themselves relevant to meet the demands of the future skills economy. In Accounting, skills such as critical thinking and problem-solving will be among the most sought-after skills in the next five years. Other soft skills identified in the top ten skills list include self-management, active listening, resilience, stress tolerance and flexibility. These skills are important because they can act as an indicator of how well somebody engages in their work. Employees with strong interpersonal skills are typically skilled communicators and get along with others (Tumulty 2021).

‘The 21st-century skillset is generally understood to encompass a range of competencies, including critical thinking, problem-solving, creativity, meta-cognition, communication’, analytical skills, civic responsibility and global awareness (Muteti 2017 in Kim et al. 2019). This can only be achieved if employees are empowered with the right skills needed to deliver desired results. These soft skills are necessary in the 21st-century business environment and companies have spent fortunes to equip their employees with such skills. The development of critical thinking skills will become evident as they deliberate and persevere in their problem-solving, work to make their oral and written products more precise and accurate, consider others’ points of view, generate questions and explore the alternatives and consequences of their actions (Mangieri & Collins 2004).

Case and Wright (1997) suggest that there is an assumption that learners naturally know how to think critically, and all that teachers have to do is give them the opportunity to apply their knowledge in evaluating alternatives, understand key critical thinking concepts to communicate about the problem, use a variety of thinking strategies and 'develop the necessary habits of mind for critical thinking, including open [*and*] fair mindedness, independent thinking, an inquiring mind, respect for high quality, and intellectual discipline' (Graham 2013).

Learners need to develop these key skills and competencies to be academically successful (Hamilton & Hamilton 2009). This requires schools to provide positive environments in order to promote well-being.

According to various theories behind positive education, like positive psychology, all students should have the opportunity to receive support, identify their strengths and weaknesses in terms of developing healthy emotions, engage in learning, form social connections, find meaning in life and move closer to achieving goals (Knoop 2013; Noble & McGrath 2008, 2015).

According to the first author's own experience as a teacher, many learners give up too easily when working through problems in Accounting. They tend not to complete assignments, tasks and homework exercises given by the teacher. They will work on it in the class while there is support from teachers and peers, but when work is sent home to complete, they seem not to persevere. This kind of behaviour has also been noticed during formal tests and examinations. Incomplete papers are handed in with inaccurate calculations resulting in wrong answers. Therefore, we believe for learners in Accounting to be successful in their learning and for the achievement of outcomes, persistence to complete all the tasks and activities and working accurately are crucial aspects to focus on.

This chapter will give an overview of the literature examining relevant theoretical frameworks for successful learning, positive education and teaching for 21st-century skills. In addition to addressing the difficulties relating to the Accounting education scenario in South Africa, the findings on the factors influencing classroom learning environments as described in the literature will also be discussed.

## Purpose of the study

Based on the foregoing consideration, the primary goal of this study was to investigate factors that influence classroom environments for successful learning in the Accounting classroom. The role of positive education, as well as the attitudes and abilities of teachers and students, was also examined to establish the positive classroom environments required for successful learning and development of 21st-century skills in Accounting in order to address these factors.

## The research problem

High scores in the Accounting subject are required for learners to join the best accounting firms and qualify to become chartered accountants in South Africa (Botha 2014). As a result, it is critical to examine the Accounting pass rates utilised in schools to determine whether the requirements are being met. To motivate students to think critically, persevere and perform Accounting assignments correctly, teachers must create a positive learning atmosphere in the classroom (Costa & Kallick 2009; Darwin 2011; Jacobs & Harvey 2010). In order to do this, the classroom must be a calming environment and free of frequent failures and negative feedback (Ameen, Guffey & Jackson 2002). It can be contended that when considering the constructivism theory (cf. 4) of learning, motivation and effort play an equally significant role in explaining students' academic success as cognitive components. This leads to the claim that learning is inhibited in hostile learning settings where teachers use ineffective pedagogical techniques.

A hostile classroom environment fosters discontent with learning, which leads to low academic performance as a result of unfavourable learning outcomes (Knoop 2013). According to Telford and Masson (2005), this type of environment hinders learners' growth and may lead to unsuccessful learning. On the contrary, when teachers set up their classes in a way that encourages students to think critically, persevere and complete their work effectively, in Accounting, better academic results can be achieved (Costa & Kallick 2009; Darwin 2011; Jacobs & Harvey 2010). This calls for an encouraging and supportive classroom where students do not frequently fail and receive unfavourable feedback (Ameen et al. 2002).

Research indicates that a large number of learners appear to not see the relevance of accounting to their personal lives and thus minimise their efforts by simply memorising enough material to merely pass the exam. In order for learners to excel in Accounting, it is crucial that teachers foster a good learning environment (Phillips & Graeff 2014). However, many teachers also experience anxiety as a result of not feeling qualified to teach the topic.

Ameen et al. (2002) and Borja (2003) postulate that a main contributor to these feelings of anxiety can be a result of not employing an effective teaching approach, and they affirm that these feelings of anxiety can be reduced if the Accounting educator comes to class well prepared and confident of their ability to teach the content to be presented. This could ensure effective teaching that will enable Accounting educators to introduce new methods, theories and philosophies into the curriculum, which will then encourage learners to view Accounting as an interesting subject in which they will want to enrol and succeed. It is also essential to acknowledge that reducing anxiety would potentially enhance successful learning and motivate learners to become accounting experts. Exploring the aforementioned discussion has led to making recommendations that could assist teachers in Accounting to use more effective teaching methods, help develop skills and dispositions to think critically in Accounting and create positive learning conditions in order for all learners to experience successful learning.

## Theoretical framework

In this study, constructivism was regarded as the driving force behind the instructional design process in the Accounting classroom for successful learning (Schunk 2004). Piaget's developmental theory of learning and constructivism emphasises discovery. According to his constructivist theory, to create an ideal learning environment, children should be allowed to construct knowledge that is meaningful to them (Piaget 1953).

Constructivist teaching is based on the belief that learning occurs when learners are actively involved in a process of meaning and knowledge construction as opposed to passively receiving information. Learners thus become the makers of meaning and knowledge. This fosters critical thinking and creates motivated and independent learners, which is an important aspect of the learning of accounting (Donald, Lazarus & Lolwana 2010; Schunk 2004).

The underlying assumption for this particular study, which focused on factors influencing classroom environments that have an impact on successful learning in the Accounting classroom, emphasises one of constructivism's central tenets: That learning takes place in a context. This presumption emphasises how crucial context is to instruction and learning. By involving students in activities that apply and practice the cognitive skills they require for success in Accounting, the classroom environment should foster favourable attitudes for the development of abilities (Schunk 2004).

## Literature review

There are several factors influencing classroom environments that affect successful learning in Accounting education. The following segment focuses on successful learning and explores the factors that could influence the classroom environment and lead to successful learning for Accounting learners.

In this chapter, successful learning is seen as the outcome or as the result of the process of learning, where effective learning will contribute to this process as if the process were managed effectively and a successful result or outcome would be possible.

## Successful learning

Successful learning is typically measured by determining the extent to which the intended learning outcomes of any curriculum have been attained using particular criteria, as well as by examining what motivates learners to learn and how they view the importance of the learning processes and results (Broadfoot 2008).

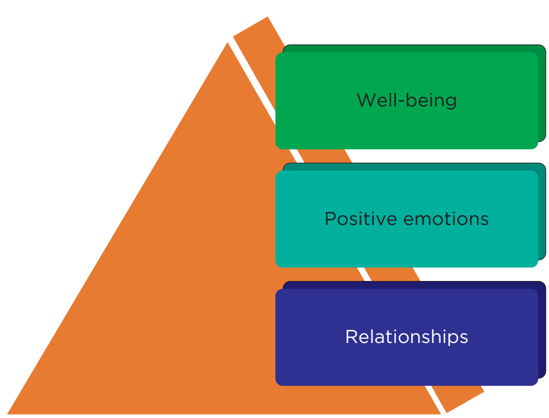
Successful learners are more likely to be motivated (Walton 2010), and successful learning is also linked to learner achievement; therefore, the emphasis should be on learning that includes the effects of the classroom experience and individual roles within. Having a sense of learning successfully, making progress and being in control of that learning are not necessarily reflected in the kind of learning outputs that schooling demands (Coyle 2013), where the emphasis seems to be more on formal measurement. However, measuring learner attainment provides only part of the picture of success, as not all aspects of successful learning can be measured by formal testing alone (Coyle 2013).

## Positive education

This chapter endorses positive education as an approach for successful learning in Accounting.

Figure 12.1 provides a visual presentation of how positive education as an approach can influence successful learning in the Accounting classroom.

Positive psychology has three fundamental concerns: Positive emotions, positive individual traits and positive institutions (Donaldson, Dollwet &




*Source*: Author's own work.
**FIGURE 12.1:** Positive education as an approach for successful learning.

Rao 2015). Understanding positive emotions involves the study of contentment with the past, happiness in the present and hope for the future. The positive individual traits consist of the analysis of strengths an individual has, such as the capacity for love and work, courage, compassion, resilience, creativity, curiosity, integrity, self-knowledge, moderation, self-control and wisdom. Finally, understanding positive institutions requires the study of the strengths that promote better communities, such as justice, responsibility, civility, parenting, nurturance, work ethic, leadership, teamwork, purpose and tolerance (Donaldson et al. 2015).

Consequently, it is essential that schools should be developmental settings in young people's lives where they can develop the key skills and competencies needed to be academically successful (Hamilton & Hamilton 2009). This requires schools to provide stable environments in order to promote well-being (Bond et al. 2007; Seligman et al. 2009; Short & Talley 1997). According to Seligman (2011), some elements of well-being are meaning and purpose. Meaning refers to one's purposeful existence in the world, while purpose is related to feeling a sense of accomplishment and success. In school contexts, Noble and McGrath (2008, p. 129) claim that 'learners have a sense of "meaning" when what they do have impact on others beyond themselves. They have a sense of "purpose" when they pursue worthwhile goals'. Education should therefore be about accomplishment and a pathway into the real-life world of work (Adler 2005). In order to achieve this, both the skills of well-being and the skills of achievement must be taught (Hamilton & Hamilton 2009).

Thus, education should not be a negative and boring experience for learners and teachers as learning marked by negativity is counterproductive in that it distracts learners away from learning and boring learning is highly ineffective (Knoop 2013). Education needs to be a positive and inspiring experience (Seligman et al. 2009).

Although positive education can be seen in different ways, generally, it is about the application of psychological knowledge that focuses on individual strengths, well-being, social relations and leadership (Knoop 2013). A school is an excellent location for well-being initiatives because children and adolescents spend much of their time in school (Hofferth & Sandberg 2001). Learners' day-to-day interactions and experiences with peers, teachers and coaches are vital to their well-being. In addition, most parents and educators see the promotion of well-being and character as an important aspect of schooling (Cohen 2006). Seligman (2011) further defines positive education as traditional education focused on academic skill development, complemented by approaches that nurture well-being and promote good mental health. In addition, the significant and transformative contribution that effective teaching and educational theories bring to the process of applying principles of positive psychology in educational contexts should also be acknowledged (Seligman 2011).

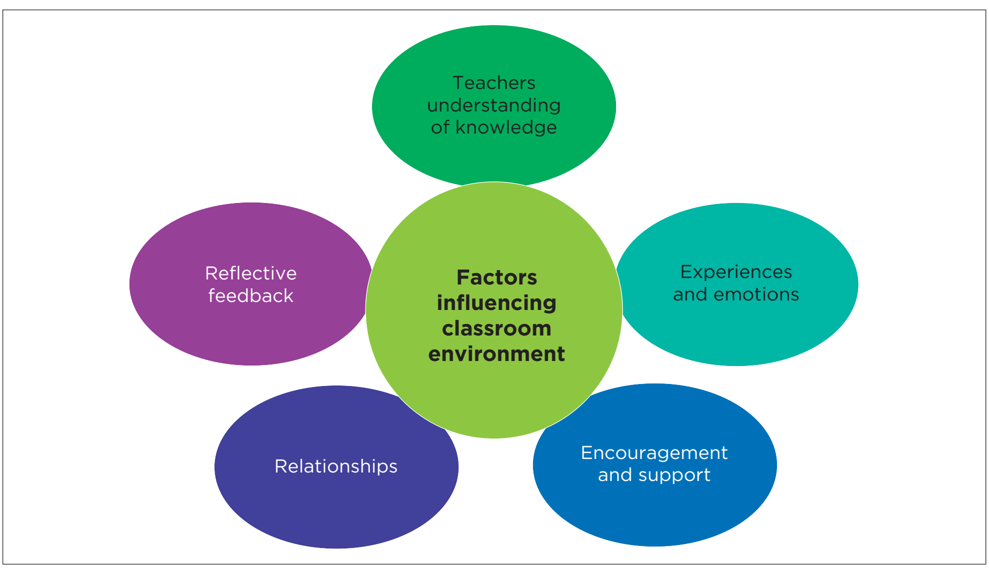
The fundamental goal of positive education is to promote flourishing or positive mental health within the school community, helping learners to understand key ideas and concepts, engaging them meaningfully in exploration and reflection, and helping them to apply the skills and mindsets for flourishing in their lives (Norrish et al. 2013). Thus, positive education seeks to combine principles of positive psychology with best-practice teaching and with educational standards to promote optimal development and flourishing in school environments (Michalos 2017; Norrish et al. 2013).

## ☐ Factors influencing Accounting classroom environments

Figure 12.2 provides a visual presentation of certain factors influencing classroom environments that have an impact on successful learning in the Accounting classroom. For successful learning to be possible in the Accounting classroom, some significant factors such as encouragement, support, emotions, relationships and reflective feedback, that influence successful learning, need to be the main focus in the learning environment.

## ☐ Teachers' understanding of knowledge

> In the 21st-century, the accountancy profession needs a new approach to respond to technological changes and developments in the process of digitalization so that the accounting profession is more effective. (Gulin et al. 2019, p. 4)




*Source*: Authors' own work.

**FIGURE 12.2:** Factors influencing Accounting classroom conditions.

The quality of the teaching workforce has become more of a focus in recent years in addition to enhancing student outcomes (Guerriero 2016). This includes the challenge of teachers lacking a thorough understanding of the subject matter, which can negatively impact student learning. This necessitates that teachers in Accounting education not only stay current with new teaching methodologies to develop learner competencies but also stay in touch with new curriculum changes and new content knowledge in the subject. By continuously gaining new knowledge effective teaching and learning can be ascertained which leads to improving teacher quality (Calderhead 1991). This is important as the quality of teaching can determine progress in learner achievement and successful learning.

In Accounting classrooms, teachers must have a solid knowledge base of content, as well as teaching strategies in order to reduce the difficulties faced by Accounting learners in the Further Education and Training (FET) Phase in high schools. This is important as Gorski (2009) reports that teachers seem to struggle in the Accounting classroom with subject content knowledge, pedagogical content knowledge, accounting knowledge for teaching and accounting classroom practice (Gorski 2009).

## Encouragement and support

For teachers to inspire learners to excel in Accounting, they need to be perceived by their learners as competent. It was discovered that learners who made a greater effort to study ahead, finish their assignments and participate in class did better (Darwin 2011). Thus, Accounting teachers need to encourage learners to become actively involved in the subject matter by going beyond the information given. This means restructuring the content to challenge learners' way of thinking and prior understanding. In this process, the responsibility for learning must be gradually shifted to the learners for example, through practice exercises, question-and-answer dialogues and discussions that engage them in increasingly complex thought patterns (Carter & Hogan 2013).

Positive interactions between learners and teachers provide learners with a sense of belonging at school and provide the atmosphere to feel more comfortable in asking for assistance when needed. Constructive relationships between teachers and learners can also motivate learners to achieve and behave according to a school's culture, contributing to a positive school culture (Noble & McGrath 2008). Diener (2011) asserts that learners who have strong, enduring relationships with their teachers are more likely to set and achieve objectives for themselves. These components of positive attitudes and support in the classrooms are most likely to assist Accounting learners in making successful academic progress.

## Experiences, relationships and emotions

Emotional experiences are seen as critical in academic settings. Tests, examinations and homework are associated with different emotional states that encompass frustration, anxiety and boredom (Tyng et al. 2017). Borja (2003) found that many learners new to Accounting view the subject as being as difficult as acquiring a foreign language. Phillips and Graeff (2014) noticed that learners seem to have a rigid negative idea about the difficulty of Accounting, which colours their experience of the subject with fear and worry, resulting in anxiety and a lack of motivation. Additionally, many learners do not seem to recognise the connection between accounting and their daily lives, so they minimise their efforts by memorising just enough information to pass examinations.

Based on research conducted by Buckhaults and Fisher (2011), the Accounting classroom seems to create anxiety for teachers, as well as learners. Anxiety has been consistently shown to have a negative effect on academic learning and performance, specifically when learners need to give attention in classrooms, memorise difficult content or use different strategies in their tasks (Pintrich & Schunk 2002). Research conducted by Ameen et al. (2002) reported that 78% of college and university Accounting lecturers surveyed suffer from teaching anxiety, with 38.5% of these lecturers suffering physical symptoms and 80% experiencing psychological symptoms. Ameen et al. (2002) and Borja (2003) claim that a main contributor to these feelings of anxiety can be a result of not employing an effective teaching approach, and they further assert that these feelings of anxiety can be lessened if the Accounting teacher comes to class well prepared and fully comprehensive. In the first author's own experience as a teacher and university lecturer, it was noticed that many Grade 9 learners do not choose the subject of Accounting because they are scared and uncertain about succeeding. It was also observed that several Grade 10 and Grade 11 learners dropped the subject somewhere during the year. During informal discussions with these learners, they mention that they struggle with the content and understanding the calculations and consequently do not do the homework, which snowballs into more anxiety and increased negativity towards the subject.

To understand the emotions of Accounting learners better, it is essential to investigate some elements of well-being that can enhance learning and academic performance. In 2011, the leading positive psychologist Martin Seligman proposed a model to identify the important elements of well-being (Seligman 2011).

*Positive emotions*: Learners who frequently experience and express positive emotions such as happiness, pleasure and comfort tend to be more resilient, more socially connected (Mauss et al. 2011) and more likely to function better, meaning that they have increased feelings of empowerment, self-confidence and self-esteem.

*Engagement*: Short-term academic outcomes are well predicted by learner involvement in their studies. There is a link between learner engagement, achievement and well-being which emphasises that the more learners are actively engaged and achieving in learning, the greater their sense of well-being (Noble & McGrath 2008).

*Relationships*: Relationships can make a positive contribution to learners' sense of belonging, engagement, motivation and achievement in the classroom (Martin & Dowson 2009). 'Diener and Chan (2011) explicated that strong meaningful social relationships can have a positive impact on learners working towards goals, helping them achieve these outcomes' (cited in Petzer & Nel 2021).

*Meaning*: When learners in the classroom have a sense of purpose and direction in life and feel connected to something, they experience meaning. Learners who claim that they feel more meaningful in the classroom often also report being happy and satisfied with their lives as a whole (Baumeister et al. 2013).

*Accomplishment*: Accomplishment and meaningful social relationships between learners and teachers can have a positive impact on learners working towards goals and help them achieve these goals. These aspects of positive feelings and relationships in the classrooms can most probably support Accounting learners in the classrooms to achieve successful learning.

Therefore, the link between well-being and academic success should be emphasised in the classrooms and feelings of accomplishment and success must be promoted by the teachers. Furthermore, with regard to the well-being of learners, successful learning is also linked to learner achievement which requires, having a sense of learning successfully, making progress, achieving success and being in control of one's own learning. The factors discussed in this chapter can lead to these experiences and may affect the classroom environments and influence successful learning.

## □ Reflective feedback

The link between feedback and successful learning has long been acknowledged (Hounsell et al. 2006), and the assumption of a relationship between feedback and performance is well established (Bloxham & West 2007; Holmes & Papageorgiou 2009). It is generally accepted that feedback on assignments and formative assessments serves as a key process in the development and enhancement of learning (Mutch 2003). Furthermore, feedback is increasingly seen as an imperative way to facilitate learners' development to become independent learners who are able to monitor, evaluate and regulate their own learning (Ferguson 2011; Higgins, Hartley & Skelton 2002). Consequently, feedback has come to be regarded as a vital part of every individual's development and learning progress (Mutch 2003). Appropriate feedback gives the opportunity for an individual learner to record progress towards his or her success.

Classrooms are active places where teachers and learners constantly interact with one another and thus affect learner success. This means that teachers ask questions, provide feedback, give rewards and punishments, praise and criticise, and respond to learners' questions and requests for help and support when learners experience difficulties. Studies with high school learners indicate that feedback becomes more effective when it reflects progress made in terms of actual accomplishments, rather than normative standards such as only marks (Harks et al. 2013). Such feedback seems to be regarded by learners as more useful than only marking information and has been found to enhance interest in the material being taught (Harks et al. 2013). Conversely, punitive teachers contribute to negative classroom environments, which can result in a range of adverse outcomes, such as negative attitudes towards the subject, anxiety and low marks (Demanet & Van Houtte 2012). However, this does not imply that feedback needs to be set at some universally positive level. Teacher criticism associated with controlling learner behaviour in the study of Demanet and Van Houtte (2012) has been found to have a constructive effect in encouraging learning. With regard to giving feedback for goal-directed efforts, its purpose is to indicate shortcomings, to correct errors or to suggest better ways of progressing (Hattie & Yates 2014). Research confirms that when teachers teach in ways that develop higher-order thinking and performance, it helps learners learn the more complex and analytical skills they need for the 21st century, which is very much needed for a future in accounting (Darling-Hammond & Richardson 2009).

## Research methodology

### Participants

The participants in this study consisted of all the secondary schools in the Vaal Triangle area, located in Gauteng, and all the Grade 10, 11 and 12 teachers and learners who have Accounting as a subject. The chosen schools are all governed by the Gauteng Department of Education. The reason for purposively focusing on Grades 10–12 Accounting learners is that these learners have chosen the subject in Grade 10 with the purpose of following a career related to accounting. The three schools in the Vaal Triangle chosen for the observations represented different socio-economic areas where learning resources range from more easily available to limited availability.

## Research question

In this chapter, the focus is on the research question: Which factors influencing classroom environments will enhance successful learning in Accounting classrooms?

## Sampling

Purposive sampling was used in this study in the selection of the participants. The population sample consisted of all Accounting teachers and learners in South Africa. As it was not possible to do research among all teachers and learners in South Africa, a study sample was chosen. The sample size comprised all the secondary schools in the Vaal Triangle area of the Gauteng Department of Education, and all the Grades 10–12 teachers and learners in the Accounting classes. By using the explanatory design in this study, sampling occurred at two points in the design: in the quantitative and qualitative phases.

## Data collection process

Qualitative research is based on a natural approach that seeks to understand the real-life situations of participants. Consequently, data-gathering techniques, like interviews and observations, are mainly used in the data collection methods (Maree 2010). Individual interviews were conducted with selected teachers and learners in the second phase of the data collection procedure. The interviews were audio recorded and transcribed verbatim. As another qualitative data collection method, observations were done to enable the researcher to gain a deeper insight and understanding of the learning environments in the Accounting classroom.

## Research phase 2 (qualitative analysis)

This study employed a sequential explanatory mixed methods approach. The explanatory design is a mixed methods design in which the researcher begins by conducting a quantitative phase and follows up on the findings with a qualitative phase. The qualitative phase was implemented for the purposes of explaining the initial results in more depth, and to explore the factors identified as significant in the quantitative phase. The design is most useful when a researcher wants to assess trends or themes and relationships with quantitative data but also be able to explain the reasons behind these trends (Creswell & Plano Clark 2011).

This chapter focuses on the qualitative phase. The results of the qualitative data (phase 2 of the original study) analysis will be discussed by documenting themes from the transcriptions of the interviews as well as the field notes taken during the classroom observations. The themes were identified after a factor analysis during the quantitative phase and were used as the basis for formulating the questions asked during the semi-structured interviews with the purpose of explaining the results of the quantitative data presented in themes, categories and sub-categories. In the qualitative analysis of the data, direct quotes will be used to support themes, categories and sub-categories. For the learners, it will be labelled as follows, for example: L1DGR10. 'L' refers to learner no. 1 with 'D' indicative of a particular school followed by the grade the learner was in, for example, Grade 10, at the time of the study.

In explaining themes, the collective numerical values denoting the thirteen learner participants in the qualitative phase of the study are referred to as follows:

- 'Few' indicates one to three learners
- 'Some' refers to four to seven learners
- 'Many' refers to eight to ten learners
- 'Most' refers to eleven to thirteen learners.

## Ethical considerations

In the qualitative phase of the research, the data collection procedures were administered and attended to different ethical considerations. The ethical code of conduct was considered extremely important, not only in terms of permission from participants to participate in the study but also in terms of the way they were treated (Creswell & Plano Clark 2011).

Information about the purposes of the study as well as about the procedure of the study were communicated to each learner and teacher participant during a discussion in the classroom. All participants were informed that their participation was voluntary and that they had the option to discontinue if they wanted. The learner and teacher participants were required to sign a consent form as proof that they understood the procedure and expectations and as confirmation of their voluntary participation in the study. The consent form also allowed the researcher to know their personal contact details if they were willing to participate in the interviews during the qualitative phase of the study; therefore, the confidentiality of the study was very important. The details of the participants were not exposed in the study when the results were reported in this chapter.

All the data were handled confidentially, and the collection of the data did not infringe on the time and privacy of the participants. Throughout the study, the identities of the participants remained anonymous, except for the participants for the interviews in the qualitative phase of the study.

The researcher assured the participants that the interviews recorded would not expose their identities in any way. Each participant was allocated a number in the interview coding and analysis.

An ethical clearance was obtained from the North-West University Health Research Ethics Committee (HREC) in 2017 (ref. no. NWU-HS-2017-0091).

# Findings

This section deals with the findings of the qualitative data as presented by themes, categories and sub-categories. The findings are presented in the following themes, categories and sub-categories as indicated in Table 12.1.

## Theme 1: General learning conditions

Theme 12.1 gives information provided by the learners and teachers on the general learning conditions in the Accounting classroom. It focuses on how they experience the learning environment in the Accounting classroom, their goal-setting and their views on a successful learning environment.

### Category 1: Learning environment in the Accounting classroom

#### *Sub-category 1: Positive classroom climate*

To be successful in Accounting, learners were asked what they think the ideal learning environment will be. Some of the learner participants felt that their Accounting classroom is a 'good and balanced place and the class is not too big'. They believed that 'the teacher can give more attention' to all so that everyone feels included' (L3TGR10; L2EGR10; L8TGR11).

A learner participant also mentioned that 'the teacher is always helpful, adapts to learner speed, ensures that all learners are up to speed, work is always completed in class time' (L5EGR10). Other learner participants (L12EGR12) indicated that 'it's a very free learning environment' where 'we can ask questions when we want to and have discussions' and 'we work

**TABLE 12.1:** Theme 1: General learning conditions.

| Themes | Categories | Sub-categories |
|---|---|---|
| General learning conditions | Learning environment in the Accounting classroom | Positive classroom climate |
| | | Negative classroom environment |
| | Successful learning environment | Teacher contribution to learning environment |
| | | Ideal learning environment |

*Source*: Author's own work.

hard, and we can ask anything' (L6TGR11). It was also mentioned that they experience a comfortable positive learning environment as reflected in these learner participants' comments:

> 'It's nice to be here, especially when the teacher, if you don't understand she'll come to you and she'll help you out, it just gives a positive environment, thinking I don't have to be scared of asking questions and stuff.' (L7EGR11)

'It's actually so positive' (L8TGR11); 'It's a very free learning environment; we can ask questions when we want to, and we can have discussions' (L12EGR12). Another learner participant stated, 'because of the class environment and getting to know the teacher more, [*A*]ccounting became more fun for me' (L7EGR11).

From the teachers' perspective, one teacher participant reported (T1DGR12) that she 'try my best to be friendly as possible to learners'. Another teacher participant (T2PGR10) described her classroom environment as a 'positive, nice place, where you build relationships and spent time on problems'.

#### ***Sub-category 2: Negative classroom environment***

A few learner participants commented on the negative aspects they experienced regarding the learning environment. 'Environment is quiet, some learners are scared to ask questions' (L9DGR12), while another asserted that they were pressurised for time, 'cannot learn anything when we rush through work and when finish marking homework, there were no time left for explanation' (L10DGR12).

From the teachers' perspective, one teacher participant reported (T4UGR12) that 'the resources provided by the department is not very good', whereas another teacher participant (T1DGR12) mentioned that 'the kids don't open up and some learners are shy'.

In the observations it was noted that time to complete all the required tasks seems to be an issue in the classrooms, as the homework needs to be marked, problems that arise from homework need to be discussed, as well as a new example or topic must be explained.

### Category 2: Successful learning environment

#### ***Sub-category 1: Teacher contribution to the learning environment***

To be successful in Accounting, learners were asked what they thought the ideal learning environment would be. A learner participant indicated that the learning environment needs to be strict, where 'a teacher isn't afraid to put you back in line, when you're stepping out of line, but not in the way that discourages you' (L4EGR10). Another learner participant (L5EGR10) indicated that 'a teacher that will find a different way to explain work to you and will always nurture you to grow in a specific way' contributes to the learning environment and the 'teachers' attitude plays a huge role' according to another learner participant (L13DGR11).

During the observations, it appeared that large class numbers clearly led to teacher frustration. This was evident in teachers continuously yelling at learners to keep quiet and seemed irritated if they did not react appropriately to her requests. However, in the smaller class, the teacher was calm and in control of the learning environment.

### ◻ *Sub-category 2: Ideal learning environment*

Some learner participants indicated that the ideal learning environment for success will be 'a smaller class' where the teacher can give more 'individual support' (L8TGR11), 'personal attention' (L2EGR10); 'you can ask more questions' (L11TGR12) and 'A peaceful one where you put in effort, and you don't slack off' (L7EGR11). Other learner participants stated that 'the environment has to be professional' (L3TGR10), 'Everyone has to work together' (L9DGR12) and 'work hard and success will come out of that' (L1DGR10). A few indicated that the learning environment should be 'good, competitive' (L6TGR11) and 'quiet' (L9DGR12), characterised by 'a space' where there's 'mutual respect' and everyone can just be 'positive' (L12EGR12).

Many learner participants felt that 'they need to be motivated' (L13DGR11); to be successful and there should be 'no negativity' (L9DGR12). They commented that it should be 'a place where learners support and motivate each other' (L12EGR12; L6TGR11; L4EGR10). One learner participant added that 'practising enough activities and homework' will lead learners to success (L1DGR10).

One teacher participant stated that the learning environment must be 'open and positive' (T3EGR11), while another teacher participant commented that 'success in the classroom will depend on the type of school you teach in' and further stated that 'the bigger the class, less effort will be put in' (T2PGR10).

## ■ Theme 3: Factors affecting learning in the Accounting classroom

Theme 3 in Table 12.2 gives information provided by the learners and teachers on the factors they believe affect learning in the Accounting classroom. This includes aspects such as encouragement, support, feedback and relationships.

**TABLE 12.2:** Theme 3: Factors affecting learning in the Accounting classroom.

| Themes | Categories | Sub-categories |
|---|---|---|
| Factors affecting learning in the Accounting classroom | Emotions about Accounting | |
| | Experiences with Accounting | Teacher challenges<br>Learner challenges |
| | Encouragement and support in the classroom | |
| | Relationships | Positive relationships<br>Negative relationships |
| | Reflective feedback | |

*Source*: Author's own work.

## Category 1: Emotions about Accounting

Many learner participants expressed their negative feelings about the subject in different ways. One learner showed mixed emotions and said 'Ooh, [*A*]ccounting, it's horror, but then you get so used to it, and it's not as bad as I thought it would be' (L8TGR11). Other learner participants stated, '[*A*]ccounting is a challenge, and you need to work hard to get it right' and 'if the balance sheet balance, it's a good feeling' (L9DGR12; L13DGR11; L3TGR10). Words like, 'amazing' (L13DGR11), 'interesting' (L8TGR11) and 'challenging' (L5EGR10) were used by the learner participants to describe their feelings if they understood what was going on in the subject. This is reflected in these statements: 'Doing [*A*]ccounting in Grade 12 was enjoyable for me and the best year' (L9DGR12); and 'I realised that I really enjoy working with numbers and doing calculating' (L3TGR10).

A few learner participants felt that if they understand the work, 'you feel good, its easy and I enjoy it' (L13DGR11; L12EGR12; L1DGR10). Some learner participants commented on the emotional aspects that affected their feelings towards the subject Accounting: 'It makes me very emotional; it frustrates me, it makes me happy and when I know this is good, I'm very satisfied with my work' (L3TGR10). Another learner' participant's emotions were negative, 'I feel like the first time you see something it will be like; I won't get this right' (L8TGR11). Another one added: 'This is not my favourite subject, but it's nice to study it because I like to understand things' (L10DGR12).

Teachers expressed their feelings about Accounting as 'difficult' to teach (T3EGR11), 'I enjoy Accounting and like the content' (T6TGR11; T4VGR12; T2PGR10), and 'it takes hard work' (T1DGR12).

## Category 2: Experiences with Accounting

The following were identified as sub-categories within the experiences of Accounting: Teacher challenges, learner challenges, activities in the classroom and content difficulty.

### ☐ *Sub-category 1: Teacher challenges*

Some of the challenges the teacher participants experienced in the Accounting classrooms are stated as 'you'll find in a class of 49 learners, only 25 has calculators' (T3EGR11), whereas another teacher participant affirmed that, 'basic skills in language and maths', which she feels are important skills to master Accounting, is a big challenge (T4VGR12). Some teacher participants indicated that 'the real challenge is they struggle with certain topics and experience it as difficult' (T5DGR10; T6TGR11; T1DGR12).

### ☐ *Sub-category 2: Learner challenges*

Some learner participants asserted Accounting as a 'challenge' and that 'you must work hard to get it right' (L9DGR12; L1DGR10). One learner participant mentioned: 'It's mainly the way the questions are asked that is challenging' (L11TGR12), and others stated that 'as a learner you get frustrated if you don't understand and don't get things right' (L3TGR10; L13DGR11). Some of the challenges the learner participants experience in Accounting were reported as: 'When you write the exam, they'll ask it differently and then you struggle most of the time' (L11TGR12; L10DGR12). Other learner participants were of the opinion that 'the textbook sometimes explains it in a very complicated way' (L5EGR10; L13DGR11); and 'it's a bit tough if you read an adjustment and you have no clue what's going on there and if you make one mistake in the balance sheet, the rest is then all wrong' (L10DGR12; L9DGR12).

According to some learner participants, another challenge was when they needed to 'comment and give advice when solving problems, this was very difficult for me' (L9DGR12; L10DGR12). It appeared that 'unprepared class tests' and 'assignments also lead to frustration' (L1DGR10; L10DGR12). One learner participant asserted that 'I don't know what to do, because we did not practice it in homework and then everyone gets 20% or 30%' (L13DGR11). A few learner participants stated that 'all of this link, if you do not understand one concept, then you do not know what to do next' (L1DGR10; L10DGR12).

## ☐ Category 3: Encouragement and support in the classroom

Many of the learner participants asserted that support in the Accounting classroom is an important aspect for them to feel motivated. One learner participant stated, 'support between us learners is a huge fact' (L13DGR11), and others commented 'the support is actually quite good, but we are a bit competitive' (L6TGR11) and 'we motivate each other the whole time' (L5EGR10). According to other learner participants, they 'are all friends, and support each other when we do homework together' and they 'know all your classmates very well' (L4EGR10; L11TGR12; L2EGR10; L7EGR11).

Some of the learner participants described some ways how they support each other in the Accounting classroom: 'We also have a WhatsApp group, so if we don't understand something, then we discuss it there' (L3TGR10); and 'if we don't understand we end up having a discussion with whole entire class' (L5EGR10). Other learner participants mentioned that 'I am not sure if we are allowed to support each other' (L9DGR12), 'but feels at ease if I struggle and there's someone next to you to help' (L7EGR11).

Some learner participants commented that the teacher would encourage them to support each other: 'So ma'am says, "you guys may help each other"' (L4EGR10) 'and if there's a problem in the WhatsApp group, she can address it there or you can just go individually to your friend for support' (L2EGR10). Another learner participant stated that 'the teacher places us next to each other in the classroom for support, one that do well and one that struggle' (L10DGR12), whereas another learner mentioned that 'we help each other a lot, but only if the teacher is out of the classroom' (L1DGR10).

Many of the learner participants asserted that support in the Accounting classroom is an important aspect for them to feel motivated. A few learner participants added the following about support: 'If anyone wants help there's always help given by the teacher, by even the students themselves' (L3TGR10); 'Because it's a small group, it's easier to get help from each other. If we need help with homework, we speak to each other' (L12EGR12); and 'It's actually good, because we can talk to one another, and even during breaks we figure out certain problems regarding the homework by helping each other' (L10DGR12).

During the interviews with teachers, they were asked how they felt about learners supporting each other in the classroom during activities. Some teacher participants indicated how they feel about support: 'I promote it definitely, I do not mind, because it builds self-confidence' (T2PGR10); 'I think we have to allow them to support one another' (T1DGR12); 'I had small classes, so you could do peer-teaching within limits' (T4VGR12) and 'I really encourage that to a certain point' (T3EGR11).

In one of the classes, it was observed that learners speak freely to one another and actually help each other when they have questions regarding the homework. In another class, it was a bit different, where the learners only spoke when the teacher asked a question. It was the same learners who asked the questions every time, whereas the other learners in the class never said anything or asked questions.

## Category 4: Relationships in the Accounting classroom

### *Sub-category 1: Positive relationships*

Many of the learner participants felt that they have more positive relationships with their Accounting teachers than negative ones. A few learners realised that 'the teacher helps everyone a lot, she does her best for you to take out your best and that's a good relationship' (L3TGR10; L8TGR11; L7EGR11). Another learner participant stated that he has a 'good and comfortable relationship with teacher but a little bit casual' (L2EGR10).

The teacher-learner relationship was seen as 'a mentor relationship' by one of the learner participants, and he claimed that 'it's supposed to be like that' (L5EGR10). He indicated that 'there are certain troublemakers in the class, and she has a very quick way of dealing with them and never degrading them' (L5EGR10). One of the other learner participants stated that 'if you do your part, then the teacher will gladly help you' (L9DGR12). Another learner participant expressed that 'it's a beautiful relationship actually, feeling like she's our mom, she cares, and you can ask her anything' (L8TGR11). A few learner participants indicated that 'the relationship was good, characterised by motivation of learners, she's not rude to us and answers our questions' (L13DGR11; L4EGR10; L12EGR12). Another learner participant commented, 'because it's a smaller class, the relationship becomes more personal and open' (L11TGR12). Others felt 'it's a very comfortable relationship where she will perform the same role as what our mentors would' (L7EGR11; L9DGr12), whereas another learner participant highlighted 'there's not favouritism, it's constant, so that's good' (L6TGR11).

A teacher participant stated that 'I believe there must be a good relationship so that they can feel comfortable in my class' (T1DGR12), while another expressed 'you do not have to be a drill sergeant in class' (T4VGR12). In the private school setting, the teacher commented, 'It is so positive, and you build a good relationship with smaller classes' (T2PGR10). Another teacher participant indicated, 'the relationship is wonderful and by just being strategically friendly and accommodating, we'll automatically develop that thing' (T3EGR11).

### *Sub-category 2: Negative relationships*

A few learner participants did feel that the relationships were negative. One learner participant felt that 'the relationship between us and the teachers is not very good' (L1DGr10), whereas another learner viewed the relationship 'not so open' (L2EGR10). Some of the learner participants expressed their concerns regarding the relationships in the classroom. One learner noticed that 'if you do not work in class and you sit and do nothing, the teacher have a little sore and difficult attitude towards you' (L9DGR12), whereas another learner participant mentioned that the teacher 'has favourites which get more attention in the class as others, she is friendlier to them and you get that feeling that she doesn't like you a lot' (L10DGR12). A learner also reported, 'if there's a problem, she shouts at you and if you did something wrong, she gets mad' (L3TGR10). Many of the learners reported good and positive relationships between teachers and learners in the Accounting classroom. Many of the learner participants felt that they have more positive relationships with their Accounting teachers than negative ones. A few learners realised that: 'the teacher helps everyone a lot, she does her best for you to take out your best and that's a good relationship' (L3TGR10; L8TGR11; L7EGR11). Another learner participant stated that he has a 'good and comfortable relationship with teacher but a little bit casual' (L2EGR10). The teacher–learner relationship was seen as 'a mentor relationship' by one of the learner participants, and he claimed that: 'it's supposed to be like that' (L5EGR10). A teacher participant stated that, 'I believe there must be a good relationship so that they can feel comfortable in my class' (T1DGR12).

## Category 5: Reflective feedback

Feedback in Accounting classrooms was reported to be done, mostly after tests and exams and was mainly teacher-guided. Some learner participants indicated that the teacher 'usually gives us our mark and feedback on the test to see what we got wrong and then we work through it' (L5EGR10; L8TGR11; L7EGR11; L4EGR10). A few of the learner participants reported that the teachers made an effort to give corrective feedback on their mistakes. This is reflected in the following statement: 'Mostly after she has checked everything, we can see where did we go wrong and rectify your mistakes, by doing a similar exercise again to just make sure' (L6TGR11; L9DGR12); Individual attention was also reported: 'she'll ask you if you understand, but if all of us got the same question wrong, she'll explain it again' (L8TGR11); 'if there's something wrong that all of us did wrong, she will explain it with us and show us what we did wrong, but if it's individual, she will sit with us individual' (L7EGR11); 'She actually helps you individually with your mistakes' (L3TGR10); 'She does do the whole test with everybody, but if you have one specific one that you are questioning about, then just you ask her and then she'll explain it' (L4EGR10); and 'She will show you what you have done wrong, then you have to work on it and then she'll give you feedback and give you the opportunity to ask questions' (L11TGR12). However, one learner participant asserted that:

> 'Feedback happens very fast, you still sit there to get over the shock of your mark, then the teacher is already three questions away, sometimes I missed answers, and you still have no clue what's going on there.' (L13DGR11)

Another aspect regarding giving feedback that the learner participants touched on, is the memorandum. Some learner participants stated that 'the mistakes of the test are done in class', but 'no memorandum of the test is handed out' (L13DGR11); and 'no memorandum is handed out, the teacher just give us the correct answers' (L10DGR12; L1DGR10). Another learner participant added, 'if somebody needs help, she's said we must work on it first and I don't remember a time with a memorandum' (L3TGR10). While other learner participants affirmed that a memorandum is used during feedback. They indicated, 'she gives us the marks and then she gives us our test with the memorandum to check the work and what we got wrong and if we have questions, we can ask the questions' (L12EGR12). Other learner participants added, 'if you made mistakes, you sometimes get a memorandum and then later she will help you with your mistakes' (L2EGR10; L10DGR12). A few learner participants also reported on the feedback about homework or class activities. One learner participant stated:

> '[*D*]uring class exercises, most of the time, you will submit your answer sheets to the teacher and then she will call you individually and highlight your mistakes and at the end, she will go through problems with the whole class.' (L9DGR12)

Other learner participants commented, 'after class activities, she will take it in and mark it herself and give it back to you the next day, then we can go through it and ask questions' (L10DGR12; L9DGR12).

All the teacher participants confirmed that they use 'memorandums' to give feedback after homework, tests and exams (T1DGR12; T2PGR10; T3EGR11; T4VGR12; T5DGR10; T6TGR11). Most of them indicated that they give the learners their scripts back to them and then 'they have to work through their tests and highlight what they have wrong' (T3EGR11).

## Interpretation of the findings

Three aspects emphasised strongly during the interviews with learners are motivation, support and relationships in the Accounting classroom. The issue of feeling safe to ask questions indicates that support is given by the teacher when asked. We also observe the positive interaction between the teacher and learners when they are allowed to ask questions. However, support between learners, associated with positive relationships between learners and teachers, is fervently asserted as an important factor for successful learning in the Accounting classroom. Teachers also mention placing stronger and weaker learners next to each other so the stronger learner can assist when the weaker learner struggles. This is an important strategy for teachers as peer support is found to be a very constructive support strategy. An important tool for the learners is using the social media tool of WhatsApp to communicate with each other when they struggle. Constructive relationships between teachers and learners can also motivate learners to achieve their goals to experience successful learning. During the interviews with teachers, they are asked how they feel about learners supporting each other in the classroom during activities. Some teachers feel strongly about learners supporting each other and indicate that it builds self-confidence. From the findings in the qualitative phase, some learners express that they do not experience good relationships in the classroom and that the teachers have 'favourites'. From this, it appears that they feel the relationships between the teacher and those 'favourite' learners are better and that not all learners are treated equally in the Accounting classroom. This could possibly have a negative impact on their performance, as literature affirms that teachers must recognise and manage emotions, set and achieve positive goals, appreciate the viewpoints of others, and establish and maintain positive relationships to handle interpersonal situations constructively for learners to acquire the core competencies (Borkar 2016). It is generally accepted that feedback in the classroom serves as a key process in the development and enhancement of learning (Mutch 2003).

From the learner responses during interviews, it seems that feedback in the Accounting classrooms is mainly teacher-guided, where the teacher provides memorandums and only explains the incorrect answers to the learners. This is disconcerting as it appears that there are teachers who do not regard feedback after class activities and homework as important, and for successful mastering of the content, corrective feedback is a very important action (Hattie & Yates 2014). From the qualitative findings, it appears that some learners experience difficulties with problem-solving and follow through with difficult tasks and ask for help to complete the activities they struggle with. As the development of 21st-century skills in the Accounting classroom is very important, it seems there is sufficient evidence that some learners acquire the relevant skills in some of the classrooms. Additionally, they believe that giving feedback to learners about mistakes, giving positive comments and motivating a learner to do better next time will help learners persist, especially with difficult tasks.

To summarise, motivating learners to work through difficult problems:

> [*W*]ith positive attitudes, emotions, and relationships, as well as giving corrective and constructive feedback on teaching and learning activities, are critical factors for successful learning in Accounting. The literature review and empirical study reveal that successful learning in the Accounting classroom depends on several factors, but most important is the positive engagement of the learner with the environment in which the learning takes place. (Petzer & Nel 2021, p. 204)

The objective of this study was to explore which factors that influence classroom environments are important for an Accounting classroom to ensure successful learning. If these factors are considered together with the skills regarded as being the most important to consider in the 21st century in the Accounting classroom, successful learning will be possible.

## Recommendations[2]

> 'To be more effective in the twenty-first century, the accounting profession requires a new approach to respond to technological changes and developments in the process of digitalization.' (Gulin et al. 2019, p. 429)

Some recommendations on how to create learning environments for successful learning and which factors to consider will be discussed in this section. The recommendations identify different factors and delineate a classroom environment that seems to exert a significant effect on successful learning and developing 21st-century skills in the Accounting classroom.

The environment in the Accounting classroom should be covered under the umbrella of positive education, meaning that Accounting education needs to be a positive and inspiring experience. That said, all the factors influencing the classroom conditions for learners to experience success should be approached in a positive manner. This includes the learner attitudes towards subject content, their approaches to learning, as well as their learning activities, which should be conducted with a positive attitude while experiencing positive emotions. Accounting teachers should approach each lesson with a positive attitude, motivating their learners also to stay positive when working with difficult activities. Furthermore, teachers should inspire, motivate and support learners to persist and work accurately when approaching their class activities, homework exercises, tests and exam papers. Learners can be assisted with difficult calculations with difficult calculations and showing them systematically how to approach different questions, by using different strategies, methods and steps. By striving to engage all the Accounting learners in the class and showing interest in their unique learning needs, the teacher can have a positive influence on the learners' success.

Accounting teachers must stay updated on new content knowledge and teaching methods that can enhance learners' competencies. Additionally, continuously evaluating learner outcomes through regular informal and formal assessments is essential for informing teachers on how to adapt their methods for improved learning and to track learner progress. As Accounting is a practical subject that needs a lot of practice, Accounting teachers should expose their learners to different assessment opportunities, including tests, assignments, homework exercises, etc. This will help the learners to practice a variety of questions and prepare them to answer an

2. Parts of this section are based on the following published work by the author: Petzer, V & Nel, M 2021, 'A classroom conditions model for enhancing learner attainment of quality educational outcomes in Accounting education', in ML Hove & M Matashu (eds.), *Quality education: The nexus of human capital development, economic growth and social justice in a South African context*, AOSIS Books, Cape Town, pp. 193–220. https://doi.org/10.4102/aosis.2021.BK287.09

exam paper with more confidence. Moreover, assessment can be done by asking the learners questions, monitoring their work and constantly providing corrective feedback to ensure that learning occurs successfully. The subject of Accounting has been developed with the purpose that learners need to acquire critical thinking, communicating, mathematical, collecting, analysing, interpreting and organising skills.

In order to teach and assess the practical application of such 21st-century skills, it is important to provide learners with opportunities to practise these skills regularly when they engage in activities, homework, tests and exam papers. Accounting teachers should also develop positive relationships with their learners. This will become evident when they get to know the learners, take a particular interest in their overall development and progress, and treat all learners with respect while expecting the same in return. Such relationships can make a positive contribution to the Accounting learner's sense of belonging, engagement, motivation and achievement. This will then encourage learners to view Accounting as an interesting subject in which they will want to succeed.

## ■ Limitations and further research

The study was conducted only in the Vaal Triangle area of the Gauteng province. As a result, the findings based on this research study might be seen by some to be one-sided and not representative of the views of the majority of Accounting teachers in South Africa. Although the response rate was high for the quantitative phase, it was challenging to find more Accounting teachers to participate in the qualitative phase, as there were very limited teachers at each school teaching Accounting. Only 12 teachers completed the questionnaire and six participated in the interviews. Some teachers failed to complete the questionnaire. This resulted in the number of responses in some of the analyses being inconsistent. I believe that further research should be conducted to develop a strategy or strategies that will enable Accounting teachers to teach difficult content and skills from the curriculum more effectively. Furthermore, find ways to implement effective teaching methods and strategies in the Accounting classroom that are important for developing critical thinking skills and dispositions in the Accounting classroom for successful learning.

## ■ Conclusion

Successful learning in the Accounting classroom is the key that unlocks the door to financial understanding, paving the way for confident decision-making and a brighter financial future. This study aims to explore the factors that influence classroom environments and their impact on successful learning in Accounting. The study investigated the role of positive education, along with the relationships and support provided by teachers and learners, in creating the positive classroom conditions necessary for successful learning in Accounting. Findings from the qualitative phase of the research have been highlighted, and recommendations have been made. It is hoped that this study offers a framework for fostering positive classroom conditions that enhance learning in Accounting. Furthermore, it aims to motivate Accounting teachers and learners to improve their teaching and learning environments while developing 21st-century skills for successful learning experiences.

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## Chapter 4

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## Chapter 5


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## Chapter 11

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## Chapter 12

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# Index

This book presents original research by the Faculty of Education at North-West University in South Africa on holistically empowering 21st-century teachers to teach formal education. It examines how both pre-service and in-service teachers can be prepared to impart 21st-century skills amid rapid technological and societal changes, contributing to scholarship on teacher education in diverse South African contexts.

The book covers topics from ethics of care and education law to innovative subject-specific strategies in language, mathematics, history, the Foundation Phase and accounting. It foregrounds skills such as self-directed learning and applies mixed methods, including exploratory, experimental, and qualitative approaches like case studies, systematic reviews, educational design research and participatory action learning and action research (PALAR) to studies.

Aimed at scholars and researchers in teacher education, education ethics, education law, self-directed learning, reflective practices and emerging pedagogies, *Empowering 21st-century skilled teachers: A holistic approach* offers a comprehensive original contribution to knowledge to support scholars in their research on preparing teachers for 21st-century and future classrooms.

This scholarly book rigorously investigates the skills 21st-century pre-service and in-service teachers require, highlighting their implications for teacher education and professional development. Set against a rapidly evolving global and technological landscape, the authors critically analyse the essential knowledge, skills and aptitudes for effective future teaching.

The carefully curated chapters are attentive to Africa's diverse educational contexts, providing a foundation of universally applicable competencies and a methodological framework for adapting these skills to local needs. The book also articulates pedagogical strategies tailored to specific disciplinary contexts, ensuring relevance across a broad spectrum of teacher education domains.

The volume is particularly pertinent to the aims of the African Union's *Agenda 2063: The Africa We Want* and UNESCO's *Transforming Knowledge for Africa's Future*, while addressing the specific educational development imperatives for South Africa. Written in a clear, accessible scholarly style, this work synthesises current research on teacher education and professional practice, offering a valuable resource for scholars.

*Empowering 21st-century skilled teachers: A holistic approach* is recommended for scholars seeking a robust and contextually sensitive resource to advance research and practice in 21st-century teacher education.

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