

University of KwaZulu-Natal

THE DEVELOPMENT OF A LEADERSHIP MODEL FOR THE INTERPRETATION AND
ENACTMENT OF 21ST CENTURY LEARNING: A CASE OF SOUTH AFRICAN
PRIVATE SCHOOLS IN KWAZULU-NATAL

by

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ABSTRACT

Rapid developments in information and communication technology (ICT), since the early 1990's, have introduced significant global changes in education, which has necessitated pedagogical transformation. Many countries have moved from traditional approaches to education, to 21st Century Learning (21 CL). 21 CL is student-centred, practical, inquiry-based, ICT aligned, inclusive of morals and attitudes, and focuses on the development of cognitive, and affective competencies. ICT is a necessary and critical facet of 21 CL. Furthermore, effective school leadership, is also necessary, and a critical component in determining the success of the change to 21 CL.

Globally, many professions in the 21st century have simultaneously transformed with the global changes brought about by the fourth industrial revolution, and now require individuals of a different calibre, with different 21st century competencies. In addition, the rapid and profound ICT innovations, have fundamentally altered many aspects of human existence, such as the way we communicate, bank, buy, socialise, and learn. Consequently, many countries have already transformed their educational systems, to 21 CL. Others, are in the process of transforming their education systems, to make 21 CL a reality, in the hope of producing learners who are fully functional, capable and effective global citizens by empowering them with 21st century competencies. The COVID-19 pandemic has also changed the global landscape, especially in education. Private schools in South Africa, who were well resourced, engaged in digital learning. These schools embarked on the intensive use of digital tools to teach and learn.

School leadership has the potential to be one of the cornerstones of the paradigm shift to 21 CL, as well as the new field of e-learning, both nationally and internationally, because it directly influences all structures, and individuals within a school. The four dominant leadership theories, which have proven to be critical facets of 21 CL, are ecological leadership, system leadership, transformational leadership, and strategic leadership.

This research intended to investigate the relationship between 21 CL, ICT and school leadership in the South African context. The aim of which, was to develop a leadership model for the interpretation and enactment of 21 CL, in South African private secondary schools in KwaZulu-Natal.

Key words Leadership, twenty first century learning, technology

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LIST OF ABBREVIATIONS AND ACRONYMS

TERM	ABBREVIATION
Advanced Certificate in Education	(ACE)
Advanced Diploma in Education	(ADE)
Assessment and Teaching of 21 st Century Skills	(ATC21S)
Cambridge International Examinations	(CIE)
Computer Applications Technology	(CAT)
Curriculum Assessment Policy Statements	(CAPS)
Definition and Selection of Competencies	(DeSeCo)
Department of Basic Education	(DBE)
Digital Game-Based Learning	(DGBL)
Geographical Information Systems	(GIS)
Independent Education Board	(IEB)
Information and Computer Technology	(ICT)
Integrated Quality Management System	(IQMS)
International Society for Technology in Education	(ISTE)
Institute for Technology Strategy and Innovation	(ITSI)
Information Technology	(IT)
Independent Schools Association of Southern Africa	(ISASA)
Organisation for Economic Co-operation and Development	(OECD)
Partnership for 21 st Century Skills	(P21CS)
Progress in International Reading Literacy Study	(PIRLS)
Program for International Student Assessment	(PISA)
Subject Assessment Guidelines	(SAGS)
Science, Technology, Engineering and Mathematics	(STEM)
South African Council of Educators	(SACE)
South African Standard for Principalship	(SASP)
Statistical Package for Social Sciences	(SPSS)
Substitution, Augmentation, Modification and Redefinition	(SAMR)
Technology Proficiency Self-Assessment for 21 st Century Learning	(TPSA C-21)
Thinking Schools South Africa	(TSSA)

Trends in the International Mathematics and Science Study	(TIMSS)
Technology, Pedagogy and Content Knowledge	(TPACK)
Twenty First Century Learning	(21 CL)
United Nations Educational, Scientific and Cultural Organisation	(UNESCO)
Virtual Collaborative Research Institute	(VCRI)

CHAPTER 1

INTRODUCTION TO THE RESEARCH

1.1 Introduction

This research aims to develop a leadership model, for the interpretation and enactment of 21st Century Learning (21 CL), in private secondary schools. Rapid developments in information and communication technology (ICT), since the early 1990's, have introduced significant global changes in education, which has necessitated pedagogical transformation (Hines & Lynch, 2019; Maphosa, Dube, & Jita, 2020). Many countries have moved from traditional approaches to education, to 21 CL (McGuire, 2018; Bedir, 2019). 21 CL is student-centred, practical, inquiry-based, ICT aligned, inclusive of morals and attitudes and focuses on the development of cognitive and affective competencies (Varghese, Vate-U-Lan & John, 2019; Maphosa, 2021). ICT is a necessary and critical facet of 21 CL (Moyo & Hadebe, 2018; Hines & Lynch, 2019). Furthermore, effective school leadership is also necessary and a critical component in determining the success of the change to 21 CL (Ajmain, Hehsan & Mohamad, 2019; Munby, 2020; Pan & Chen, 2020).

This research intended to investigate the relationship between 21 CL, ICT, and school leadership, in the South African context. To accomplish this aim, school leaders from private secondary schools in KwaZulu-Natal, shared their experiences and knowledge of 21 CL, ICT and leadership. This was accomplished through online questionnaires, individual interviews and focus group interviews. This research was conducted in schools prior to the outbreak of COVID-19.

This study provides a comprehensive literature review of ICT, as a necessary enabler of 21 CL, 21 CL as an emerging pedagogical philosophy and school leadership training and development. The four dominant leadership theories, which have proven to be critical facets of 21 CL, were also investigated and reviewed, to provide more insight into how they positively influence 21 CL. These leadership theories are ecological leadership, system leadership, transformational leadership, and strategic leadership.

This research is informed by both the positivist paradigm, and the interpretivist paradigm. The mixed research approach, in which both quantitative and qualitative data is collected, analysed and interpreted.

This chapter provides an overview of the research. It discusses the background to the study, motivation for the study, focus of the study and the problem statement. The chapter also presents the aims and objectives of the study, research questions, significance of the study and research methodology. The chapter finally elucidates the limitations and overview of the thesis.

1.2 Background to the study

We are currently undergoing radical ICT transformations, in almost all spheres of life, as we advance through the fourth industrial revolution, towards a potential fifth one, which already seems to be rapidly emerging (Claro, Salinas, Cabello-Hutt, San Martin, Preiss, Valenzuela & Jara, 2018; Bedir, 2019; Maphosa *et al.*, 2020). The time in between the last two successive industrial revolutions, is much less in comparison to the time in between previous industrial revolutions (Hines & Lynch, 2019). This is an indication, that the rate at which the world, is changing has increased exponentially over the last few decades.

The COVID-19 pandemic has also changed the global landscape. South African private, and government schools, closed on the 18th of March 2020 because of the COVID-19 pandemic. Due to this quick action of closure of schools, they did not have sufficient time, to adequately prepare for teaching and learning during the lockdown which followed (Spaull & Van der Berg, 2020; Le Grange, 2021). This time was also full of uncertainty, in terms of duration, restrictions, resources and especially the rate of infections because of the virus. Initially, school's leadership bodies were under the impression that the lockdown measures would be three weeks in duration, and that the missed teaching and learning time at school, would be easily compensated for by the shortening of the June holidays and/or teaching over weekends or extended school days (Ardington, Wills & Kotze, 2021). The lockdown period was subsequently extended by another three weeks (Spaull & Van der Berg, 2020). Thereafter, schools were intermittently closed throughout 2020 (Chirinda, Ndlovu & Spangenberg, 2021).

The vaccination program in South Africa began in 2021, gradually reduced the spread of COVID-19. During this time, the periodic closure of schools continued (Reimers, 2022). This closure was due to the second, and third waves of the virus. In August 2021, schools were authorized by government to open. However, many schools remained closed, due to the number of COVID-19 cases present. The opening and closing of schools, now largely depends on the number of infections/positive cases, in line with the number of deaths caused by virus (Reimers, 2022).

In light, of the many days missed at school, during the initial lockdown period, and the extension of the lockdown period, school leadership teams, hastily begun preparations, to teach and learn digitally, without personal physical contact (Spaull & Van der Berg, 2020; Le Grange, 2021). Private secondary schools, were at a distinct advantage over government schools, to facilitate teaching and learning during the lockdown, as they have appropriate resources available to them (Chisango & Marongwe, 2021; Pillay, 2021; Maree, 2022). These schools embarked,,on the intensive use of digital tools to teach and learn. The use of applications such as, Microsoft Teams, Google, Zoom, Seesaw, WhatsApp, and many others, in teaching and learning, are common place (Chirinda *et al.*, 2021; Maree, 2022; Reimers, 2022). Government schools have also moved into the digital space, but not at the same pace, and not to the same extent as private schools (Chisango & Marongwe, 2021; Pillay, 2021). Lockdown therefore had the positive effect of shifting, especially private secondary schools, into a digital space in terms of teaching and learning.

Another driving force, behind the digital change in private schools, was that they needed to be seen, to be providing the services promised for the high school fees, that parents have to pay (Pillay, 2021). The focus of the online teaching and learning, was therefore, the delivery of missed theory. However, this was achieved through the same content-based, rote learning approach, utilised during a normal school day, before the pandemic. In this haste, to deliver content and service the client, 21 CL was not significantly contemplated, or used by schools over the lockdown period (Mathebula & Runhare, 2021; Maree, 2022). Neither has the pertinent factors, related to the interpretation and enactment of 21 CL, been considered. Leadership training for 21 CL and ICT, has not featured during lockdown. Despite these challenges, the positive impact of the rapid increase of ICT in teaching and learning, still allows a unique opportunity for schools to adopt 21 CL.

The radical global changes, brought about by ICT developments and COVID-19, has caused many governments around the world, to acknowledge that the traditional content-based educational methodologies of the past, do not contain the knowledge, skills or practices to adequately prepare learners for life in the modern era, of the 21st century. Consequently, these governments have embarked on transforming their educational systems, to be more aligned with the principles 21 CL (McGuire, 2018; Hashim, Rafiq & Yunus, 2019; Hines & Lynch, 2019; Maphosa *et al.*, 2020; Ramli, Majid & Badyalina, 2020). The change towards the paradigm of 21 CL through ICT is considered by countries as a necessary transformation to survive the present rapid and drastic global reforms (Lay & Osman, 2018; Ajmain *et al.*, 2019; Howard, O'Brien, Kay & O'Rourke, 2019; Maphosa *et al.*, 2020; Literat, 2021).

Globally, many professions in the 21st century have simultaneously transformed with the global changes brought about by the fourth industrial revolution and now require individuals of a different calibre, with different 21st century competencies (Cheng, 2017; Mabaso, 2017, Claro *et al.*, 2018). Any form of employment, that does not require a significant, or critical amount of some form of human input, can be replaced with advanced robotics and/or complex computer software, either currently, or in the near future (Mhlanga & Moloji, 2020; Maphosa, 2021). These jobs spread across most disciplines, and include public transport drivers, manufacturing workers, mechanics, cashiers, fast food cooks, and even more skilled professions, such as pilots, accountants and even many medical professions. However, the fourth industrial revolution has also given rise, to new professions, such as ICT technicians, software developers, cybersecurity experts, social media consultants, and data scientists. In addition, these rapid and profound ICT innovations, have fundamentally altered many aspects of human existence, such as the way we communicate, bank, buy, socialise, and learn (Bai & Song, 2018; Barrot, 2018; Maphosa, 2021).

Many governments of countries, have already changed their educational systems to 21 CL (Hines & Lynch, 2019). Others are in the process of transforming their education systems to make 21 CL a reality, in the hope of producing learners who are fully functional, capable, and effective global citizens, by empowering them with 21st century competencies (Clarke, Gill, Sim, Patry, & Ginsler, 2014; Claro *et al.*, 2018; Maphosa, 2021). This includes many African governments, such as South Africa, Ghana and Nigeria, who have conceded that the drastic social, economic and digital changes that have occurred globally have necessitated changes in

the educational sphere (Mensah & Amponsah, 2016; Agormedah, Henaku, Ayite & Ansah, 2020; Ogonnaya, Awoniyi & Matabane, 2020).

The different schools in South Africa, vary in economic status also range extremely affluent to extremely penurious (Pather & Booii, 2020; Chirinda *et al.*, 2021). Therefore, the interpretation and enactment of 21 CL in South African schools, is different and in varied stages, depending on the context. However, there is evidence that South Africa is in the process of introducing 21 CL in some schools, through an inquiry-based learning approach, facilitated by the use of technological advancements (Botha, 2016, Mabaso, 2017; Mhlanga & Moloi, 2020). There have been several legislations by the South African Government from 1996 to 2015, outlining the need for ICT and 21 CL, as well as frameworks for the transformation process. However, public and private schools in South Africa operate very differently regarding the pace of enactment. Public schools tend to adhere to the timeline and transformation process, provided by government, whereas private schools work more independently (Mhlanga & Moloi, 2020). They are usually further ahead of public schools, in the change to 21 CL using ICT, because they have more resources at their disposal, with less bureaucratic financial access protocols than public schools (Ramrathan, 2020; Subekti, 2020). The onset of COVID-19, has also highlighted the inequality in education, with many public schools lacking the resources to deliver education during lockdown periods, whilst most private schools moved into the digital educational space because of adequate resources (Mudaly & Mudaly, 2021). The focus of this study is thus, on private secondary schools.

South Africa has many different types of schools - private, semi-private or public schools (Mhlanga & Moloi, 2020, Ramrathan, 2020). Private schools have been in existence in South Africa from colonial times, often with the churches playing a major role in their development (Pretorius, 2019). Some of the twenty five private secondary schools from KwaZulu-Natal that participated in this study, date back to the late 1800's, whereas others have been in existence for less than twenty years. In light, of the corruption and poor management, of some sectors of the Department of Basic Education (DBE) over the last twenty five years, many parents have opted to send their children to private schools, if their financial situation allowed them to do so (Mudaly & Mudaly, 2021). This has resulted in the establishment of many, newer private schools which cater for different financial classes. Most of the traditional and historic private schools have also shown growth over the last twenty five years (Naidoo, 2019).

Private schools in KwaZulu-Natal, and the rest of South Africa, acquire most of their income from learner school fees. They are managed as businesses, with profit margins taking priority in most instances. Therefore, there is a high degree of accountability regarding expenditure of school finances, resulting in these schools, being well financially managed (Naidoo, 2019). In order, to remain attractive to prospective learners, and parents of prospective learners, these private schools spend a substantial amount of their finances on resourcing their schools, with the necessary educational tools and devices. For the same reason, these schools are also willing to engage with innovative educational approaches and practices. This has produced the ideal climate and culture for the interpretation and enactment of 21 CL. The context of this study is therefore on private schools, rather than public schools, in KwaZulu-Natal.

Better working environments, for teachers in private schools in KwaZulu-Natal, and the rest of South Africa, also contribute to more highly motivated teachers who have greater job satisfaction, than teachers in public schools (Naidoo, 2019). Some of the conditions that result in better working environments are higher remuneration, more chances at promotion, more professional development, better team relationships, smaller classes, and lower teaching loads (Naidoo, 2019). These conditions allow, and encourage teachers to experiment with innovations in education, such as 21 CL. This is another reason why this research focuses on only private schools in KwaZulu-Natal.

The reason why many countries have engaged with 21 CL is also because the pedagogy of 21 CL differs substantially from traditional teaching and learning approaches. The focus of 21 CL is the application of knowledge to new and different situations rather than only the memorisation of content knowledge through repetition (Barrot, 2018; Bedir, 2019; Varghese *et al.*, 2019). 21 CL is also characterised by being cross disciplinary, inquiry-based and learner centred (van Laar, van Deursen, van Dijk & de Haan, 2017; Shanmugam & Balakrishnan, 2019; Maphosa *et al.*, 2020). The use of ICT has proven to be a vital component in creating innovative learning environments during the enactment of 21 CL (Toh, Jamludin, Hung & Chua, 2014; Mathew, 2018; Bedir, 2019; Maphosa, 2021). The 21st century competencies included in 21 CL are critical and innovative thinking, emotional intelligence, global citizenship, civic literacy, self-management, self-direction, ethics and communication, collaboration and information skills (Hakkinen, Jarvela, Makitalo-Siegl, Ahonen, Naykki, Voltonen, 2017; Siddiq, Gochyyev and Wilson, 2017; Abdurrahman, Nurulsari, Maulina & Ariyani, 2019).

School leadership has the potential to be one of the cornerstones of the paradigm shift to 21 CL as well as the new field of e-learning, both nationally and internationally, because it directly influences all structures and individuals within a school (Volmink & van der Elst, 2017; Mowat, 2018; Ajmain *et al.*, 2019; Munby, 2020; Pan & Chen, 2020). In the context of this study school leadership will refer to school principals, members of the senior management team (SMT), heads of the Information and Communication Technology (ICT) department as well as specific subject heads. However, principals in particular are the leaders in their institutions and therefore can be very influential (Njukunye & Waithaka, 2020).

School leadership therefore, has the potential to facilitate the adoption of 21 CL by all structures within a school (Mohamad & Ismail, 2018; Hines & Lynch, 2019; Shava, 2021). It can also assist in developing strategies and plans when changing to 21 CL, manage and monitor the change process, design coping mechanisms to facilitate the change, provide feedback and institute corrective measures when necessary (Chatchawaphun, Julsuwan, & Srisa-ard, 2016; Hussain, Ahmad, & Qadir, 2016; Howard *et al.*, 2019; Shava & Heystek, 2021). In addition, it can also enable the change to 21 CL by playing a significant role in the effective mediation between the policies of centralised government authorities and the daily practices of staff. School leadership can further expedite 21 CL by sharing experiences of 21 CL from their own schools to other schools in the same district, region and province (Toh *et al.*, 2014; Boylan, 2018). In light of the above important areas of involvement, effective school leadership is deemed an essential component in the successful transformation to 21 CL by schools.

The purpose of this study, was to develop a leadership model, for the interpretation and enactment of 21 CL ,in South African private secondary schools in KwaZulu-Natal. The aim of this study is to explore, probe and dissect the intertwined relationship between ICT utilisation, 21 CL adoption and leadership development, by examining the views of school leadership. The study will also scrutinise the perspectives of school leaders on the infusion of principles, content and strategies of specifically ecological leadership, system leadership, strategic leadership and transformational leadership into leadership development for 21 CL.

1.3 Motivation for the study

The researcher has been a secondary school teacher for eight years, a subject head for another nine years, and a member of a school's management team for four years before he moved over to tertiary education. He had the opportunity to teach at both government and private secondary schools but most of his experience has been at private schools. The last private secondary school at which the researcher taught was the only school to actively introduce, engage and reflect on different aspects of 21 CL. This involved redesigning the grade eight timetable and curriculum to include teaching 21st century competencies and thinking school programmes, design thinking classes, different forms of digital learning and a cross-curricular subject.

The researcher noticed from his personal and professional interaction and communication with government and private secondary schools that presently relatively few schools have actively initiated 21 CL. The extent and degree of the implementation of 21 CL at schools also seems to vary substantially. Some schools have started using iPads, tablets or chrome books; others have introduced inquiry-based assessments whilst others have timetabled lessons to teach competencies of 21 CL.

In his capacity as a member of the school's senior management team, the researcher attended ICT and curriculum innovation workshops and seminars, with school leaders from some of the private secondary schools in the city of Durban and its adjacent suburbs. In these programmes, school leaders were sometimes asked to share their experiences of ICT and 21 CL related topics. From these discussions, the researcher was able to gauge that few of the participating schools had started to actively engage with 21 CL over the last three to six years. It was evident from the discussions at the training sessions that those schools had either formal cross curricular, research skills, informational technology or thinking school programmes, all of which are aligned with 21 CL. The COVID-19 pandemic has accelerated this interest and involvement in ICT and 21 CL by both private and public secondary schools in South Africa (Mhlanga & Moloji, 2020; Maphosa, 2021). This is evident from the digital platforms and innovative online teaching methods employed through television and the internet.

Many of the leading countries in 21 CL, like Singapore and Canada, realised the critical need for 21 CL to prepare learners for modern day life, and have initiated the change in their educational systems as early as the late 1990's (Howard *et al.*, 2019). Some of these countries

have reached the point of totally re-designing their entire curriculums, assessment methods and teaching practices (Abdurrahman *et al.*, 2019). South Africa has only recently embarked on the journey to 21 CL in the form of inquiry based learning and ICT development, and whilst there is a large amount of literature on 21 CL globally, local research seems to be sparse (Botha, 2016; Mabaso, 2017, Mhlanga & Moloji, 2020). In comparison with traditional teaching and learning paradigms 21 CL is still a relatively new, dynamic and emerging field with no internationally agreed upon definition, content or approach (Barrot, 2018; Hines & Lynch, 2019). However, the fundamental change from only learnt content to the application of knowledge to solve a variety of problems in different situations is common to all strategies of 21 CL (Bedir, 2019; Varghese *et al.*, 2019). The combination of cognitive and affective 21st century competencies in 21 CL is also a universal characteristic (Cheng, 2017; Mabaso, 2017).

Although 21 CL has been relatively recently utilised in educational systems around the world, some of the research does indicate that there are many positive outcomes associated with it and these include increased learner involvement during lessons, improved learner assessment scores especially in higher order learning and the enhanced work ethic of teachers (Kokare & Strautins, 2018; Bedir, 2019). Proactive countries have therefore revolutionised their educational systems, and are already beginning to benefit from these positive outcomes, as well as document them (Davis, Jacobsen, Lund, Odabasi, Schrum, Voogt & Way, 2015; Hashim *et al.*, 2019). The rationale of this study is to add to the body of research on 21 CL in the South African context, and facilitate positive change in South African education.

Since effective leadership of the school principal together with the school's management team is deemed as a critical factor in the interpretation and enactment of 21 CL in schools, this study aims to further explore the interwoven relationship between 21 CL and leadership in a select group of South African private schools (Hallinger & Walker, 2017; Shava & Heystek, 2021). Toh *et al.* (2014) as well as Kokare and Strautins (2018) assert that the impact and permanence of any programme designed to introduce and enact 21 CL is based on an in-depth appreciation for pedagogical advancements in education. By virtue of its hierarchal position within the school, and its ability to significantly influence all stakeholders, structures and resources, the leadership of the school can be instrumental in the development and spreading of this appreciation for pedagogical developments (Leithwood, Harris & Hopkins, 2019; Shava, 2021). Some form of leadership development has therefore, usually been undertaken concurrently with the adoption of 21 CL (Ninkovic & Floric, 2018).

This study also investigates school leadership training and development to establish how school leadership can be further developed to facilitate the interpretation and enactment of 21 CL. Schools in the modern era have changed drastically (Mestry, 2017, Smit, 2017; Mvenene, 2020). The introduction of 21 CL in schools has compounded some of these changes and created very complex and rapidly changing educational environments, and therefore the leadership of a school should be dynamic and sophisticated in order to effectively manage these significant and intricate changes (Mestry, 2017; Sepuru & Mohlakwana, 2020). Some of the responsibilities of principals now cross over into curriculum development, professional development, human resource management, financial management and legal representation (Ndamani, 2016; Hallinger & Walker, 2017; Pan & Chen, 2020). School leadership should therefore be afforded the proper leadership training and development in order to maximise their effectiveness in these roles (Chemutai, Chelimo & Keter, 2015; Zelvys, Dukynaite, Vaitekaitis & Jakaitiene, 2019; Sepuru & Mohlakwana, 2020, Munby, 2020). School leaders, especially principals, need to be empowered to select the most suitable innovations and best practices for their schools, manage all available resources, develop professional capital and establish communication and trust with the wider communities (Hamilton, Forde & McMahon, 2018; Leithwood *et al.*, 2019, Munby, 2020; Shava, 2021).

Ecological leadership, system leadership, transformational leadership and strategic leadership are the leadership theories which feature most prominently in the context of 21 CL. These paradigms are therefore reviewed so that they can also be used effectively in South African schools when transitioning to 21 CL.

Research from different continents, about the relationship between transformational leadership and the change to 21 CL, shows that transformational leadership has the ability to considerably ease the transition to 21 CL, as well as produce many beneficial outcomes (Hussain *et al.*, 2016; Ismail & Mydin, 2019; Sabwami, Areba & Abenga, 2020). The focus of transformational leadership is to completely manage all aspects associated with radical organisational change, and it therefore, has the ability to provide precise and pertinent information, guidelines and actions for the change to 21 CL (Ndiritu, Mbugua & Ndiritu, 2019; Zengin & Akan, 2019; Hermans, 2021).

Likewise, research into the integration of strategic leadership into the design for the introduction and enactment of 21 CL reveals that strategic leadership has the aptitude to greatly increase the efficacy of the change (Chatchawaphun *et al.*, 2016; Abdo & Edgar, 2019; Zakaria, Nor, Alias & Hamid, 2021). Israel (2016) as well as Cobbinah and Agyemang (2019) also affirm that strategic leadership could profoundly influence the successful adoption of 21 CL in schools because it not only designs clear and realistic vision for the school, but also formulates a comprehensive strategy of introduction, enactment and sustainability which incorporates long term goals and short term objectives. In light, of the benefits of the effective use of leadership paradigms in the revolution to 21 CL, countries around the world are using one or more leadership paradigms to introduce and enact 21 CL in their schools (Mowat, 2018; Howard *et al.*, 2019).

Similarly, research from different parts of the globe regarding the incorporation of system leadership into the reformation plans for 21 CL, indicates that system leadership substantially facilitates the adoption of 21 CL (Shaked & Schechter, 2017; Brown & Weli, 2019; Harris, 2020). Boylan (2018) and Mowat (2018) both agree that the concept of system wide development has the capacity to expediate rapid, positive and long-lasting changes in each organisation within the system and then to potentially share these advancements with other systems as well (Harris & Jones, 2017; Simkins, Coldron, Crawford & Maxwell, 2018; Courtney & McGinity, 2020).

Finally, research from different countries around the world do suggest that the sustainable introduction and enactment of 21 CL in schools can be achieved using the tenets of ecological leadership, as a crucial and significant component of the change strategy and process (King & Travers, 2017; Howard *et al.*, 2019; Huijser, Kek, Abawi & Lawrence, 2019). Godfrey and Brown (2018) as well as Hung, Huang and Tang (2020) affirm that the multi-system structure of ecological leadership, has the potential to provide a viable framework for the dissemination of 21 CL, between the different levels of the school environment, to form comprehensive and sustainable improvements.

School leadership has proven to be crucial in the interpretation and enactment of 21 CL. The effective use of ICT in schools is a necessary precursor and critical component of 21 CL. The motivation of this study was to provide more information about how school leadership influences, the enactment and interpretation of 21 CL, in the South African context. The

intention of this study is therefore, to probe how school leadership conceptualises, negotiates and potentially utilises the relationship between leadership and 21 CL, in their daily school activities. Prominent leadership theories affiliated with 21 CL, are also examined so that they can be infused into the South African leadership approaches, to facilitate the transition to 21 CL. The main aim of this study is to therefore, develop a leadership model for the interpretation and enactment of 21 CL in South African private secondary schools located in KwaZulu-Natal.

1.4 Focus of the study

The study focussed on the role of school leadership in the interpretation and enactment of 21 CL in private secondary schools. Principals, deputy principals and subject heads of private secondary schools in KwaZulu-Natal were researched, using an online questionnaire. Individual semi-structured interviews were conducted with the same school management members from a sample of the private secondary schools. Focus group interviews were also conducted with the subject heads, from this sample. Quantitative and qualitative data about the interpretation and enactment of 21 CL, and the role of school leadership in this process, was collected and analysed. This data was used to develop a leadership model for the interpretation and enactment of 21 CL in private secondary schools in KwaZulu-Natal. The information in this model is also significant because it can be used in other national and international school contexts to facilitate the change to 21 CL.

1.5 Problem statement

Globally, many educational systems were designed to produce a working or labour force to meet the requirements of the industrial revolution of the past century (Cheng, 2017; Claro *et al.*, 2018). Presently, we live in a world that is undergoing many comprehensive, extreme and profound ICT changes (Claro *et al.*, 2018, 2018; Varghese *et al.*, 2019; Maphosa, 2021). These ICT changes are concerned with social, cultural, economic, technological and educational aspects (Mabaso, 2017; Hashim *et al.*, 2019). The present COVID-19 worldwide pandemic has also catapulted countries into ICT changes in all facets of life (Pather & Booi, 2020; Ramli *et al.*, 2020). Learners need to be prepared for a future where they are required to do jobs that have not yet been created, to use radical technologies that have not been invented, and solve

global problems never before encountered (Clarke *et al.*, 2014; Schrum *et al.*, 2015; McGuire, 2018; Hines & Lynch, 2019; Subekti, 2020; Maphosa, 2021).

21 CL should be interpreted and enacted at the schooling level because it has the potential to prepare learners to be fully functional in all spheres of the modern world (Lay & Osman, 2018; Ajmain *et al.*, 2019). Traditional educational systems are grounded mostly on the learning theory of Behaviourism whereas 21 CL involves deeper order learning and is based on the learning theories of Cognitivism, Constructivism and Constructionism (Hakkinen *et al.*, 2017; Lay & Osman, 2018; Maphosa, 2021). Although many first world countries are engaged with 21 CL, it is still a relatively new educational theory (Crawford, 2017; McGuire, 2018). The DBE in South Africa is only beginning to become engaged with this change in thinking, regarding education (Botha, 2016; Mabaso, 2017; Maphosa, 2021). This research investigates how 21 CL is interpreted and enacted in South African private secondary schools. In the context of this study, 21 CL will refer to the formulation, introduction and enactment of frameworks or curriculums that focus specifically on 21st century competencies as well as newly developed subject specific curriculums, which are based on 21st century competencies. This includes teaching methods, assessment strategies and resources involved in the interpretation and enactment of these new frameworks or curriculums (McGuire, 2018; Abdurrahman *et al.*, 2019).

In South Africa's new democracy, the DBE has unfortunately, been plagued with extensive corruption and mismanagement of funds (Mudaly & Mudaly, 2021). This has resulted in many public schools being under resourced, and some, in a state of total decay. Due to heavy workloads and lower salaries, teachers in public schools, have also become very dissatisfied (Naidoo, 2019). This negative climate and culture, within public schools has limited the experimentation with 21 CL through ICT (Chisango & Marongwe, 2021; Mudaly & Mudaly, 2021). In contrast, the downward trend in the South African public school system, has created the opportunity for the development of more private schools, as well as the growth of existing ones (Naidoo, 2019). To increase their marketability, private secondary schools in KwaZulu-Natal, and the rest of South Africa have used their financial resources to equip their schools with the necessary educational resources. To remain attractive to prospective parents and learners, these schools have also shown an eagerness to engage with pedagogical innovation. Teachers in private schools are also much more satisfied with their job situations, resulting in them being more amenable to experimentation with new educational practices (Naidoo, 2019).

This positive climate and culture within private schools, has caused them to be more engaged with 21 CL (Pillay, 2021; Maree, 2022). It is for these reasons that the context of this study is limited to only private schools in KwaZulu-Natal.

As with change that is introduced, there needs to be responses/actions to respond to these changes. Therefore, the aims, objectives, goals and even practice of education should also change in order to be relevant to learners living in this complex and dynamic world (Clarke *et al.*, 2014; Davis *et al.*, 2015; Kokare & Strautins, 2018). These changes in education need to be responded to at the schooling level, informed by the school leadership, in partnership with government education departments. Effective school leadership teams form a critical and integral component of the introduction and enactment of 21 CL (Ndamani, 2016; Ninkovic & Floric, 2018; Leithwood *et al.*, 2019). Truong, Hallinger and Sanga (2017), Cobbinah and Agyemang (2019), as well as Sepuru and Mohlakwana (2020) explain that leadership training and development of school leaders, as well as their beliefs and practices, need to evolve in order to meet the demands of the 21st century, so that they can prepare learners for the future. This study reconnoitres how school leadership facilitates the interpretation and enactment of 21 CL in private South African schools.

The successful adoption of 21 CL by schools is significantly affected by an erudite, experienced and highly skilled school leadership team (Marlatt, 2018; Ajmain *et al.*, 2019). This is because these teams are able to perform research, understand the intricate complexities of the change, meticulously and comprehensively plan the enactment process, establish a safe change environment for followers, effectively collaborate and communicate, analyse and evaluate all related information, as well as provide constructive and informative feedback (Howard *et al.*, 2019; Pan & Chen, 2020). Furthermore, effective school leadership has been associated with enhanced curriculum content, higher learner assessment scores and greater efficiency of teachers, and is therefore considered only second to the actual process of teaching and learning when improving educational standards (Gumus, Bellibas, Esan & Gumus, 2016; Leithwood *et al.*, 2019; Munby, 2020).

School leaders have a crucial role in actively promoting the vital 21 CL principles of autonomous, shared and genuine learning amongst members of the school community (Brown & Weli, 2019; Elizondo-Garcia, Gomez-Zermendo, & de la Garza, 2019). The effective training and development of especially principals in leadership, is therefore, viewed as being

crucial in introducing 21 CL in a sustainable manner (Mestry, 2017; Hamilton *et al.*, 2018; Pan & Chen, 2020). Therefore, in introducing 21 CL in schools many countries around the world have simultaneously invested time and resources to develop their leadership teams (Mohamad & Ismail, 2018; Mowat, 2018; Sepuru & Mohlakwana, 2020). Zelvys *et al.* (2019) and Munby (2020) explain, that this is because effective school leadership is considered as a vital component in the delivery of quality education. Effective school leadership has been one of the critical factors in improving all aspects of the teaching and learning process in different educational systems around the world (Ndamani, 2016; Koh & Hung, 2018; Romanowski, Abu-Tineh, Ndoye & Aql, 2019; Munby, 2020). Some countries have focused on a singular leadership paradigm when introducing and enacting 21 CL whilst others have focused on a combination of them.

Effective leaders utilise features of different leadership theories when executing their duties. Ecological leadership, system leadership, strategic leadership and transformational leadership have all been frequently used to facilitate the interpretation and enactment of 21 CL (Brown & Weli, 2019; Lee & Kuo, 2019; Manns, 2019). Their use in the adoption of 21 CL by schools has generated significant improvements in the educational sector (Singphen, Poopayang, Siphai, Charoensuk, 2019; Shava & Heystek 2021).

In light of the significant influence of effective school leadership on educational change, the focus of this study is to delve into the intricate relationship between leadership and the interpretation and enactment of 21 CL in private secondary schools in the province of KwaZulu-Natal. The intention is to unravel useful information to develop a leadership model, which can be used by these schools, as well as other schools, both nationally and internationally, to facilitate the change to 21 CL.

1.6 Aim and objectives of the study

The main aim of the study is to examine the roles that school leadership plays in the interpretation and enactment of 21 CL in private secondary schools in KwaZulu-Natal.

- To determine how ICT is utilised to facilitate 21 CL in private secondary schools in the province of KwaZulu-Natal.

- To assess how 21 CL is interpreted and enacted in private secondary schools in KwaZulu-Natal.
- To determine the roles of school leadership in the interpretation and enactment of 21 CL in private secondary schools in KwaZulu-Natal.
- To develop a model for leadership in private secondary schools in KwaZulu-Natal to effectively interpret and enact 21 CL.

1.7 Research questions

- How is ICT utilised to facilitate 21 CL in private secondary schools in the province of KwaZulu-Natal?
- How is 21 CL being interpreted and enacted in private secondary schools in the province of KwaZulu-Natal?
- What are the roles of school leadership in the interpretation and enactment of 21 CL in private secondary schools in KwaZulu-Natal?
- How can a leadership model be developed for the interpretation and enactment of 21 CL in private secondary schools in KwaZulu-Natal?

1.8 Significance of the study

Research from the late 1990's suggests that the world has changed drastically on every frontier, and in every discipline, as it rapidly moves through the fourth industrial revolution (Claro *et al.*, 2018; Howard *et al.*, 2019; Maphosa, 2021). Accordingly, there is research supporting the idea that the present educational paradigms in South Africa, Africa and other countries around the world, do not have the necessary content, skills and practices to comprehensively prepare learners, to be successful global citizens in this rapidly changing world, or to meet the present and future global challenges (Botha, 2016; Siddiq *et al.*, 2017). Consequently, there is also research to validate that many countries, consider 21 CL as the next necessary step in in the evolution of educational systems, in order to meet the new needs of present and future learners (Claro *et al.*, 2018). These countries are therefore in various stages of transforming their educational systems, to be aligned with 21 CL (Ajmain *et al.*, 2019). Although different countries around the world have varying definitions and approaches to 21 CL, depending on

their unique contexts, all of them share the same basic principles and practices (Cheng, 2017; Barrot, 2018).

Research into the interpretation and enactment of 21 CL through ICT indicates that one of the most critical factors that determine the extent of 21 CL in schools, is the development of an effective school leadership team (Koh & Hung, 2018; Hines & Lynch, 2019). Research has also revealed that the change process can be facilitated by whole scale complete organisational change rather than only compartmental rectification procedures, the co-ordinated use of ICT for pedagogical advancement, as well as teaching and learning methodologies which are group orientated, cross-curricular, authentic and inquiry-based (Marlatt, 2018; Shanmugam & Balakrishnan, 2019). The transformation to 21 CL can also be enhanced by the utilisation of structured higher order questions, a focus on reading, writing and mathematical skills, comprehensive and continuous professional development of teachers in 21 CL, the creation of a community of learning which is learner-focused, and the development of robust associations with research institutions (Nappi, 2017; Moyo & Hadebe, 2018). Depending on the context in which the adoption to 21CL is taking place, the change process can utilise a centralised or distributed approach (Toh *et al.*, 2014; Cheng, 2017).

Some of the concerns that research has revealed about the interpretation and enactment of 21 CL, through ICT, include learners in higher grades having difficulty in adapting to changes associated with 21 CL, the slow transformation of teacher training institutions, and the continuation of the majority of major examinations being purely content based (Claro *et al.*, 2018; Ajmain *et al.*, 2019). Some of the other concerns surrounding 21 CL include the relative limited data surrounding the use of 21 CL, teachers having insufficient time to experiment with it, and the assessment of 21st century competencies, which are more qualitative and subjective (McGuire, 2018; Agormedah *et al.*, 2020; Ogbonnaya *et al.*, 2020).

The decisions and actions of the school leadership team, especially the principal, directly and indirectly, affect all structures and personnel in the school environment (Kokare & Strautins, 2018). Therefore, much research has been undertaken into the role of the school leadership team in the interpretation and enactment of 21 CL, as well as the relevant leadership development and training (Hallinger & Walker, 2017; Leithwood *et al.*, 2019). Research suggests that an effective school leadership team can lead to positive outcomes throughout the school community, and that there is a severe and urgent need for effective and consistent

leadership development and training (Smit, 2017; Mohamad & Ismail, 2018). Research has also revealed that use of ecological leadership, system leadership, transformational leadership and strategic leadership, in the interpretation and enactment of 21 CL, expedites and accelerates the change process (Harris & Jones, 2017; Lee & Kuo, 2019).

South African private schools are more effectively financially managed, better resourced, and more willing to engage with pedagogical advancements, than public schools (Mudaly & Mudaly, 2021). Therefore, private schools are much more involved with 21 CL, through the use of ICT. The research gap is that local research, into how private secondary schools in KwaZulu-Natal, and the rest of South Africa, are interpreting and enacting 21 CL, is limited (Mabaso, 2017, Mhlanga & Moloi, 2020). Effective school leadership is considered as a crucial component in the successful transformation to 21 CL (Marlatt, 2018; Ajmain *et al.*, 2019). Research into the roles of school leadership in the interpretation and enactment of 21 CL, in South African private secondary schools, is also very limited.

This study aims at addressing these gaps in research. It is significant because it has the potential to further probe and investigate the roles of school leadership in the interpretation and enactment of 21 CL, particularly in a South African context. It can assist in understanding the knowledge and experiences of secondary private school leaders in KwaZulu-Natal, regarding the roles of leadership in the interpretation and enactment of 21 CL. It might also help in documenting the professional development and training of these private school leaders. This study could also be significant because it has the potential to reveal the leadership approaches adopted by South African private schools when interpreting and enacting 21 CL.

It could furthermore, provide greater evidence and clarity into the relationship between effective school leadership, and the successful interpretation and enactment of 21 CL especially in a South African context. This research in addition might possibly provide valuable information about the content of professional development programmes, regarding educational leadership in KwaZulu-Natal. Finally, this study may also be significant because it might provide great clarification regarding the relationships between strategic, transformational, system and ecological leadership to 21 CL. This will lead to the development of a leadership model for the interpretation and enactment of 21 CL in private secondary schools in KwaZulu-Natal, which could assist other schools, provinces and countries in the transformation to 21 CL.

1.9 Research methodology

A mixed method research methodology was used, as both the positivist and interpretivist paradigms were employed in different parts of the research. Online questionnaires were sent to the leadership teams of all the private secondary schools in KwaZulu-Natal. The online questionnaires comprised of mostly questions requiring quantitative answers, where respondents had to choose from a range of specified alternatives. The questionnaire also had a limited amount of open-ended qualitative questions.

Purposeful sampling was used to select five secondary schools, where the school leadership (principals, deputy principals, ICT subject heads) were expected to take part in individual semi-structured interviews. Focus group interviews were also conducted with the subject heads of different department. All interviews were recorded and transcribed.

The Statistical Package for the Social Sciences (SPSS) was used to analyse the quantitative data from the online questionnaires. The qualitative data from the questionnaires were collated and analysed. Thematic analysis was used to identify patterns trends and themes, from the data, of both the individual interviews, and the focus group interviews.

The data from the online questionnaires, individual interviews and focus group interviews were triangulated in order to formulate recommendations and conclusions.

1.10 Delimitations of study

Delimitations, are the precise and intentional decisions, made by the researcher, to outline and delineate, the borders and restrictions of the research, so that it can have a well-defined direction and focus (du Plooy-Cilliers, Davis & Bezuidenhout, 2014). The principal aim of this research is to investigate the roles of school leaders, in the interpretation and enactment of 21 CL in private secondary South African schools, from the perspectives of management members. Only secondary schools were chosen to add greater focus to the study, because leaders from these schools would potentially share similar experiences, regarding the relationship between leadership and 21 CL. The dynamics of primary schools are different from secondary schools, and school leaders of primary schools would probably have different

leadership roles in the facilitation of 21 CL. Online questionnaires were only sent to the leadership teams of all fifty-five private secondary schools in KwaZulu-Natal in the form of a google form. Level one teachers were not involved in the research.

School leaders from twenty-five of the fifty-five private schools completed the forms. The criteria for the selection of schools for the individual semi-structured interviews and the focus group interviews, was that the respective schools had to have five or more responses to the online questionnaires, and that the principal, deputy principal and subject heads must have all contributed to the responses. This was done to get the perspectives of leadership and 21 CL, from all three categories of the school's leadership team, as well as variety of responses from the subject heads. This is important because it allows for the roles of all school leaders in the interpretation and enactment of 21 CL, to be investigated, and diverse responses to be analysed.

Based on these criteria, six schools were selected for the interviews, however, one of these schools did not afford the researcher the opportunity to conduct the interviews, and therefore five schools were included in phase two of the research. Although the selection criteria limited the number of schools that were interviewed, they were necessary, because they allowed all levels of school leaders to be interviewed. The effective use of leadership can play a major role in determining the level of success when changing to 21 CL (Boylan, 2018; Elizondo-Garcia *et al.*, 2019). This research could provide valuable information to assist South Africa in effectively preparing learners to be successful global citizens in the future. I hope this research will generate more research into the different aspects of ICT, 21 CL and school leadership.

1.11 Overview of the thesis

Chapter one introduces the study by highlighting the growing need for a change from previous and present educational ideologies and practices to the principles of 21 CL. It then describes some key twenty first century competencies, a few essential characteristics and benefits of 21 CL and the critical role of leadership in the interpretation and enactment process of 21 CL. Chapter one then outlines the problem statement, rationale and significance of the study. A succinct synopsis of the paradigms of ecological leadership, system leadership, transformational leadership and strategic leadership is also depicted. The chapter furthermore

expounds on the organisation of the study, objectives, critical questions and delimitations of the study.

Chapter two offers a detailed literature review of ICT, 21 CL as well as educational leadership training and development, especially in a South African context. This chapter elucidates different pertinent topics related to 21 CL and ICT, which include a detailed explanation of these terms, the need for them, factors which facilitate their enactment and concerns about their utilisation. The chapter also concisely examines the relationship between effective leadership and the interpretation and enactment of 21 CL, the need for relevant leadership training and development, legislation regarding school leadership and the types of leadership training available in South Africa.

Chapter three presents a detailed account of the paradigms of ecological leadership, system leadership, transformational leadership and strategic leadership. This includes their principles, positive outcomes, leadership characteristics and leadership abilities of each paradigm. It then provides, a summary of the common leadership characteristics and abilities, that emerge from the four leadership paradigms regarding 21 CL.

The research design and methodology can be found in chapter four. This chapter explicates the positivist and interpretivist paradigm in detail and expounds on the mixed-method research approach that is adopted, which involving both quantitative and qualitative and. The focus of chapter four is also on the depiction of the case study research design that is used and the delineation of the sampling methods and instrument. The last part of this chapter is dedicated to explaining the ethical concerns, issues of trustworthiness and limitations of the research study.

Chapter five focuses on the analysis and presentation of the results produced during the research study. Descriptive and inferential analysis of the data was undertaken. The quantitative data produced by the SPSS software package is represented in the form of summarised charts and graphs. The data unravelled by the thematic analysis and coding of the qualitative data is presented in summaries of the emerging themes.

Chapter six provides an elucidation of the results of the study. Critical issues related to ICT, 21 CL and school leadership are discussed with reference to the literature reviews and theoretical frameworks.

Chapter seven concludes the study by providing a summary of the research findings and creates conclusions based on information from all of the previous chapters. A model is developed to show how school leadership can facilitate the interpretation and enactment of 21 CL in private secondary schools. Finally, Chapter Seven presents possible recommendations and inferences that emerge from the research.

1.12 Conclusion

The main aim of this chapter was to introduce the research topic by providing the context which underpins it. Succinct discussions were provided regarding issues related to the 21 CL through ICT, the critical role of leadership in the change process to 21 CL and the specific paradigms of ecological leadership, system leadership transformational leadership and strategic leadership. This chapter also emphasised the need for this study and the specific focused areas of research, as well as the limitations of the research. In addition, the chapter delineated the organisation of the research study. The next chapter presents a literature review of 21 CL, ICT as well leadership training and development.

CHAPTER TWO

LITERATURE REVIEW: TWENTY FIRST CENTURY LEARNING, INFORMATION AND COMMUNICATION TECHNOLOGY AND SCHOOL LEADERSHIP

2.1 Introduction

Chapter one introduced the research topic by establishing the context of the study, and the motivation behind it. It also described the aim, objectives and significance of the study. In addition, the chapter communicated the research methodology, limitations of the study and overview of the study. The fourth industrial revolution is changing the world significantly and therefore, pedagogy also needs to change to remain relevant (Ogbonnaya *et al*, 2020). There are two review chapters in this thesis. This chapter focuses of 21 CL, ICT and school leadership. It probes and analyses the model of 21 CL in its entirety. Since ICT is viewed as a crucial component of 21 CL, this chapter also contextualises the research by examining factors influencing ICT implementation, including, South African legislation pertaining to the introduction of ICT into the present curriculum. This is guided by the policy documents - Curriculum Assessment Policy Statements (CAPS) of the DBE and the Subject Assessment Guidelines (SAGS) of the Independent Education Board (IEB). Effective school leadership is also considered a vital cornerstone in the framework of 21 CL. This chapter therefore, reviews school leadership, both globally and in South Africa. The next chapter reviews and examines the leadership theories which underpin this study.

2.2. Twenty first century learning

The fourth industrial revolution has changed the way we live, work and communicate with each other and is characterised by exceptional ICT developments which are merging the physical, digital and biological spheres (Claro *et al.*, 2018; Bedir, 2019; Hashim *et al.*, 2019). As the world progresses rapidly through the fourth industrial revolution, many countries have realised the need for a drastic, system wide change, in current educational practices, to meet the needs of present and future learners (McGuire, 2018; Hines & Lynch, 2019; Ogbonnaya *et al*, 2020).

Globally, 21 CL is considered as a viable alternative to present educational practices and a necessary educational step, for both learners and countries, to survive in an ever-changing environment (Lay & Osman, 2018; McGuire, 2018; Ajmain *et al.*, 2019; Howard *et al.*, 2019; Maphosa *et al.*, 2020).

2.2.1 What is twenty first century learning?

Most traditional teaching and learning methods are based on the learning theory of Behaviourism which primarily focuses of the internalisation of new content through repetition (Hakkinen *et al.*, 2017; Lay & Osman, 2018). Whereas 21 CL is based more on the learning theories of Cognitivism, Constructivism and Constructionism, which essentially focuses on gaining the necessary skills to analyse information, solve complex problems, and formulate conclusions and opinions (McGuire, 2018; Ajmain *et al.*, 2019; Hines & Lynch, 2019; Maphosa, 2021). The emphasis of Cognitivism and Constructivism, is on learner's developing their own understandings and thoughts, whilst Constructionism focuses on the use of actual data from around the world. 21 CL can therefore equip students to apply their knowledge to different situations, as well as to critically analyse real life problems using factual data.

van Laar *et al.* (2017) explain that 21 CL involves skills and competencies that go beyond only digital proficiencies, to include a wider set of cognitive, social and affective skills, which are not always technology dependant. Botha (2016), Claro *et al.* (2018), as well as Ajmain *et al.* (2019) explain that 21 CL involves the creation, learning and application of knowledge, together with skills that will allow learners to function effectively in a global society, throughout their lives. 21 CL shifts the emphasis from the learning of facts, to the application of knowledge to solve real life problems, as well as global challenges (Mabaso, 2017; Cheng, 2017; Nappi, 2017; Barrot, 2018; McGuire, 2018; Bedir, 2019; Varghese *et al.*, 2019). It focuses on learners investigating and uncovering new knowledge and applying what they have learnt to fathom modern day conundrums (Nappi, 2017; Volmink & van der Elst, 2017; Lay & Osman, 2018; Marlatt, 2018; Abdurrahman *et al.*, 2019; Ajmain *et al.*, 2019).

One of the leading organisations in 21 CL, the United States Committee on Defining Deeper Learning and 21st Century Skills, explains that the concept of more in-depth learning refers to the application of knowledge from one situation to another in order to solve problems (Clarke

et al., 2014; Barrot, 2018; McGuire, 2018). This is aligned with the interpretation of meaningful learning in 21 CL (Bedir, 2019). South Africa's inquiry-based approach to 21 CL, also entails the application of knowledge to different contexts (Mhlanga & Moloi, 2020). The United States Committee on Defining Deeper Learning refers to the combination of learnt content, and the abilities to apply it to varied situations as 21st century competencies. Two other leading organisations in 21 CL, the Organisation for Economic Co-operation and Development (OECD) and the United Nations Educational, Scientific and Cultural Organisation's (UNESCO), describe 21st century competencies, in their Four Pillars of Learning, as including both the knowledge and skill set that will allow learners to be productive members of the modern global society (Volmink & van der Elst, 2017; Hines & Lynch, 2019).

The Partnership for 21st Century Skills (P21CS) describes 21st century competencies as an amalgam of aptitudes, erudition and capabilities that learners require to be successful in their employment, and in life (Mabaso, 2017; Bedir, 2019). The international research project Assessment for Teaching of 21st Century Skills (ATC21S) describes 21st century competencies, as including wisdom, abilities, mind-sets and principles, which will allow learners to exist and flourish in the social, cultural and economic global village (Cheng, 2017; Hakkinen *et al.*, 2017; Siddiq *et al.*, 2017; van Laar *et al.*, 2017; McGuire, 2018; Abdurrahman *et al.*, 2019). Some of the competencies include creativity, critical and innovative thinking, social and emotional intelligence, global citizenship, civic literacy, cross-cultural skills, self-direction, self-management, lifelong learning, ethics, morals, values and communication, collaboration and information skills (Mabaso, 2017; Cheng, 2017; van Laar *et al.*, 2017; Volmink & van der Elst, 2017; Bai & Song, 2018; Barrot, 2018; Marlatt, 2018; Abdurrahman *et al.*, 2019; Ajmain *et al.*, 2019; Hashim *et al.*, 2019; Maphosa, 2021).

21st century competencies may differ slightly from country to country, depending on what the respective country considers as key competencies, required by 21st century learners to be successful in the modern world. However, these competencies always seem to include erudition, aptitudes, attitudes, traits and principles, from both the affective and cognitive domain (Mabaso, 2017; Cheng, 2017; Barrot, 2018; Hines & Lynch, 2019). These competencies can be grouped into four main categories, namely ways of cogitating, ways of interacting with others, tools for interacting with others, and skills for surviving in the modern world (Hakkinen *et al.*, 2017; Siddiq *et al.*, 2017; van Laar *et al.*, 2017; Ajmain *et al.*, 2019). This is in line with UNESCO's Four Pillars of Learning, which are, learning to be, learning to

know, learning to do, and learning to live together (Cheng, 2017). This is because the categories of 21st century competencies and UNESCO's Four Pillars of Learning, both focus on equipping learners to think critically, and to interact with other individuals in society (Nappi, 2017; Moyo & Hadebe, 2018; Hines & Lynch, 2019).

McGuire (2018) explains that the 21st century competencies from the four categories can be arranged in three incremental levels of competence, which allows learners to solve everyday difficulties, as well as global issues in a creative manner within the classroom. These include the cognitive domain, which involves reflecting and analysing, the intrapersonal domain, which involves the management of one's own emotions, and the interpersonal domain, which involves the ability to communicate effectively with others (Cheng, 2017; Barrot, 2018; McGuire, 2018).

21 CL is also learner centred, with the learner taking greater responsibility for their own learning, and therefore, the learner actively participates in the process from beginning to end (Botha, 2016; Mabaso, 2017; Cheng, 2017; Tong & Raznaik, 2017; Lay & Osman, 2018; McGuire, 2018; Ajmain *et al.*, 2019; Bedir, 2019). Hakkinen *et al.* (2017), as well as Lay and Osman (2018) affirm that learners are not passive recipients of knowledge from the teacher, but active contributors to their own learning and the learning of other learners in the class. 21 CL involves a partnership between the teacher and learners, where both parties are co-learners in a common collaborative environment and community of learning (Mabaso, 2017; Tong & Raznaik, 2017; Kokare & Strautins, 2018; Barrot, 2018; Lay & Osman, 2018; Maphosa, 2021). Learners are encouraged to be independent, critical and inventive thinkers, who adopt a collaborative approach to learning (Hakkinen *et al.*, 2017; Tong & Raznaik, 2017; Volmink & van der Elst, 2017; Heinrich & Kupers, 2018; Moyo & Hadebe, 2018; Marlatt, 2018; Hines & Lynch, 2019). 21 CL also is more accommodating to the concept of individual learning possibilities, rather than collective learning ones, and focuses on both learning in the affective domain, and the cognitive domain (Cheng, 2017).

The scientific method is used extensively in the pedagogy of 21 CL. Botha (2016) and Barrot (2018) mention that both the learning and teaching approaches to 21CL involves experimentation, investigation, analysis, evaluation and review. This is supported by McGuire (2018) and Ajmain *et al.* (2019), who affirm that the scientific method, and the ability to think logically and draw conclusions, as well as form opinions, form an integral part of 21 CL.

Cheng (2017) and Ajmain *et al.* (2019) in addition explain that 21 CL involves experiential learning, or learning through experience. 21st century competencies, such as knowledge and skills, are more easily learnt in the formal curriculum within the classroom, whereas 21st century competencies such as attitudes, characteristics, and values, are learned through experiences, which can mostly be learnt outside the classroom, through extracurricular activities, such as sport, cultural, community service and student leadership initiatives. Consequently, the extracurricular program in schools should be more structured, with finances and resources being allocated to it, as well as a comprehensive assessment plan, for the quantitative assessment of the relevant 21st century competencies. Since inequalities in extracurricular programs exist at different schools in dissimilar economic sectors of society, active economic strategies and partnerships with community organisations should be put into place, to feed resources to the poorer communities to create greater equity (Mabaso, 2017; Cheng, 2017).

2.2.2 The need for twenty first century learning

The first industrial revolution was characterised by the discovery of coal, steam power and industrialisation. Key aspects of the second industrial revolution was the discovery of electricity, gas and oil, as well as rapid developments in communication and transport technologies. Crucial elements of the third industrial revolution, include the development of the microchip, and rapid developments in electronics, as well as nuclear energy. The fourth industrial revolution is noted for rapid ICT advancements, which have transformed the world. Futuristic and fictional concepts, such as humanoid robots and driverless modes of transport, have become a reality.

The world is becoming more complex socially, economically, professionally and digitally, as we rapidly move through the fourth industrial revolution (Cheng, 2017; Volmink & van der Elst, 2017; Claro *et al.*, 2018; Hashim *et al.*, 2019; Varghese *et al.*, 2019). Some of the traditional employment opportunities and environments, globally and in South Africa, have drastically changed, which in turn has led to a demand for a much more educated and skilled labour force, with different competencies, who have a culture of lifelong learning (van Laar *et al.*, 2017; Lay & Osman, 2018; Howard *et al.*, 2019; Maphosa, 2021). This is evident by the

human element, being replaced in many fast food outlets and factories, with innovative computer programs, and robots, as well as computer literacy and ICT knowledge, being prerequisites for most jobs (Claro *et al.*, 2018; Hines & Lynch, 2019). Many skilled professions, such as medical doctors and mechanics, have also seen a slump in business, as people embrace ICT and find innovative solutions to some medical and mechanical problems (Mabaso, 2017; Ajmain *et al.*, 2019). COVID-19 has been a further catalyst to the fourth industrial revolution, as countries, including South Africa, rapidly move into a digital space (Mahaye, 2020; Maphosa, 2021).

Cheng (2017), Siddiq, Gochyyev and Wilson (2017), as well as Ajmain *et al.* (2019) further suggest that industry and the working sector, are now employing individuals who not only possess the traditional content knowledge, but individuals who are capable of critical and higher order thinking, and who can manage and analyse the massive amount of information, available digitally in the workplace. New professions such as data analysts, Google and Microsoft innovators, social media influencers, software engineers and game developers have become more prominent, both nationally and internationally (Mhlanga & Moloji, 2020; Chirinda *et al.*, 2021). The ability to effectively communicate and collaborate, also appear to be highly sought-after attributes in the working environments, of these new professions (Volmink & van der Elst, 2017; Lay & Osman, 2018; McGuire, 2018; Hines & Lynch, 2019).

The rapid developments in ICT have also revolutionised the educational environment, the workplace, and the way we retrieve and interpret knowledge personally, socially, educationally and professionally (Cheng, 2017; Bai & Song, 2018; Barrot, 2018; Claro *et al.*, 2018; Marlatt, 2018; Hashim *et al.*, 2019; Shanmugam & Balakrishnan, 2019; Varghese *et al.*, 2019; Maphosa, 2021). Besides technological advancements there have been drastic changes in economies, societies and cultures in the 21st century (Cheng, 2017; Ajmain *et al.*, 2019; Hines & Lynch, 2019; Varghese *et al.*, 2019). The onset of the present COVID-19 pandemic, has further radically changed the global landscape, with major vicissitudes in education, as countries have been plunged into the realm of digital learning because of lockdown measures. In South Africa and around the world, COVID-19 has intermittently interrupted schooling, employment and the daily lives of individuals. As a result, schools have been forced to engage and utilise different forms of ICT, to continue the teaching and learning of the curriculum (Munby, 2020; Pan & Chen, 2020).

The global changes that have occurred, because of rapid ICT advancements, have necessitated a change in the education sphere, in order for it to be relevant and germane in the 21st century (Siddiq *et al.*, 2017; Tong & Raznaik, 2017; Marlatt, 2018; Heinrich & Kupers, 2018; Abdurrahman *et al.*, 2019; Bedir, 2019; Subekti, 2020; Chirinda *et al.*, 2021). The development of 21st century competencies, through 21 CL, is considered a prerequisite for learners becoming successful in the modern world, and has drawn much attention from all educational sectors (Mabaso, 2017; Cheng, 2017; Tong & Raznaik, 2017; van Laar *et al.*, 2017; Barrot, 2018; Marlatt, 2018; Abdurrahman *et al.*, 2019; Ajmain *et al.*, 2019; Hashim *et al.*, 2019). Many countries in Africa, and around the world, have invested heavily in transforming their educational systems, to include ICT and 21 CL (Cheng, 2017; Tong & Raznaik, 2017; Moyo & Hadebe, 2018; Bedir, 2019; Varghese *et al.*, 2019; Maphosa, 2021).

Learners, need to be able to survive, in a rapidly changing world, and excel in careers that have not yet been identified, use unimaginable future technologies, and resolve unforeseeable challenges (Mabaso, 2017; Volmink & van der Elst, 2017; Claro *et al.*, 2018; Heinrich & Kupers, 2018; Barrot, 2018; Moyo & Hadebe, 2018; Ajmain *et al.*, 2019; Mhlanga & Moloi, 2020). 21 CL involves teaching learners, skills and knowledge, which will assist them in becoming productive global citizens, in this modern era and digital age (Clarke *et al.*, 2014; Toh *et al.*, 2014; Siddiq *et al.*, 2017; Marlatt, 2018; Moyo & Hadebe, 2018; Ajmain *et al.*, 2019; Bedir, 2019; Hines & Lynch, 2019; Maphosa, 2021).

2.2.3 The interpretation and enactment of 21 CL in schools

The initial steppingstone towards 21 CL in some countries, was probably the introduction of Outcomes-Based Education and Bloom's taxonomy, which provided a structured pyramid of levels, which teachers could use to develop higher order thinking, and critical thinking in a systemised approach (Nappi, 2017). East Asia was one of the leading parts of the globe in introducing 21 CL into schools, as it formally began changing the educational curricular and teacher training approaches, in the direction of 21 CL, in the late 1990's (Cheng, 2017; Tong & Raznaik, 2017; Ajmain *et al.*, 2019). This was probably because Japan and China, were considered as economic leaders, in the 1970's and 1980's, and the economies of Singapore, Hong Kong and South Korea, were considered as flourishing developing economies in the 1980's, resulting in these countries, experiencing the impact of changes in the 21st century,

earlier than other countries (Cheng, 2017). Some of the other leading countries in 21 CL include Canada, Australia, Mexico, Switzerland, Finland, England and Germany (Christensen & Knezek, 2017; Hakkinen *et al.*, 2017; McDonald, 2017; Scherer *et al.*, 2017; van Laar *et al.*, 2017; McGuire, 2018; Mathew, 2018; Mayfield & Hester, 2018).

Schools appear to have also discarded the fragmented use of 21 CL, in disconnected and compartmentalised learning programmes (Clarke *et al.*, 2014; Toh *et al.*, 2014; McGuire, 2018). Effective interpretation and enactment of 21 CL in schools, has been characterised by a complete, comprehensive, and holistic adoption of the paradigm, by all members and departments of a school, as well as by larger school systems (Clarke *et al.*, 2014; Toh *et al.*, 2014; Siddiq *et al.*, 2017; McGuire, 2018; Ajmain *et al.*, 2019). The successful interpretation and enactment of 21 CL in different countries, especially East Asian countries, has also not been characterised, by just corrective or improvement strategies to existing educational systems, but rather by a significant change in educational aims, syllabi, and pedagogical approaches (Toh *et al.*, 2014; Cheng, 2017; Barrot, 2018; Claro *et al.*, 2018; Bedir, 2019).

Cheng (2017) warns that the political climate of a country, and the aspirations of governments for their educational systems, can play a key role in the extent to which 21 CL is interpreted and enacted. The central goal, of the educational systems of some of the East Asian countries, has changed from economic development, to positively developing future generations for peace and sustainability (Cheng, 2017; Ajmain *et al.*, 2019). The basis for the effective enactment of 21 CL in schools, and school systems, seems to be a sincere admiration and desire for educational improvement and social development (Clarke *et al.*, 2014; Toh *et al.*, 2014; Kokare & Strautins, 2018).

The effective use of ICT, has also expedited the interpretation and enactment process (Siddiq *et al.*, 2017; Barrot, 2018; Lay & Osman, 2018; Marlatt, 2018; Shanmugam & Balakrishnan, 2019; Varghese *et al.*, 2019). 21 CL is also characterised, by inquiry-based project work, which is cross curricular in nature, and which involves genuine learning, through the use, analysis and interpretation, of credible and authentic data, from around the world (Cheng, 2017; Hakkinen *et al.*, 2017; Tong & Raznaik, 2017; Bai & Song, 2018; Hines & Lynch, 2019). Garcia-Penaluo and Mendes (2018) affirm, that 21 CL entails a collaborative and cross curricular approach,

that involves evidence and empirical based thinking, which fosters ingenious solutions to challenges.

Lay and Osman (2018) propose an instructional strategy for 21 CL, which is based on the theories of constructivism and constructionism. Their strategy is based on three main objectives, which are involving learners in group work activities, where the learners try to find solutions to different challenges or tasks, affording the learners platforms to share and analyse their thoughts, and including learners in the process, of designing a particular solution or project. The instructional strategy is broken down into five phases, namely, inquiry, discover, produce, communicate and review. This instructional strategy has similar threads of thought, with the six hierarchal levels in Blooms Taxonomy, which was developed in 1956 (Nappi, 2017).

Similarly, to inquiry-based project work, which involves real world data, the inquiry phase, involves learners engaging in group work, and brainstorming sessions, and the selection of one possible design for a solution to the problem. The discover phase involves learners designing, explaining and constructing their solution, using digital platforms such as PowerPoint or Google Slides. The produce phase entails learners critically analysing, and testing their solutions, and then making corrections to their design solution. The communicate phase involves learners sharing their design solutions with other groups, and making further improvements based on the collaborative input. Finally, the review phase includes learners describing the positives and negatives of their individual group design solutions, then combining all the design solutions of the different groups, and assimilating them, to form one comprehensive and unified design solution to the problem.

Nappi (2017) and Tong *et al.* (2017) emphasise, that any strategy for the interpretation and enactment of 21 CL, should incorporate layered and structured higher order questions, based on the different cognitive levels, because these types of questions promote critical thinking and metacognition, which increases the efficacy of the teaching and learning process. Johns, Troncale, Trucks, Calhoon and Alvidrez (2017) and Ajmain *et al.* (2019), stress that learners in a 21st century classroom, must also be kept motivated and engaged, for fruitful learning to take place. Otherwise, learners tend to get bored and lose interest in the teaching and learning process. These authors suggest, that teachers can create an engaged and motivated classroom, by clearly informing learners of the educational objectives and intentions of the lesson, offering

learners the possibility of different choices in the learning process, planning well-organised and appropriate learning activities, providing quick, concise and constructive feedback, and finally, allowing for several opportunities for collaboration.

Clarke *et al.* (2014) and McGuire (2018) suggest, that to increase the effectiveness of 21 CL through ICT in schools, the Ontario Ministry of Education, invested time and recourses to improve the reading, writing and mathematical skills of the students. This strategy, in the interpretation and enactment of 21 CL, was also adopted by Singapore (Toh *et al.*, 2014; Tong & Raznaik, 2017). The OECD and the Ontario Ministry of Education, also utilised advanced literacy and numeracy skills, together with real world problems, to develop the 21st century skills of critical and creative thinking (Clarke *et al.*, 2014). These skills formed an integral part of the curriculum in Ontario and was not a separate component (Clarke *et al.*, 2014; McGuire, 2018). These authors also mention that the provincial curriculum utilised in Ontario, starts from kindergarten and ends in grade 12, and has been developed according to the 21st century knowledge and skills needed for each grade. This curriculum is informed by current research into 21 CL, together with national and international educational trends, and therefore sets the standard for teaching and learning, in all schools within the province. Botha (2016) and Bedir (2019) affirm that 21 CL should be introduced to learners, as early as possible in their schooling career, so that they become accustomed to its processes and outcomes.

Countries that have success with the interpretation and enactment of 21 CL in schools, have invested time and resources to educate, develop and train their teaching force, in the latest pedagogical and ICT research, so they can effectively teach in the modern 21st century classroom (Cheng, 2017; Tong & Raznaik, 2017; Bai & Song, 2018; Barrot, 2018; Bedir, 2019; Hines & Lynch, 2019; Nouri, Zhang, Mannila & Noren, 2019). Bai and Song (2018), as well as Maphosa (2021), further affirm, that this building of capacity amongst teachers, occurs in a climate of mutual collaboration, and a culture of continuous professional development. Botha (2016), Hakkinen *et al.* (2017), Ajmain *et al.* (2019), and Patrick *et al.* (2021) concur, that the role of the teacher is pivotal in the interpretation and enactment of 21 CL in schools, and the curriculum of trainee teachers should be restructured and aligned with 21 CL principles. Mabaso (2017) and Landa, Zhou and Marongwe (2021) affirm, that effective and appropriate teacher training in enacting 21 CL, is fundamental to its successful adoption in South Africa.

Hakkinen *et al.* (2017) and van Laar *et al.* (2017) further mention that, using problem solving as a basis, the different dimensions of collaboration such as learning to collaborate, collaborating to learn, and learning how to teach with collaboration, should form a corner stone of the new pedagogical framework, taught to both existing and trainee teachers. These authors have developed a pedagogical model for trainee teachers based on principles, competencies and skills in the ATC21s project, the OECD's initiative, called the Definition and Selection of Competencies (DeSeCo), and the OECD's Program for International Student Assessment (PISA). The model is composed of four major components referred to as tasks (complex, inquiry-based, project/case based), collaborative activities (argumentation, elucidation, arbitration and inquisitorial), resources (technology, materials, teachers and peers), and levels (individual, small group and whole class).

Teachers have also been exposed and trained in digital game-based learning (DGBL), which appears to have increased the motivation and performance of learners, as well as facilitated the learning of 21 CL (McDonald, 2017; Lay & Osman, 2018). To facilitate the enactment of 21 CL, teachers can be cognisant of ICT advancements relevant to educational practices, teach learners how to effectively use and cite new digital resources, teach learners about the ethical and responsible use of ICT, modify their assessment methods to include the assessment of 21st century competencies, and create a balance between traditional educational practices, and new innovative 21 CL educational practices (McGuire, 2018; Varghese *et al.*, 2019).

21 CL appears to be also changing the relationship between teachers and learners, to the teacher adopting a more personalised coaching approach, and the learners becoming more independent and autonomous in their approach to learning (Mabaso, 2017; Volmink & van der Elst, 2017; Moyo & Hadebe, 2018; Hines & Lynch, 2019; Maphosa, 2021). Botha (2016), Cheng (2017), Hakkinen *et al.* (2017) and Barrot (2018), likewise explain, that 21 CL is centred on the learner's ideas, experiences and interactions, with the teacher adopting the role of a facilitator. 21 CL furthermore, involves creating a mutual collaborative community of inquiry, where teachers and learners are co-learners (Botha, 2016; Hakkinen *et al.*, 2017; Ajmain *et al.*, 2019; Bedir, 2019). However, Hakkinen *et al.* (2017) suggests that when learners are left on their own, they tend not to involve themselves in constructive interactions, for most of the time. Therefore, as facilitator, the teacher must be receptive to what learners need, and still stimulate and direct the learners, in the correct time and direction, to achieve meaningful learning objectives (Botha, 2016; McGuire, 2018; Moyo & Hadebe, 2018). Learners also need to take

more responsibility, in the monitoring and regulation of their own learning progress, as well as the learning progress of the group, as this increases their level of involvement and stimulates their interest (McGuire, 2018).

Another common element that seems to emerge in the successful interpretation and enactment of 21 CL programmes, is the establishment of strong partnerships between professional teaching practice and informative research, where one mutually informs the other, and the findings are constantly shared for continuous improvement (Clarke *et al.*, 2014; Toh *et al.*, 2014; Bai & Song, 2018). These authors posit that the successful interpretation and enactment of 21 CL, in Ontario, has also been because of the adoption of a culture of continual learning, and sharing of research, between schools and educational research institutions. There have been special research centres in some of the East Asian countries, which have been established, to decipher and bridge the gap, between the theories underpinning the science of learning, and the development of concrete educational practices, and thereafter, to actively and consistently communicate this information to schools (Cheng, 2017).

The enactment and sustainability of 21 CL in schools, can also be further facilitated by well-developed policies and plans, clearly defined methods to measure higher order learning, the ability to enact new and different educational paradigms, and an in-depth knowledge of how learners succeed with higher and deeper learning programmes (Clarke *et al.*, 2014; Hakkinen *et al.*, 2017; Siddiq *et al.*, 2017; Heinrich & Kupers, 2018; McGuire, 2018).

The professional development of a school's leadership team, specifically in leadership development pertaining to 21 CL, is considered as an essential component to the successful interpretation and enactment of 21 CL, and as a result, many countries have invested time and resources in this domain (Volmink & van der Elst, 2017; Koh & Hung, 2018; Ninkovic & Floric, 2018; Mowat, 2018; Ajmain *et al.*, 2019; Howard *et al.*, 2019). Effective school leadership is crucial to the change to 21 CL, because it can design strategic short-term and long-term plans, ensure that all stakeholders are well informed of these plans and anticipated changes, assist with uniting all stakeholders, co-ordinate all school structures, resources and activities, and unify directives of national authorities, with the contextual needs and daily procedures of the individual schools or school systems (Boylan, 2018; Mohamad & Ismail, 2018; Hines & Lynch, 2019). Ecological leadership, system leadership, transformational leadership, and strategic leadership, are leadership paradigms that have been adopted by many

countries when interpreting and enacting 21 CL, and these leadership theories, seem to have facilitated the change to 21 CL, as well as improved the efficiency and productivity of the educational systems (Prasertcharoensuk & Tang, 2017; Anderson, 2018; Bryant, 2018; Godfrey & Brown, 2018; Afey, 2019; Brown & Weli, 2019; Dogru, 2019; Ismail & Mydin, 2019; Lee & Kuo, 2019; Manns, 2019).

Finally, the entire interpretation and enactment process of 21 CL in schools, can adopt a more centralised approach, or a more distributed approach using system thinking (Toh *et al.*, 2014; Cheng 2017). These authors suggest, that the centralised approach focuses on strong partnerships between mentor and mentee schools within the system, intensive and systematic communication, and in-depth development of pedagogical practices. It is directed towards smaller systems. The distributed approach focuses on the widespread adoption, of less intensive developmental programmes, in larger systems (Toh *et al.*, 2014; Cheng, 2017). These authors explain that it offers the participating schools, in the system, much more decision-making powers, as to how and when to utilise pedagogical innovations, whilst still promoting the alignment of schools within the system, towards the common goals and principles. Similarly, in the classroom, 21 CL can adopt a more planned and organised approach, or a more autonomous and self-governing approach (Botha, 2016). Researchers agree that whether 21 CL is centralised, distributed, or sovereign, it must be planned, well in advance to its execution (Hakkenin *et al.*, 2017; Kokare & Strautins, 2018; Moyo & Hadebe, 2018).

2.2.4 Positive outcomes of 21 CL

Botha (2016) points out that research on 21 CL in South Africa is limited, since 21 CL has been introduced into South Africa, in the form of inquiry-based learning, relatively recently in comparison to other countries. However, the research that is available both nationally and globally indicate that inquiry-based learning, can result in more effective and in-depth learning (Botha, 2016; Tong & Raznaik, 2017; Hakkinen *et al.*, 2017; Volmink & van der Elst, 2017; Hines & Lynch, 2019; Maphosa, 2021). This is further supported by Mabaso (2017), whose research indicates that the use of ICT, in rural South African schools to enact 21 CL, has improved all round learner participation and achievement. Although 21 CL has been enacted in South Africa, the level of utilisation can differ substantially from one school to another as well as from one teacher to another (Botha, 2016). This is because different schools, and

teachers, tend to adopt varying approaches to 21 CL, depending on their individual context (Mhlanga & Moloi, 2020; Ramrathan, 2020).

Research on the effectiveness of 21 CL, is also relatively limited, in comparison to traditional pedagogical approaches (Siddiq *et al.*, 2017; McGuire, 2018). However, technological advancements and developments in pedagogical approaches, have provided some evidence, that when learners experience 21 CL, they are able to produce and maintain a higher standard of work, as well as achieve more advanced learning outcomes (Clarke *et al.*, 2014; Hakkinen *et al.*, 2017; Barrot, 2018; Lay & Osman, 2018; Hashim *et al.*, 2019; Varghese *et al.*, 2019; Maphosa, 2021). Increased learner participation, enjoyment and representation have also accompanied the successful use of 21 CL (Botha, 2016; Volmink & van der Elst, 2017; Bai & Song, 2018; Kokare & Strautins, 2018; Bedir, 2019).

Clarke *et al.* (2014) further posit, that 21 CL has caused many disinterested learners to develop positive mind-sets towards learning, and they have become enthusiastic and vigorous participants in the learning process. The positive relationship between 21 CL and effective learning, is further strengthened by Botha's (2016) suggestion that the learner's acquirement, and recollection of content knowledge, has increased with the enactment of 21 CL. 21 CL also allows the learners, the opportunity to participate in their own learning process, from start to finish. Therefore, they have more opportunities to contemplate and assess their progress, as well as the progress of their class (Botha, 2016; Kokare & Strautins, 2018).

Siddiq *et al.* (2017) and Hashim *et al.* (2019) affirm, that when 21 CL forms the basis of the teaching and learning process, it leads to an improvement in the learner's retention and application of knowledge, in higher order form of assessments. Ajmain *et al.* (2019) and Hines and Lynch (2019) explain that 21 CL seems, to not only positively affect learners, but has improved teacher interest, enthusiasm and work ethic. Lay and Osman's (2017) research in Malaysia, into using the Malaysian Kimia (chemistry) Digital Game (MyKimDG), has provided further evidence, that 21 CL and technology can enhance the teaching and learning process. Nappi (2017) affirms that the use of higher order questions in 21 CL, also increases effective classroom learning, and increases learner's performance and achievement in assessments.

2.2.5 Concerns regarding 21 CL

There are also some areas of concern with the interpretation and enactment of 21 CL (Botha, 2016; Heinrich & Kupers, 2018). One of these involves learners, especially in higher grades, having difficulty with adjusting to the different teaching and learning approaches, involved in 21CL. If learners in higher grades encounter this difficulty, then provision should be made to assist them during the change (Botha, 2016; Claro *et al.*, 2018). There is a higher level of maturity and responsibility, as well as an increased amount participation and effort required by learners (Clarke *et al.*, 2014; McGuire, 2018; Patrick *et al.*, 2021). This poses another area of concern, as learners might not be always willing to provide this extra commitment to the learning process (Botha, 2016). The assistance offered to learners should include content pertaining to methods and techniques, which they could utilise to actively contribute to the learning process (Botha, 2016; Moyo & Hadebe, 2018). With this assistance, learners should become more accustomed to the greater effort required of them in 21 CL, but it is still recommended, to introduce learners to 21 CL as early in their schooling career as possible (Botha, 2016; Bedir, 2019).

Although many tertiary institutions involved in teacher training, recognise the need to incorporate 21 CL teaching content and skills into their curriculum, to adequately equip future teachers, to effectively function in the changing sphere of education, they have been still slow to initiate the change (Botha, 2016; Mabaso, 2017; Cheng, 2017; Barrot, 2018; Bai & Song, 2018; Heinrich & Kupers, 2018; Ajmain *et al.*, 2019; Bedir, 2019). Although the need to transform educational systems to be more 21 CL compliant, is appreciated, effective training of teachers in 21 CL teaching and learning methods, especially in Africa, seems to be an obstacle to the interpretation and enactment of 21 CL (Mabaso, 2017; Volmink & van der Elst, 2017; Moyo & Hadebe, 2018). Cheng (2017), Hakkinen *et al.* (2017) and Maphosa (2021) agree that many trainee teachers come from traditional behaviourist, teacher centred schooling environments, which causes them to conceptualise the teaching and learning environment, in a more conventional manner. Therefore, new innovative 21 CL aligned pedagogical principles and practices, need to be introduced into the curriculum for teachers in training.

Nappi (2017) concurs, and adds that the majority of questions asked by teachers in the classroom are content based, and involve recall, whereas 21st century competencies, such as critical thinking, collaboration and communication, can only be developed through planned

higher order questions. The development and effective posing, of levelled higher order thinking questions, is a skill, which must be taught as part of the teacher training curriculum, designed for student teachers and existing teachers (Nappi, 2017). Tong *et al.* (2017), Bedir (2019), as well as Hines and Lynch (2019), emphasise that teacher training curricular for future teachers, as well as professional development, in-service training for existing teachers, should include both theoretical and practical components, of incorporating cross curricular, inquiry-based project work into pedagogical approaches. The Uduku online 21 CL introductory course is a good example, of how trainee and existing teachers can be taught and upskilled (McGuire, 2018). Although the professional development of teachers and teacher education curricular are slowly changing, to meet the needs and changes of 21 CL, it is still in its beginning stages of evolution and more research should be undertaken into this area of research (Hakkinen, 2017).

The curricular and formalised assessment programs of many countries are examination, theory and rote learning based (Volmink & van der Elst, 2017; Claro *et al.*, 2018; Lay & Osman, 2018). This lends itself to the adoption of traditional teaching methods of content-based, repetition learning, and not to the principles of 21 CL (Lay & Osman, 2018; Moyo & Hadebe, 2018). This is another obstacle to the enactment of 21 CL, as teachers tend to shy away from modern innovative teaching and learning practices, and utilise only traditional teaching methods, as these methods have proven to produce good results, under the formalised content-based assessment program (McGuire, 2018; Lay & Osman, 2018). Cheng (2017) adds that the majority of universities world-wide, base their acceptance criteria on content-based assessments, as well as design their own rote learning based acceptance tests, and this further supports the use of traditional teaching and learning approaches, and not the principles and practices of 21 CL. However, Singapore and other countries, have included project-based collaborative learning, as a component of some of their university entrance examinations, while some of the South Korean schools have included a non-examination semester, where students are required to design their own learning strategies (Cheng, 2017).

Due to the relatively limited time frame, in which 21 CL has been incorporated in the teaching and learning environment, there is also relatively limited data about the its effectiveness, and as a result, teachers again tend to shy away from it (McGuire, 2018). The shying away of teachers from 21 CL, is especially prevalent in South Africa, where ICT has been more recently incorporated into education, as compared to other countries (Mbandlwa, 2021).

The work load of teachers in South Africa and globally is demanding. Another concern regarding the interpretation and enactment of 21 CL, is that teachers do not have sufficient time to effectively engage with 21 CL (Clarke *et al.*, 2014; Claro *et al.*, 2018). Many teachers have mentioned, that they are still bound by the content-based assessment program because they must prepare learners for these examinations, and are thus restricted by time, and cannot experiment with the new ideals of 21 CL (McGuire, 2018). Cheng (2017) agrees that teachers in most countries are overworked, as a result of the new demands of present educational systems, and do not have sufficient time to explore 21 CL. They must therefore, be afforded sufficient time in the school day, and the curriculum, to explore and test the efficacy of 21 CL (Kokare & Strautins, 2018).

Many countries have begun to make the shift, from the realisation of the need of 21 CL, to the incorporation of 21 CL in their educational systems, through government policy and legislation (Cheng, 2017). However, the aspect of quantitative assessments of 21st century competencies, which are not examination focused, is still a major stumbling block to 21 CL (Hakkinen *et al.*, 2017). More research needs to be conducted into the assessment of 21st century competencies, especially those belonging to the affective domain, as well as ethical centred competencies (Cheng, 2017; Tong & Raznaik, 2017; Volmink & van der Elst, 2017; McGuire, 2018). Cheng (2017), Mabaso (2017) and Ajmain *et al.* (2019) add, that competencies which are value orientated or belong to the affective domain, are more difficult to quantitatively assess, as they usually occur over an extended duration of time, and out of the classroom environment. Hakkinen *et al.* (2017) and Siddiq *et al.* (2017) concur, that present assessment methods, do not comprehensively gauge 21st century competencies, and new innovative assessment techniques need to be developed. Van Laar *et al.* (2017) further suggests, that another possible reason for the competencies of 21CL, not being comprehensively and properly assessed, is that there are many 21st century competencies, and it is therefore difficult to formulate a single activity to assess all of them.

In order to facilitate the assessment of affective and ethical 21st century competencies, the OECD developed DeSeCO, which forms the basis of PISA, and the Trends in the International Mathematics and Science Study (TIMSS) (Hakkinen *et al.*, 2017; Pan & Chen, 2020). Some of the competencies that PISA assesses in a mathematical context, are formulating and sustaining communal intellect and joint wisdom, choosing the correct approach to resolving the challenge, and forming and preserving the group structure (Cheng, 2017; Hakkinen *et al.*, 2017; Volmink

& van der Elst, 2017; Pan & Chen, 2020). TIMSS uses the platform of mathematical content and science content to assess critical thinking and problem solving (Mabaso, 2017; Hakkinen *et al.*, 2017; Claro *et al.*, 2018). Some of the 21st century skills that the ATC21s project assesses, include, the recognition and appreciation of the views of others, the willingness to contribute and express one's ideas, the cognizance of the group dynamics, the designing and checking abilities for constructing plans to resolve the difficulty, and the ability to develop erudition through social interaction within the group (McGuire, 2018). To assess collaborative problem solving, the ATC21s project used a computer-based assessment portal, cloud-based technology and game-like tasks.

South Africa's performance in PISA and (TIMSS) was exceptionally poor. PISA began in 2000, and is undertaken with grade nine learners every three years. South Africa was ranked seventy fifth out of seventy-six countries in the PISA 2015. South Africa did not participate in PISA 2018. TIMSS began in 1995 with grade five, and grade nine learners, and is undertaken every four years. In TIMSS 2015, South Africa was ranked forty eighth out of forty-nine countries in the grade four Mathematics component, thirty eighth out of thirty-nine countries in the grade nine Mathematics component, and last out of thirty-nine countries in the grade nine Science component. Sixty-four countries participated in TIMMS 2019, and South Africa was ranked in the last three countries, which had the lowest science and mathematics average scores. These statistics reveal that the in-depth teaching and learning of higher order Mathematics and Science is at a very low level in these respective grades, and the teaching and learning of the related 21st competencies in these grades are also at a poor standard.

Singapore, Japan, Hong Kong, South Korea and Taiwan, were ranked in top positions for both PISA and TIMSS, which could be attributed to their proactive and early adoption of 21 CL (Cheng, 2017). The educational transformations of these countries began by changing, establishing and achieving targets related to wanted characteristics in individuals, reform changes, envisaged competencies, and fundamental values (Cheng, 2017). The Virtual Collaborative Research Institute (VCRI) also conducts research in collaborative problem solving, together with its assessment (Hakkinen *et al.*, 2017). Singapore, Japan, Hong Kong and Taiwan have created special educational institutions, to investigate and create digital collaborative technologies, to assess 21st century competencies (Cheng, 2017).

To further assist in assessing 21st century competencies, Siddiq *et al.* (2017) conducted research using their adapted form of the Learning in Digital Networks; Information and Communication Literacy test, which attempts to assess learner's 21st century competencies, as they think, work, collaborate and learn over social media. The original Learning in Digital Networks; Information and Communication Literacy test, was developed by the Berkeley Evaluation and Assessment Research Centre. The two scenarios that Siddiq *et al.* (2017) used were the Artic Trek and Human Legacy, in which students were required to complete several hierarchical online tasks and questions, which were similar to classroom activities, whilst collaborating with each other over social media, and other multi-user platforms such as google drive. Lay and Osman's (2018) research into the use of MyKimDG, was also successful in evaluating the 21st century competencies of digital literacy, critical thinking, communication and high productivity. In addition, the research of McDonald (2017), into the use of the digital game called The Coffee Shop, in entrepreneurship lessons, also provides empirical evidence, that gaming can be used to assess and improve critical learning in the classroom.

Another reason for the relatively slow development of assessment strategies for 21st century competencies, is that although many countries and organisations have defined 21st century competencies, progress into the actual operational components, such as 21st century teaching practices and assessment methods, is still in the beginning stages (van Laar *et al.*, 2017; McGuire, 2018). Furthermore, additional long-term studies of former learner's level, or degree of competence, with 21st century competencies in the working environment, must also be conducted, as this would potentially reveal the more effective and less effective components of the 21 CL system (McGuire, 2018).

With the onset of 21 CL, there is also a concern of the lack of personal interaction between learners themselves, and between learners and teachers (Barrot, 2018; Hines & Lynch, 2019; McGuire, 2019). The closure of schools, and the reduction in face-to-face teaching time, due of COVID-19, has caused greater concern for this lack of personal interaction, and its long term effects (Mhlanga & Moloi, 2020; Literat, 2021). Teachers should therefore, create a balance in their classrooms, with the use of online learning and person interaction, as well as teach learners how to communicate, and collaborate, responsively using ICT (Siddiq *et al.*, 2017; Mbandlwa, 2021). Some teachers have opted to use the concept of blended learning in their classrooms, where they establish an equilibrium between online and onsite learning, individual mental and

communal learning, and teacher driven and learner driven learning (Tong *et al.*, 2017; Kokare & Strautins, 2018; Ajmain *et al.*, 2019).

2.3 Information and communication technology

The rapid advancements in ICT have revolutionised the world in all aspects of life, especially the educational sphere (Cloete, 2017; Kokare & Strautins, 2018; Marlatt, 2018; Shanmugam & Balakrishnan, 2019; Varghese *et al.*, 2019; Mhlanga & Moloji, 2020). ICT is a necessary component to the effective interpretation and enactment of 21 CL (Moyo and Hadebe, 2018 Hashim *et al.*, 2019; Nouri *et al.*, 2019). Its use in education is focused on digital literacy and digital learning. The more intensive use of ICT by teachers in the classroom, began as early as the 1980's in proactive countries, whilst other countries initiated the process towards the end of the 1990's, or in early 2000's (Williams, 2015; Oakley, Pegrum, Xiong, Lim & Yan, 2017; Hodges, Moore, Lockee, Trust & Bond, 2020).

In education, ICT has two sub-divisions, namely digital literacy and digital learning (Mathew, 2018; Bedir, 2019). The utilisation of ICT, in the form of digital literacy and digital learning, has revolutionised the teaching and learning process, together with the entire schooling community and environment (Blau & Inbal, 2016; Cloete, 2017; Marlatt, 2018; Hashim *et al.*, 2019; Hines & Lynch, 2019; Nouri *et al.*, 2019; Shanmugam & Balakrishnan, 2019; Maphosa *et al.*, 2020). Digital literacy refers to the technological theory, the pragmatic technological knowledge, and the mental, social and emotional skills, which both young and old individuals in the modern world, must possess to successfully utilise ICT (van Laar *et al.*, 2017; Claro *et al.*, 2018). Whereas, digital learning refers to the actual process of learning content and skills, using digital devices and platforms (Blau & Inbal, 2016; Osakwe, Dlodlo & Jere, 2017; Varghese *et al.*, 2019). The introduction of ICT, is considered as one of the fundamental and pivotal elements, in the successful introduction and enactment of 21 CL, and a detailed analysis of it assists in clarifying the complexity of 21 CL (Kokare & Strautins, 2018; Marlatt, 2018; Moyo & Hadebe, 2018; Ajmain *et al.*, 2019; Hines & Lynch, 2019).

The National Education Policy Act of 1996, formed the initial basis for the introduction of ICT into education. The subsequent White Paper on e-Education (DoE, 2004) provided a description of the South African ICT landscape in education, emphasised the importance and

need for the comprehensive inclusion of ICT, together with 21st century competencies in schools, and designed a framework for the transformation process. These government legislations regarding ICT in Education were followed by other government initiatives such as the Implementation Strategy for e-Education in South Africa 2013-2025 (2013), National Integrated ICT Policy Green Paper (2014), Policy Dialogue on ICT in Education (2014), Phakisa (2014), and the Action Plan to 2019 (2015).

2.3.1 The need for information and communication technology in education

The ICT developments in the fourth industrial revolution have been rapid and significant (Claro *et al.*, 2018; Bedir, 2019; Hines & Lynch, 2019; Hashim *et al.*, 2019; Varghese *et al.*, 2019; Mhlanga & Moloi, 2020). Even digital automation and artificial intelligence are no more futuristic concepts, but present realities (Cloete, 2017; Mayfield & Hester, 2018). Classroom lessons, textbooks and educational resources are rapidly becoming more electronic, and the teaching and learning space is rapidly becoming technology based (Gil-Flores, Rodriguez-Santero & Torres-Gordillo, 2016; Al-Awidi & Aldhafeeri, 2017; Chiu, 2017; McDonald, 2017; Marlatt, 2018; Ajmain *et al.*, 2019; Shanmugam & Balakrishnan, 2019; Maphosa, 2021). Some of the other radical technological advancements include affordable internet accessibility, social media, skype, Wi-Fi, iPad and tablet technology, mobile and smartphone technology, digital textbooks and libraries, netbooks, on-line courses, cloud technologies, and e-learning (Crawford, 2017; Osakwe *et al.*, 2017; Petko, Cantieni & Prasse, 2017; Bai & Song, 2018; Hines & Lynch, 2019; Agormedah *et al.*, 2020).

These innovations have completely changed the way people communicate, teach and learn, which has resulted in all individuals, both young and old, being required to be technologically skilled (Christensen & Knezek, 2017; Crawford, 2017; Siddiq *et al.*, 2017; Claro *et al.*, 2018; Marlatt, 2018; Ajmain *et al.*, 2019; Shanmugam & Balakrishnan, 2019). Almost every aspect of the lives, of present-day learners, has a connection with technology, especially their future employment opportunities, which are becoming more and more digitally orientated (Blau & Inbal, 2016; Mayfield & Hester, 2018; Maphosa *et al.*, 2020; Mhlanga & Moloi, 2020).

Generation Y individuals called millennials were born from 1980 and 1995. Generation Z individuals called zoomers were born from 1996 and 2015. Generation A individuals called

alphas were born from 2016, and includes individuals who will be born till 2025. Generation Z, and generation A learners, have vastly different social environments, characteristics, skills, mind-sets and opportunities to previous generations, and these learners, therefore, require revolutionised educational approaches, curricular, models, and theories (Greenhow & Askari, 2015, Crawford, 2017; Mathew, 2018; Shanmugam & Balakrishnan, 2019). Blau and Inbal (2016), Kokare and Strautins (2018), Marlatt (2018), Moyo and Hadebe (2018), Varghese *et al.* (2019), as well as Lawrence and Fakuade (2021), agree, that modern day educational systems need to comprehensively include technological innovations in their curricular, to be effective in the 21st century.

The advancements in ICT's have streamlined educational processes in some countries, and enabled 21 CL in schools and systems (Blau & Inbal, 2016; Oakley *et al.*, 2017; Mathew, 2018; Hashim *et al.*, 2019; Nouri *et al.*, 2019; Varghese *et al.*, 2019; Maphosa, 2021). South Africa has started to use ICT more extensively in some private and public schools from around 2015, and this move into the digital space has been accelerated by COVID-19, and the subsequent closure of schools (Mabaso, 2017; Ramrathan, 2020; Maphosa, 2021). The advancements in ICT, have the capacity to meet some of the new educational needs, and further change the classroom, and the wider school context (Johns *et al.*, 2017; Scherer, Siddiq and Baran, 2017; Claro *et al.*, 2018; Shanmugam & Balakrishnan, 2019). van Laar *et al.* (2017) and Mathew (2018) suggest that ICT, may be the major method of teaching and learning in the future, because it is making online content delivery more personal, and online assessment methods more effective. However, the present educational policies and curricular of some countries, have become antediluvian because they have not evolved significantly, to include all the different essential components of 21 CL, and aligned ICT (Claro *et al.*, 2018; Marlatt, 2018; Mathew, 2018; Ajmain *et al.*, 2019).

2.3.2 Factors that facilitate ICT implementation

One of the crucial factors that determine the successful adoption of ICT's in schools, is a knowledgeable, well-trained and skilled school leadership team, which can research, and understand the complexities of introducing technology into the schooling environment, plan and strategize the enactment process, provide a nurturing environment for all educational stakeholders, communicate and collaborate, supply adequate infrastructure, resources and training, and have the

ability to evaluate, provide feedback and solve implementation problems (Blau & Inbal, 2016; Gil-Flores *et al.*, 2016; Adukaite *et al.*, 2017; Wang, 2017; Marlatt, 2018; Ajmain *et al.*, 2019; Hines & Lynch, 2019; Howard *et al.*, 2019). When introducing and enacting technological innovations into schools, the school leadership should consider the intricacy of the innovation, communication channels, time frame, support structures, as well as the different categories of the population adopting the change, which include the innovators, early adopters, majority and laggards (Blau & Inbal, 2016).

Some of the leadership paradigms, which have proved to be effective in facilitating the adoption of ICT's into country's educational systems, include ecological leadership, system leadership, transformational leadership, and strategic leadership (Berkovich & Eyal, 2017; Shaked & Schechter, 2017; Anderson, 2018; Bryant, 2018; Chan, 2018; Shapira-Lischinsky & Ben-Amram, 2018; Afey, 2019; Brown & Weli, 2019; Cobinah & Agyemang, 2019; Ismail & Mydin, 2019; Manns, 2019).

One of the other common factors, in the successful implementation of ICT in different countries, is the acceptance and adoption of a holistic system wide approach to its introduction (Clark *et al.*, 2014; Al-Awidi & Aldhafeeri, 2017; Wang, 2017; Bai & Song, 2018; Ajmain *et al.*, 2019; Shanmugam & Balakrishnan, 2019). Accompanying this holistic approach, should be positive mind-sets and attitudes, of both learners and teachers, towards the comprehensive incorporation of technology into pedagogical approaches (Osakwe *et al.*, 2017; Lindberg, Olofsson & Fransson, 2017; Petko *et al.*, 2017; Scherer *et al.*, 2017; Williams, 2017; Pather & Booi, 2020). Some of the pilot schools in Singapore, were the first to use ICT as efficient methods for 21 CL, and subsequently, Singapore holistically adopted technology based 21 CL in its practices, curricular and policies, from kindergarten through to grade twelve (Toh *et al.*, 2014; Cheng, 2017). These schools were leaders in the field of ICT based 21 CL, and their success seems to be, that their focus was not limited to only learning the content to be taught. Rather, their learning was holistic, and focused on all aspects of the change to technology driven pedagogy, including research, strategizing, infrastructure, communication and collaboration, training, and evaluation.

Other countries, like Canada, have also successfully introduced ICT based 21 CL, from kindergarten to grade twelve, as well as more than 110 online courses, and blended learning programmes into their teaching methods (Clarke *et al.*, 2014, McGuire, 2018). These authors

further affirm, that Ontario has also drastically changed the ICT infrastructure of their secondary education system, to support the large-scale introduction of innovative digital learning, which is aligned with the pace of ICT advancements occurring in the workplace, and the greater economy. At tertiary level the Ontario online programme was launched to create an open platform, where different institutions can share and collaborate, on good pedagogical practices and research, as well as offer the latest most highly developed innovative online courses, which have accreditation at many institutions (Clarke *et al.*, 2014). The holistic adoption of ICT based 21 CL, in terms of utilising all steps in the change process, and also all grades in the schooling system, has been already adopted by many Eastern and Western countries around the world, and some African countries, are in different stages of its interpretation and enactment (Lindberg *et al.*, 2017; McDonald, 2017; Osakwe *et al.*, 2017; Petko *et al.*, 2017; Marlatt, 2018; Mayfield & Hester, 2018; Hines & Lynch, 2019; Varghese *et al.*, 2019; Obonnaya *et al.*, 2020).

Haelermans (2017), Hulten and Larsson, (2018), Marlatt (2018), Ajmain *et al.* (2019), as well as Patrick, Abiolu and Abiolu (2021), suggest that many countries have had success in introducing ICT into the teaching and learning environment, because the foundation of the introduction has been on pedagogical improvement, informed through empirical research, and not merely on the use of one or two random technological innovations. This idea is supported by Hashim *et al.* (2019), Agormedah *et al.* (2020) and Bordoloi, Das and Das (2021), who mention that for the use of ICT in the classroom to be effective, it must be accompanied by a change in pedagogy. Research in Chile by Claro *et al.* (2018) proposes that the teaching and learning process can be enhanced further, by the use of ICT, if the focus is on digital literacy and digital learning. ICT should therefore not be under-utilised, infrequently, as merely an information resource, but must be actively used to promote 21 CL (Blau & Inbal, 2016; Cloete, 2017; Johns *et al.*, 2017; Osakwe *et al.*, 2017; Mathew, 2018; Varghese *et al.*, 2019).

Crawford (2017) and Oakley *et al.* (2017) amplify this sentiment, by mentioning that both Australia and China have invested heavily, in not only the teaching of the actual ICT content and accompanying communication skills to learners, but also the competencies to ethically, critically, and creativity use them. The onset of COVID-19 has seen many counties, including South Africa, rapidly transforming their educational systems to include ICT on a much larger scale than ever before (Pather & Booi, 2020; Ramli, 2020). During this time, the delivery of only content through ICT, has proven to be highly ineffective, unless it was significantly and

effectively incorporated in pedagogical approaches (Agormedah *et al.*, 2020; Obonnaya *et al.*, 2020).

Cloete (2017) as well as Moyo and Hadebe (2018) emphasise that ICT in an African context, is seen as especially crucial in socio-economic development, and the reduction of poverty across the continent. Some countries which have successfully incorporated ICT in schools, have also adopted a centralised-decentralised approach, whereby individual schools are given greater autonomy to contextualise their introduction in their respective schools, but all schools are still bound by central, key directives which are legislated by government (Cheng, 2017; Scherer *et al.*, 2017; Hines & Lynch, 2019; Varghese *et al.*, 2019).

To facilitate the use of ICT, Webb, Davis, Bell, Katz, Reynolds, Chambers and Syslo (2016), as well as Nouri *et al.* (2019) advocate that the subject Computer Science, which encompasses all the aspects of ICT, should form part of the compulsory syllabus of learners from very early in primary school, and should be taught using age appropriate pedagogical approaches. This is supported by Mayfield and Hester (2018), whose research in Alabama, advocate that Computer Science as a subject, should be taught across all the grades. Moyo and Hadebe (2018) affirm that ICT should be introduced to learners very early in their schooling career, to facilitate the adoption of a digital culture. Kokare and Strautins (2018) as well as Hines and Lynch (2019) agree, that these aspects should be introduced formally into the pre-primary, primary and secondary school curricular. The non-profit organisation Code.org., is one of the organisations devoted to achieving this goal, by growing the subject of computer science in all schooling grades (Mayfield & Hester, 2018).

To facilitate the implementation of ICT, learners can also be taught coding, programming and computational thinking, from a young age in primary school (Webb *et al.*, 2017; Garcia-Penaluo & Mendes, 2018; Mayfield & Hester, 2018; Nouri *et al.*, 2019). These authors explain, that computational thinking involves thinking about and structuring problems, as well as solutions in different disciplines, utilising the principles and content of computer science. Coding, programming and computational thinking are increasing seen to be the building blocks, which allows individuals to be competent and successful in the digital world. These elements are also thought to form the basis for Science, Technology, Engineering and Mathematics (STEM) subjects, which are considered to be the choice subjects for potential careers in the future (Garcia-Penaluo & Mendes, 2018; Mayfield & Hester, 2018; Ajmain *et*

al., 2019). Lay and Osman (2018) stress that for individuals to be successful in the modern world, they need a solid grounding in STEM content, but also an in-depth knowledge of 21st century competencies.

Another factor that has facilitated ICT implementation, is that teachers have begun to view cell phones, social media, gaming, and other ICT tools frequently used by learners, as an opportunity to augment learning, rather than considering them as distractions to learners in the classroom (Williams, 2015; Cheng, 2017). Teachers are beginning to use these ICT advancements to increase learners' levels of engagement (Johns *et al.*, 2017; McGuire, 2018; Hashim *et al.*, 2019; Varghese *et al.*, 2019). Teachers have also started to frequently use more developed interactive, dynamic applications, as well as social media platforms called Webb 2.0 technologies in the classroom (Crawford, 2017; Elstad & Christophersen, 2017; Oswake *et al.*, 2017; Hulten & Larsson, 2018; Hines & Lynch, 2019; Varghese *et al.*, 2019; Ogonnaya *et al.*, 2020). Social media is a powerful ICT application, which can be used to create learner-centred, 21 CL learning activities and projects, but teachers are sometimes apprehensive about using social media, because of the privacy concerns that accompany their use in the classroom (John *et al.*, 2017).

However, John *et al.* (2017) mentions that free Websites, such as Classtools.net and Fakebook, allow learners to create their own individualised versions of social media and news, safely, and without the privacy concerns associated with the actual social media application. These applications on the Classtools.net Website, mirror the actual social media applications, with all of their functionality, so they are familiar to learners and user friendly. Learners could embark on individual or group projects, such as creating a social media profile on Fakebook, which could then be assessed by teachers, for both syllabus content and 21st century competencies. Free Websites such as Classtools.net, allow teachers to effectively utilise and incorporate digital technology in the classroom, so that their approach to teaching and learning can change from being more traditional, to being more 21 CL compliant.

Johns *et al.* (2017) and McGuire (2018) mention that the Google suite (G suite), in particular Google Classroom, together and more recently, with Microsoft Office 365, in particular Microsoft Teams, offers teachers a revolutionary way to effectively digitally manage their classroom, as well as flip the classroom, so learners take greater ownership of the teaching and learning process. Teachers are experimenting with Google suite and Microsoft Office 365, as

these platforms have many applications, which are educationally appropriate, and that are compliant with the aims and objectives of the International Society for Technology in Education (ISTE), and 21 CL (Johns *et al.*, 2017; McGuire, 2018). Google Classroom and Microsoft teams have been used widely in the teaching and learning process during COVID-19 (Subekti, 2020; Literat, 2021). Teachers are also experimenting with virtual whiteboard and screen casting applications, such as Educreations, Explain Everything and Show Me. These applications act as interactive whiteboards, with all the functionality of a digital whiteboard, on which both teachers and learners can separately or jointly interact, to develop concepts, lessons and presentations (Johns *et al.*, 2017). These applications further enhance the effective utilisation of ICT in the classroom.

The Seesaw application allows learners to formulate their own individual digital portfolio, of all their work in a tamper-proof and protected space (Johns *et al.*, 2017). Applications such as Seesaw allows learners to be proactive in the learning process, allows immediate feedback from teachers, and fosters collaboration between students, whilst also informing parents of the quality of their children's work, as well as their performance (Al-Awidi & Aldhafeeri, 2017; Lindberg *et al.*, 2017; Johns *et al.*, 2017). The Sound Exchange and the Music Improvisation Websites are more examples of free interactive platforms, which teachers and learners around the world are using (Crawford, 2017). Innovative digital musical resources such as online Webbcasts, workshops, chat groups, lessons, videos and libraries can be accessed in these platforms. The research by McGuire (2018) produced a document with a list of forty, mostly free, Websites and applications, which can be utilised in the classroom to facilitate creativity, collaboration, communication and critical thinking, as well as other 21CL principles.

The use of digital online gaming known as gamification has also proved to be an effective tool which enhancing ICT implementation (Adukaite *et al.*, 2017; Hakkinen *et al.*, 2017; McDonald, 2017; Lay & Osman, 2018; Hashim *et al.*, 2019). DGBL was successful in developing digital literacy, digital learning, as well as computational thinking (Lay & Osman, 2018).

Electronic textbooks have become more readily available, and teachers have tended to use them more frequently and efficiently to maximise their contribution to the pedagogical process, provided the electronic textbooks cater to the different abilities of learners, are designed to be

fully interactive and collaborative, and are not forced onto teachers through mandatory usage (Chiu, 2017).

Wang (2017), as well as Hulten and Larsson (2018), explain that teachers have introduced and enacted the concept of the flipped classroom more frequently in recent years, whereby most of the research and content learning for the lesson takes place outside the classroom, either individually or in groups using ICT, and this learning is reinforced, extended and intensified, through collaborative group activities, and teacher input in the classroom. The willingness of teachers to experiment with ICT advancements, to create more stimulating classrooms, has facilitated their incorporation into modern day pedagogical approaches.

Another fundamental factor that positively influences the implementation of ICT in the classroom, is the effective development and training of teachers, regarding the theory and skills underpinning ICT pedagogy (Al-Awidi & Aldhafeeri, 2017; Lindberg *et al.*, 2017; Scherer *et al.*, 2017; Webb *et al.*, 2017; Bai & Song, 2018; Hulten & Larsson, 2018; Maphosa, 2021; Chirinda *et al.*, 2021). The ICT professional development of teachers, leads to higher confidence levels, and may be strong correlators, to the successful and sustainable adoption and use of it (Lindberg *et al.*, 2017; Osakwe *et al.*, 2017; Petko *et al.*, 2017; Varghese *et al.*, 2019; Adarkwah, 2020). Christensen and Knezek (2017), Moyo and Hadebe (2018), as well as Ogbonnaya *et al.* (2020) further affirm that the training of teachers, in the effective use of ICT in the teaching and learning process, is a pivotal strategy, in instilling and developing a digital culture, amongst learners within the school environment.

Similarly, in order to facilitate ICT, Toh *et al.* (2014) elaborate, on a three-stage staff development programme in their research, which focused ICT as a component of 21 CL. The first stage involved basic ICT training for all teachers, the second stage involved more specific training, which was departmentally aligned, and the third stage involved higher order and in-depth training to develop ICT expertise. This professional development programme was introduced to meet some of the requirements of the centralised educational department, but was designed around the contextual needs, and limitations of the institutions (Toh *et al.*, 2014). Teachers were, in addition, obligated to participate in the first stage of the programme, but their level of participation in the second and third levels of the programme was not specified, and voluntary.

Osakwe *et al.* (2017), Petko *et al.* (2017), Claro *et al.* (2018), Hines and Lynch (2019), as well as Shanmugam and Balakrishnan (2019) assert, that teachers have become much more confident with the use of ICT in the classroom, and have been able to effectively modify their teaching practices accordingly. However, research of teachers and ICT has focused on their technological expertise, teaching methods and administration (Williams, 2015; Claro *et al.*, 2018). More attention, should be directed towards, understanding the details of how teachers develop their own digital literacy, as well as their learner's digital literacy, in the broader context of 21 CL, and the actual teaching and learning process (Kokare & Strautins, 2018; Moyo & Hadebe, 2018). Blau and Inbal (2016), Geer *et al.* (2017), Scherer *et al.* (2017), Marlatt (2018), Subekti (2020) and Patrick *et al.* (2021), concur that teacher training should be more encompassing, of all the important educational factors, and should focus on the domains in the Technology, Pedagogy and Content Knowledge (TPACK) model, or the domains of the Substitution, Augmentation, Modification and Redefinition (SAMR) model, for teacher's development in the 21st century.

Williams (2015), Gil-Flores *et al.* (2016) as well as Garcia-Penaluo and Mendes (2018), mention that learners are exposed to new ICT devices at a very young age, and they recommend that teachers, especially trainee teachers, need to be also taught about selecting and using new age appropriate content, activities and assessments. Chiu (2017), McDonald (2017), Mayfield and Hester (2018), Nouri *et al.* (2019), as well as Varghese *et al.* (2019), also propose, that teacher training institutions should incorporate the use of Webb 2.0 technologies in education, computer science, digital logic and design, coding, programming and computational thinking, as well as gamification, in the theoretical and practical components of their curriculum, which are designed to prepare future teachers for the modern classroom.

Haelermans (2017), Webb *et al.* (2017), as well as Hulten and Larsson (2018), affirm that the training of teachers should be continually evaluated and restructured, to align it with the rapid developments in technology, to which our learners are exposed. Gil-Flores *et al.* (2016), Al-Awidi and Aldhafeeri (2017), Elstad and Christophersen (2017), Moyo and Hadebe (2018), as well as Shanmugam and Balakrishnan (2019), agree that the journey of ICT by teachers, should begin with their initial teacher training, which should go beyond only the use of ICT in classrooms, to the effective assimilation of technology in the teaching and learning process. This journey of digital learning by teachers should also be consistent and progressive,

throughout their career, according to how technology advances (Oakley *et al.*, 2017; Osakwe *et al.*, 2017; Wang, 2017; McGuire, 2018; Marlatt, 2018).

Tests such as the Technology Proficiency Self-Assessment for 21st Century Learning (TPSA C-21), which was developed and refined from the original Technology Proficiency Self-Assessment by Christensen and Knezek (2017), have been developed to assess and enhance American teachers' use of ICT in the classroom, whilst Texas, Arkansas and Athens have their own computer tests, to assess the digital expertise of entry level and trainee teachers (Mayfield & Hester, 2018). Gil-Flores *et al.* (2016), Al-Awidi and Aldhafeeri (2017), as well as Mayfield and Hester (2018), conclude that many countries around the world are in the process of legislating, through policy, that ICT training become a requirement for teacher qualifications.

2.3.3 Positive outcomes of information and communication technology in education

ICT has led to increased learner preparation outside the classroom, more allocated time for classroom activities, improved learner participation in the classroom, and an increase in achievement scores for assessments (Al-Awidi & Aldhafeeri, 2017; Geer, White, Zeegers, Au & Barnes, 2017; Hulten & Larsson, 2018; Shanmugam & Balakrishnan, 2019; Adarkwah, 2020; Lawrence & Fakuade, 2021). They also encourage energetic learner centred learning which has resulted in improved levels of performance (Hakkinen *et al.*, 2017; Oakley *et al.*, 2017; Mathew, 2018; Moyo & Hadebe, 2018; Hines & Lynch, 2019; Shanmugam & Balakrishnan, 2019). Adukaite, van Zyl, Sebnem and Cantoni (2017), Lindberg, Olofsson and Fransson (2017), McDonald (2017) and Hashim *et al.* (2019) affirm, that ICT, especially in the form of gamification can increase the impetus and commitment levels of learners, with different abilities, as well as improve their retention of content knowledge.

Crompton, Burke and Gregory (2017), McDonald (2017) and Marlatt (2018) affirm, that ICT enhances the teaching and learning process, by significantly promoting several 21st century competencies. The speed at which ICT allows information to be relayed, between the different educational stakeholders, streamlines the entire process of teaching and learning, and makes it more efficient (Osakwe *et al.*, 2017; Wang, 2017; Shanmugam & Balakrishnan, 2019). Blau and Inbal (2016), Caro *et al.* (2018), Amain *et al.* (2019), as well as Nouri *et al.* (2019), posit that the technological revolution has also enabled collaborative learning, pedagogical research,

discoveries, and advancement. The Uduku online introductory course for teachers presents the basic information about the four 21st century competencies of creativity, collaboration, critical thinking, and communication, for trainee teachers as well as established teachers, who want to increase their knowledge of 21 CL.

Developments in ICT have also allowed a greater number of learners access to education, in a time where surplus finances are extremely limited, as well as providing digital platforms, which facilitate cross-curricular learning, increased collaboration, input from world renowned experts, and easier access to learner's academic information by parents (Clark *et al.*, 2014; Crompton *et al.*, 2017; Johns *et al.*, 2017; McDonald, 2017; Lay & Osman, 2018; Hines & Lynch, 2019; Varghese *et al.*, 2019).

Consequently, ICT are being taught to learners from a very young age, and reinforced at every stage of their development (Gil-Flores *et al.*, 2016; Al-Awidi & Aldhafeeri, 2017; Cheng, 2017; Garcia-Penaluo & Mendes, 2018; Shanmugam & Balakrishnan, 2019). Presently, many countries, either provide learners with digital devices, or learners are asked to bring their own devices to school, but irrespective of the policy for devices, learners have access to ICT, throughout the day to complete their schoolwork (Gil-Flores *et al.*, 2016; Marlatt, 2018; Mayfield & Hester, 2018; Shanmugam & Balakrishnan, 2019; Varghese *et al.*, 2019). Many countries around the world have also adopted the concept of centralised-decentralisation in the introduction of ICT into educational systems. This concept involves giving schooling communities a greater degree of autonomy when incorporating ICT, but the central government still manages and oversees the entire process by legislating overarching, core directives that need to be fulfilled, as well as providing the majority of the funding that is needed (Gil-Flores *et al.*, 2016; Cheng, 2017; Hines & Lynch, 2019).

2.3.4 Challenges to the implementation of ICT in education

Some teachers tend not to use ICT in their teaching because the research, on the positive outcomes of ICT in education, is relatively limited (McGuire 2018). This is because, although ICT has been introduced into education in some countries as early as the 1980's, it has only significantly changed the educational systems of many countries from around 1995, and scholars, who have been part of these educational systems or born later than 1995, are only

now entering tertiary institutions or the working environment, and as a result more long-term studies need to be undertaken to investigate the success of ICT in education (Petko *et al.*, 2017; Mathew, 2018). The extensive implementation of ICT in South African schools has occurred even more recently, and this has been further increased due to COVID-19 causing the closure of schools (Botha, 2016; Ramrathan, 2020). As a result, research into ICT in education is limited, which causes some teachers not to engage with it (Hines & Lynch, 2019; Maphosa, 2021).

The use of ICT in schools has brought with it other unique challenges as well. Another challenge includes the responsible, ethical and legal use of ICT in the school environment, by teachers, but more especially by learners, as issues such as cyber bullying, and the use of sexually explicit material becomes more prominent (Crawford, 2017; Elstad & Christophersen, 2017). The teaching of digital literacy in schools, seems to have increased learner's understanding, of the need for respect of an individual's personal information and images, the understanding of the legal ramifications of misusing the information of others, as well as the development of restrictive strategies of ICT, such as policies pertaining to cell phone use at schools (Crawford, 2017; Claro *et al.*, 2018). Countries such as Japan and Taiwan, which have successfully introduced ICT on a large scale into their educational systems over the last two decades, have done so by focusing on the concept of digital literacy (Cheng, 2017).

Other challenges encountered by schools, is the provision of equal access to ICT to all learners, disseminating the digital culture to parents and the wider society, storing and sharing of information, access and security of information, and long-term planning in the light of the rapid advancements in ICT (Cheng, 2017; Clarke *et al.*, 2014). In response to these challenges, schools have developed their own comprehensive policies regarding the use of ICT, as well as creating both virtual and physical communication channels where information, experiences and developments, can be mutually and openly shared (Clarke *et al.*, 2014; Cheng, 2017).

Adukaite *et al.* (2017), Moyo and Hadebe (2018) and Ogonnaya *et al.* (2020) further propose that especially on the African continent, funding, facilities, resources and effective teacher training, are other obstacles to the effective implementation and sustainability of ICT in schools. These problem areas are not unique to Africa, but occur in many other countries around the world. They are sometimes due to financial constraints, socio-economic factors, political climates, or the lack in the desire to change, from traditional educational practices to

new innovative, relevant ones (Elstad & Christophersen, 2017, Marlatt, 2018; Mathew, 2018; Hines & Lynch, 2019; Ramli *et al.*, 2020; Subekti, 2020). Many of these countries, including South Africa, have realised the necessity to widely incorporate ICT into their educational systems, but simply lack the resources to accomplish this (Wang, 2017; Mathew, 2018; Nouri *et al.*, 2019; Pather & Booi, 2020). Consequently, learners are not consistently and effectively introduced to ICT, within the school environment, and frequently do not develop a personal digital culture.

Al-Awidi and Aldhafeeri (2017), as well as Kokare and Strautins (2018), explain that teachers must be formally given sufficient time in the curriculum during the school day, and adequate resources to research and experiment with the effective use of ICT. Teachers are continuously busy with content delivery, assessments, administration, and discipline issues, which utilises most of the time allocated to teachers (Al-Awidi & Aldhafeeri, 2017; Cloete, 2017; Lindberg *et al.*, 2017; McGuire, 2018; Moyo & Hadebe, 2018; Ajmain *et al.*, 2019; Agormedah *et al.*, 2020). These authors explain that this causes teachers to only use traditional teaching methods such as rote learning, charts, and the chalk and talk teaching method, and not innovative concepts of ICT, as there is no time to experiment with new educational innovations. Furthermore, since the traditional teaching methods have produced good examination results in the past, they are more inclined to remain with the norm and not transform using ICT.

There is also a concern that the use of ICT reduces personal interaction, and negatively affects the social skills of learners (Al-Awidi & Aldhafeeri, 2017; Kokare & Strautins, 2018; Marlatt, 2018; Nouri *et al.*, 2019; Shanmugam & Balakrishnan, 2019; Ramli *et al.*, 2020; Literat, 2021). These authors propose the concept of blended learning as a possible solution. Cloete (2017), Crawford (2017) and Mahaye (2020) describe blended learning, as combining and integrating the best aspects associated with the personal interaction between teachers and learners, together with the positive aspects of the online learning experience. Mahaye (2020) and Bordoloi *et al.* (2021) affirm that blended learning has the potential to substantially improve the practice of 21 CL, because it utilises the beneficial aspects of personal and digital pedagogical approaches. Wang (2017), as well as Hulten and Larsson (2018), propose, the model of the flipped classroom, as an example of blended learning, which utilises the approach of ICT to form the basis of the content learning outside the classroom, and then building on this, through personal learner group and teacher interactions within the classroom.

2.4 School leadership

The interpretation and enactment of 21 CL in educational systems around the world, has usually been accompanied by some form of leadership development (Hallinger & Walker, 2017; Volmink & van der Elst, 2017; Koh & Hung, 2018; Mowat, 2018; Romanowski *et al.*, 2019; Pan & Chen, 2020). Effective leadership of the school, is considered as a fundamental factor in the introduction and enactment of 21 CL, because it influences all aspects of the school community and environment, through long-term and short term planning (Truong *et al.*, 2017; Boylan, 2018; Leithwood *et al.*, 2019; Gilber & Mohlakwana, 2020; Shava & Heystek, 2021). In addition, effective school leadership has been positively correlated with improved curriculum development, learner performance and teacher effectiveness, as well as the enactment of change and improved educational strategies (Carroll & Gillies, 2017; Hamilton *et al.*, 2018; Elizondo-Garcia *et al.*, 2019; Zelvys *et al.*, 2019; Pan & Chen, 2020). Effective school leadership, is considered second, only to efficient teaching and learning, when improving learner's performance (Adams, Kutty & Zabidi, 2017; Sebastian, Huang & Allensworth, 2017; Leithwood *et al.*, 2019; Romanowski *et al.*, 2019; Shava, 2021).

Therefore, many countries have invested heavily in the development of their school leadership teams, especially their school principals, who head their educational institutions (Campbell, 2017; Wang, 2017; Mohamad & Ismail, 2018; Elizondo-Garcia *et al.*, 2019; Romanowski *et al.*, 2019; Shava, 2021). In light of the importance of school leadership, in 2007, at the annual general meeting of the Kenyan Secondary School Heads Association, it was recommended that the training of newly appointed principals, be allocated to a department of government called the Kenyan Education Staff Institute (Chemutai *et al.*, 2015). It was further recommended at this meeting that a policy be formulated regarding the identification, appointment and training of principals.

Clarke *et al.* (2014) and Mestry (2017), mention, that one of the pivotal strategies that the Ministry of Education in Ontario, and the Council of Ontario Directors of Education utilised, to enact 21st Century Learning and related innovative ICT changes, was to create the Institute for Educational Leadership. The function of the institute, was to implement a rigorous and effective leadership development programme, especially for principals and deputy principals (McGuire, 2018). To improve the outcomes of educational systems, leadership training for school leaders, has also been placed as a priority in the transformation process, by countries

such as China, Brazil, Singapore, Austria, Scotland, the United Kingdom and the United States of America (Hamilton *et al.*, 2018). These countries have also established their own education leadership centres, which are focused on the professional development of principals, and other school leaders (Ndamani, 2016; Mestry, 2017; Truong *et al.*, 2017; Munby, 2020).

The South African Government's Task Team on Educational Management, was setup by the Department of Education in 1996, to evaluate the leadership knowledge and skills of education leaders, and provide information, for the creation of appropriate future leadership training and development courses. In South Africa, leadership training and continuous professional development for school principals in the public sector, are accentuated in the Integrated Quality Management System (IQMS), whilst private schools may have their own professional development requirements for principals and school leaders (Ndamani, 2016; Mestry, 2017, Davids & Waghin, 2018). In South Africa, professional development courses for school leaders are also offered, by both private and government tertiary institutions, as well as non-governmental organisations such as the South African Council of Educators (SACE). Many countries around the world have introduced aspects of ecological leadership, system leadership, transformational leadership and strategic leadership into their leadership development programs, because these leadership paradigms have positively influenced, and improved existing educational systems, as well as facilitate the interpretation and enactment of 21 CL (Boylan, 2018; Israel, 2018; Munir & Aboidullah, 2018; Trach Lee & Hymel, 2018).

2.4.1 The need for formal school leadership development and training

School principals and other school leaders are usually selected from the community of professional teachers, based on their teaching qualifications, seniority in terms of years of experience, involvement in extra-curricular activities and effective teaching practices, accompanied with good learner pass rates (Chemutai *et al.*, 2015; Zelvys *et al.*, 2019; Munby, 2020; Sepuru & Mohlakwana, 2020). These criteria are only related directly to the process of teaching and learning, and only qualify principals and other school leaders, to carry out their actual teaching or extra-curricular responsibilities. However, the role of a school leader, especially a principal, extends beyond this pedagogical sphere, to incorporate managerial and leadership functions, much like those required by a chief executive officer of a company (Gumus *et al.*, 2016; Adams *et al.*, 2017; Smit, 2017; Zelvys *et al.*, 2019; Munby, 2020;

Mvenene, 2020). Some of these functions include staffing, interviewing, mediating staff relations, delegating responsibilities, appraisal and performance management, strategic planning, communication with parents, community relations, curriculum development, financial management, and the enactment of educational reforms such as 21 CL (Ndamani, 2016; du Plessis *et al.*, 2017; Hallinger, 2017; Hallinger & Walker, 2017; Mestry, 2017; Smit, 2017; Sepuru & Mohlakwana, 2020).

Sepuru and Mohlakwana (2020) assert that one of the major weaknesses of current school principals, globally and nationally, is the lack of a theoretical foundation, of leadership and management. Clarke and O'Donoghue (2017), Mestry (2017), Hamilton *et al.* (2018), as well as Munby (2020), therefore posit, that principals need further training and development in leadership and management, in order to be successful as the heads of their institutions. du Plessis *et al.* (2017), Smit (2017) and Hallinger (2017), propose that in the 21st century, school leadership, especially principalship, is considered as a specialist profession, which requires specialist training and knowledge. These authors, further affirm, that one of the key components of this training, should be human resource management, as this is a vital component in keeping a school relevant and competitive in the 21st century.

Principals may have leadership and managerial traits, but these should be nurtured and developed, through professional development and training, so that principals can reach their full potential, and make maximum use of these abilities (Chemutai *et al.*, 2015; Zelvys *et al.*, 2019; Pan & Chen, 2020). Chemutai *et al.* (2015), Truong *et al.* (2017) and Hamilton *et al.* (2018) suggest that the effectiveness of school leaders, such as principals, can be heightened with formal training and education, such as courses, diplomas and degrees, pertaining to specifically leadership and management. They assert that formal education, has the potential to significantly prepare and equip principals, and other members of the school leadership team, for the challenges of heading a modern day school, whereas in-service training sometimes lacks relevancy, may not be well presented and structured, and is often short lived, quickly forgotten, and not implemented. They substantiate their argument, by noting that formal training and education, are mandatory and compulsory, for managers and leaders in other professions, especially in industry. One such example, mentioned by these authors, is that of a human resource manager, who is compelled to complete either a diploma, degree or master's degree which is not less than two years in duration.

Mestry (2017) concurs, that although in-service training of principals, does increase effectiveness, in their leadership and management roles, it may not be sufficient to train principals adequately, especially regarding the management of the changes affiliated with the introduction of 21 CL in schools. The Strategic Training of Employees Model (STEM), may a viable alternative to provide skills, which allow for more in-depth training and development of employees, within an organisation (Chemutai *et al.*, 2015).

Sepuru and Mohlakwana (2020) propose that leadership and management training and/or qualifications, be a prerequisite for the appointment of principals, and also that some basic management and leadership developmental areas, be introduced to the curriculum of teacher education, for student teachers. Mestry (2017), Volmink and van der Elst (2017), Hamilton *et al.* (2018) and Zelvys *et al.* (2019) concur, that there should be compulsory qualifications, training and continuous professional development, for all future school leaders, as well as individuals presently in these positions. These authors further explain, that both the United Kingdom and the United States of America, have formal leadership qualification and training requirements, for applicants who want to become school principals. Whereas, a level one teacher presently in South Africa, can be appointed as a school principal, after seven years of teaching, without any formal leadership qualifications or experience. Scotland has initiated the development of a national strategy, to improve the leadership skills and knowledge of school leaders, through a continuous educational leadership program, that can begin with newly appointed teachers who aspire to become senior school leaders (Hamilton *et al.*, 2018). This leadership program is structured incrementally, as the careers of these individuals change, and progress to middle management, and finally to senior educational leadership positions (Hamilton *et al.*, 2018).

The South African government has begun the process of improving and formalising the leadership and management qualifications of school principals, through legislation such as the South African National Professional Qualification for Principalship (DoE, 2004), and the South African Standards for School Leadership (DoE, 2007). These legislations emphasise the necessary leadership qualification areas, principles, responsibilities and standards, that should form part of the national requirements for school principals. The South African Standard for Principalship (SASP) (DBE, 2015) has also been legislated, and this policy has already begun to formalise qualification requirements for school principals (Davids & Waghin, 2018; Mvenene, 2020). The SASP has been formulated, according to the role of the principal outlined

in Sections 16 and 16A of the South African Schools Act 84 of 1996. It describes the duties, responsibilities, ethics, traits and expectations of school principals in detail, but still does not make leadership and management qualifications a prerequisite for the principal position (Sepuru & Mohlakwana, 2020). Mestry (2017), Volmink and van der Elst (2016), as well as Hamilton *et al.* (2018), emphasise that, in addition to leadership qualifications and training being prerequisites for the appointment of school leaders, professional development for school leaders should be continuous and consistent. This is because the educational sphere is dynamic, and the leadership knowledge and skills of school leaders, should therefore, be constantly modernised to meet the evolving needs of the school.

2.4.2 Types and effectiveness of leadership development and training available to school leaders

Research by Quin, Deris, Bischoff and Johnson (2015), of teachers from ten school districts in Southwest Mississippi, shows that leadership courses for principals, are inadequate because they do not incorporate the appropriate theory or practices, which are directly, associated with facilitating effective teaching and learning. Research by Tingle, Corrales and Peters (2017), of leadership development programs for principals in America, further support the idea, that some university leadership development programs, for principals may not be effective in developing them for their leadership positions in the 21st century, because they do not comprehensively address the changing needs of the modern school principal.

In a study conducted in the Nandi County of Kenya it was found that 62% of principals attended leadership and management courses, in the form of seminars and 28.9% attended full time training (Chemutai *et al.*, 2015). These authors strongly favour full time training because they consider training, in the form of seminars to be largely ineffective and short-lived. Their research also revealed that 53,7% of the training and development of principals was based on financial management, and only 26,4% was based on human resource management. There was no leadership training for principals in the Nandi County related to 21 CL during the course of the research. Research by Moorosi and Grant (2013) revealed that only 37% of school leaders in Lesotho, had any form of formal leadership training, and most of this training was basic elements of leadership which formed part of their initial teacher training. The research by Ndamani (2016), Mestry (2017), Smit (2017), as well as Mvenene, 2020 in South Africa,

revealed that many school principals did undergo some sort of leadership development, but these school leaders viewed the professional development courses, especially those offered by government, as largely irrelevant, ineffective and ill-structured. In my experience, private schools may have their own professional development program for principals, and school leaders, and the course structure, content and effectiveness may vary substantially based on the vision and needs of the individual schools.

Quin *et al.* (2015), Ndamani (2016), du Plessis *et al.* (2017) and Mestry (2017) affirm that workshops, seminars and courses designed to professionally develop principals, should include aspects of transformational leadership and change management to produce highly effective school leaders. Mestry (2017), Hamilton *et al.* (2018), as well as Munby (2020), emphasise, that an effective leadership development program, must be practically orientated, offer support and mentorship structures, and focus on the actual needs of school leaders in the 21st century, such as administrative tasks, school financial management, managerial expertise, emotional intelligence and most importantly leadership skills and knowledge. Harris and Jones (2020), add that COVID-19 has drastically change the educational sphere, and leadership training should be adapted to equip school leaders, to cope in this new context.

In South Africa, there are many different private and government tertiary institutions which offer educational management and leadership development programs, in the form of post-graduate degrees, undergraduate degrees, diplomas, certificates, and short courses which can be undertaken on a full time, or part time basis. However, a review of the prospectus, and course content, of these educational management and leadership programs, at some of these institutions, seems to suggest that most of them might be too theoretically orientated, and may lack the necessary practical aspects to equip school leadership teams effectively. Whilst some of them are indirectly linked to 21 CL, none of them are directly structured to facilitate the interpretation and enactment of 21 CL in schools. Smit (2017) and, Sepuru and Mohlakhwana (2020), agree, that although there are leadership and management courses available in South Africa, which do partially equip school leaders with the necessary skills and knowledge, these courses do not specifically focus on the practicality of becoming a principal or school leader. Even the in-service training and professional development programs may lack in relevancy in the ever-changing educational arena (Mestry, 2017).

The University of Pretoria is one such institution that offers a leadership development program, specifically for school principals. This one-year certification course focuses on developing the knowledge and practical skill set of principals, so that they are more equipped to facilitate effective teaching and learning, think preferentially, and make informed, critical decisions. It also focuses on enhancing the technological and entrepreneurial expertise of principals, as well as their creative and critical thinking, and emotional intelligence. The Educational Leadership Initiative at the University of Johannesburg also offers short courses and training programs for school management members. The Instructional Leadership Institute, which is a privately managed institution, also offers short term training courses, for specifically the school management team.

The Advanced Certificate in Education (ACE) program run by the University of Johannesburg, and other universities, has consistently attained positive reviews by school leaders which have undertaken the course, from its inception in 2007 (Ndamani, 2016; Mestry, 2017). The ACE course was the product of government legislation, regarding the common national framework for education leadership development, and was specifically designed to meet the deficit in leadership competencies of South African school principals by improving their leadership skills and knowledge (Bush *et al.*, 2011; Moorosi & Grant, 2013; Ndamani, 2016; Sepuru & Mohlakwana, 2020). The common course content, teaching resources and program structure, was devised and agreed upon, by the National Department of Education and the National Leadership and Management Committee.

The ACE course has evolved into the more comprehensive Advanced Diploma in Education (ADE), to better meet the leadership requirements of present school leaders, and it is intended that this course, hopefully forms part of legislative requirements for future principals (Ndamani 2016; Mestry, 2017). The ACE and ADE leadership courses, do have elements of transformation leadership, critical reflection, mentorship, networking and practical applicability, but these courses are focused, mainly on the contextual criteria necessary to effectively manage a modern South African school, and not on leadership knowledge and skills. The ACE and ADE courses do not have specific components, which are directly linked with the interpretation and enactment of 21 CL.

The old model of school leaders, being chosen only for their experience and success in the practice teaching and learning, does not work anymore (Hallinger & Walker, 2017; Brown & Weli, 2019). The new model of 21st century school leadership, being a specialist profession

that requires highly trained, skilled and knowledgeable individuals, must be adopted, in order to facilitate 21 CL (Adams *et al.*, 2017; Zelvys *et al.*, 2019). Effective school leadership is strongly related to improved teacher performance, learner achievement, and is considered as a necessary requirement for the proper management of the school environment, especially effective teaching and learning, as well as the interpretation and enactment of 21 CL (Mestry, 2017; Sebastian *et al.*, 2017; Volmink & van der Elst, 2017; Hamilton *et al.*, 2018; Brown & Weli, 2019; Elizondo-Garcia *et al.*, 2019; Howard *et al.*, 2019). Therefore, all educational systems and individual schools, should substantially invest in the appropriate, well-structured and continuous professional development of their school leaders (Ndamani, 2016; Hamilton *et al.*, 2018; Leithwood *et al.*, 2019; Zelvys *et al.*, 2019).

3. Conclusion

This research focuses on three central aspects. This being 21 CL, ICT as an enabler of 21 CL, and the roles of school leadership in 21 CL. This chapter provided a literature review of these main topics, as well as leadership training for school leaders. Figure 2.1, Figure 2.2 and Figure 2.3 illustrate the key facets of 21 CL, ICT and school leadership respectively.



Figure 2.1 Crucial facets of 21 CL



Figure 2.2 Crucial facets of ICT for 2CL



Figure 2.3 Crucial facets of school leadership

The following chapter will investigate the leadership theories that underpin this study. These leadership theories are ecological leadership, system leadership, transformational leadership and strategic leadership.

CHAPTER THREE

LITERATURE REVIEW: LEADERSHIP THEORIES

3.1 Introduction

The aim of this research is to develop a leadership model, for the enactment and interpretation of 21 CL in South African private secondary schools, in KwaZulu-Natal. In line, with the aim and objectives of the study, the previous chapter reviewed 21 CL, ICT and school leadership. The leadership theories of ecological leadership, system leadership, transformational leadership, and strategic leadership also feature prominently, in the interpretation and enactment of 21 CL, in countries around the globe. Therefore, this chapter reviews these leadership theories. These theories will also assist in the development of an integrated leadership model, for the interpretation and enactment of 21 CL.

3.2 Leadership theories

Leadership is a complex term, which can be defined in many different ways, and explained using a variety of concepts. It can be defined as a collaborative process between leaders and followers, in which the leader equips, motivates and positively influences followers to achieve short-term objectives, which are aligned with a long term vision (Cletzer & Tech, 2020; Pan & Chen, 2020). Leadership incorporates cognitive abilities, communication skills, emotional intelligence, and ethics (Harris, 2020; Shava, 2021).

A fundamental component in a school enacting change, for effective teaching and learning, is an experienced, skilled and educated school's leadership team (Cobbinah & Agyemang, 2019; Lee & Kuo, 2019; Lyonga, 2019; Mvenene, 2020; Shava & Heystek, 2021). Many countries have therefore, simultaneously developed their leadership programmes when engaging with 21 CL (Mowat, 2018; Howard *et al.*, 2019; Pan & Chen, 2020). Some countries have concentrated on one leadership theory, while others have considered more than one. Research in Singapore posits, that the sustainable interpretation and enactment of 21 CL in schools, can be achieved using ecological leadership (Koh & Hung, 2018). Research on the change to 21 CL, in selected

schools in England, by Boylan (2018), reveals that these schools utilised the theory of system leadership. Whereas, certain Serbian schools seem to have employed the theory of transformational leadership (Ninkovic & Floric, 2018). Mohamad & Ismail (2018), show that some Malaysian schools, appear to have adopted the theory of strategic leadership to facilitate the change to 21 CL.

3.3. Ecological leadership

Research of ecological leadership utilises Bronfenbrenner's (1979) socio-ecological model of human development as a basis. In this model Bronfenbrenner (1979) describes human development, as a consequence of the intra-actions and interactions of the different social systems of an individual. The term ecology in Life Sciences, describes the different interactions of the biotic and abiotic factors, within a specific habitat. The term ecological leadership can be used to describe the different relationships within a social system, such as an organisation or school (Toh *et al.*, 2014; King & Travers, 2017; Howard *et al.*, 2019; Huijser *et al.*, 2019; Manns, 2019; Hung *et al.*, 2020).

The activities within the classroom can form the microsystem. The inter-relationships and activities of the school environment can form the mesosystem. The exosystem can be comprised of people and institutions, which form associations with schools, which directly and indirectly affect their operations. Global, national, societal and cultural factors form the macrosystem. The chronosystem refers to the ability of the ecological structure, to change over time, depending on the different factors, to which each level is exposed. Similarly, Shapira-Lishchinsky and Ben-Amram (2018), as well as Manns (2019), explain, that the social development of learners, occurs, because of the interactions of different school levels or ecological systems.

Hung, Jamaludin, Toh, Lee, Wu and Shaari (2016), and Manns (2019), mention that ecological leaders introduce changes into an organisation or school, across the ecological levels, and are thus able to compare and contrast the different interrelated factors, which affect the successful implementation of the change. Godfrey and Brown (2018), as well as Ho, Kang and Shaari (2020), agree, that ecological leaders can utilise and maximise positive change within an organisation, by juxtaposing all the related factors across the ecological landscape. Friedel,

Cletzer, Bush and Barber (2017), as well as Ho and Tay (2020), also emphasise that ecological leadership involves the interplay of factors between the different ecological systems, within an organisation or school.

Palaiologou and Male (2017) elaborate further, that ecological leadership is a shared and communal process between leaders and followers, in an organisation or school, in which both groups co-construct leadership. The benefit of this approach, is that the talents, skills and knowledge of all workers in an organisation are utilised in a change process, rather than just those of a single leader or small isolated group of leaders. Toh *et al.* (2014) explain that ecological leadership provides an in-depth explanation, of how the enactment of innovations can be aligned, across the five systems of the ecological landscape within a school, to maximise their effectiveness.

Howard *et al.* (2019) and Hung *et al.* (2020), also suggest that the introduction of 21 CL and aligned ICT in schools, can be facilitated, if the changes are introduced across, and within all levels of the school community. Huijser *et al.* (2019) affirm, that ecological leadership involves the introduction of different innovations and advancements, across the five ecological systems, and that it also entails the management and alignment of all the interconnected factors that accompany the change. Toh *et al.* (2014) and Hung *et al.* (2020), further propose, that ecological leadership has the capacity, to not only facilitate the interpretation and enactment of 21 CL by individual schools, but also to bring about extensive and long-lasting positive development.

These authors posit, that since ecological leaders are aware of the ecological landscape of a system, they are more aware of the intertwined factors between all stakeholders in the system, and subsequently they are more adaptive at managing these cross-linked factors.

Koh and Hung (2018), and Manns (2019), agree, that the practice of ecological leadership in schools can facilitate the successful change 21 CL, and subsequently, all round improvement in the school environment, and more meaningful learning. Trach *et al.* (2018), as well as Shapira-Lishchinsky and Ben-Amram (2018), affirm, that the use of ecological leadership, when introducing change into schools, has the capacity to improve the academic performance of learners, improve teacher productivity, and create a positive school climate. Similarly, Cletzer and Tech (2020), also indicate that the use of ecological leadership can lead to improved learner performance.

3.3.1 Characteristics of ecological leaders

Ecological leaders are motivated by a philosophy of selflessness, and believe in working for the greater good and development of everybody (Howard *et al.*, 2019; Manns, 2019; Hung *et al.*, 2020). These authors suggest that ecological leaders are individuals, who are committed to introduce innovations, across the microsystem, mesosystem, exosystem, macrosystem, and chronosystem, of their own organisations or schools, but also to share these innovations with other institutions. Friedel *et al.* (2017) assert, that ecological leaders are adaptive and innovative individuals, who are at ease with the prospect of change, and are willing to assist others in coping with the change. Ecological leaders are also system driven, and they tend to lead and change their organisations, in conjunction with other organisations, which form a system, unified under a common, broad purpose or vision (Toh *et al.*, 2014; Friedel *et al.*, 2017). Ecological leaders therefore, also share beneficial operational, financial, academic and organisational changes, between ecological systems within a school, as well as between different schools within a system (Koh & Hung, 2018; Ho *et al.*, 2020).

Ecological leaders usually have work experience at higher managerial level positions, as well as at lower work positions in organisations and schools (Toh *et al.*, 2014). Koh and Hung (2018) affirm that ecological leaders, do not only originate from the highest managerial levels within an organisation or school, but from any hierarchal level. They therefore tend to have good practical and operational knowledge of both the ground levels, as well as higher departmental levels of an organisation. King and Travers (2017) explain that ecological leaders are intelligent and knowledgeable individuals, who evaluate and manage the interlinking network of ecological factors, within an organisation, to achieve realistic improvement and development. They can balance the intra-related factors and inter-related factors within an organisation, such as cultivating needed resources within one school, and then sharing these resources to other schools so that mutual partnerships can be developed. Likewise, Palaiologou and Male (2017), as well as Mpu & Adu (2021), explicate that ecological leaders manage multiple and diverse interactions between the ecological systems, which creates a complex, connected network in the work environment.

Ecological leaders tend to shift away from positional leadership, to a form of leadership that incorporates more input and collaboration from individuals in the ecological subsystems (Toh *et al.*, 2014; Ho & Tay, 2020). They are inclined to adopt a more democratic form of leadership

rather than an autocratic one. Friedel *et al.* (2017) agree that ecological leadership involves an active, cooperative partnership between followers and leaders. These authors explain that the pace of organisational change, speed of information processing, and the complexity of the work environment in the 21st century, make it impossible for a single person to successfully lead an organisation, without the insight and advice of many other individuals. Palaiologou and Male (2017), and Howard *et al.* (2019), support the pivotal role that collaboration can play in creating a productive work environment. Hung *et al.* (2016) also stress the pivotal role of collaborative human capital in introducing change into an organisation or school. Senior managers, junior managers, as well as teachers, tend to adopt a more democratic approach as ecological leaders, as they attempt to successfully diffuse innovations across the ecological levels, and bring about synergy between the subsystems of the ecological landscape (Toh *et al.*, 2014; Cletzer & Teach, 2020).

Toh *et al.* (2014), and Koh and Hung (2018) go on to explain that ecological leaders are vibrant and persuasive individuals, who can balance the dynamics between centralisation versus decentralisation, collaboration versus competition, and individualism versus communalism, which commonly arise within a school, organisation or system. They are also determined and strongminded individuals, who realise that changes or improvements within a system, will be contextually adapted according to the ecological, cultural, economic and social landscape, of an organisation or school, however, they are not deterred in their vision of broad, interconnected system development.

Friedel *et al.* (2017) mention that ecological leaders are efficient problem solvers. In solving problems that might arise during the implementation of change, ecological leaders adopt an approach based on mutual respect, and an appreciation for the importance of diversity and teamwork. Godfrey and Brown (2018) also explain that ecological leaders continually research new, innovative practical and theoretical solutions, to solve recurring problems within an organisation or school. Furthermore, Koh and Hung (2018), and Howard *et al.* (2019) mention that ecological leaders believe that learning is an ongoing process which is a lifelong journey.

3.3.2 Abilities of ecological leaders

Toh *et al.* (2014) and Manns (2019) elucidate that ecological leaders have several capabilities and aptitudes in an organisation or school. These include the ability to promote communal and shared learning, mediate between centralised directives and contextual factors, resolve differences and conflict, effectively manage resources and intellectual capital, and allow for the development of new abilities. Koh and Hung (2018) as well as Hung *et al.* (2020) also mention that ecological leaders can establish a balance between the dynamics of standardised practices versus necessary contextual procedures, and well-established norms versus essential transformations.

When introducing changes or innovations into an organisation or school, ecological leaders involve followers and stakeholders from all the ecological levels in every step of the process (Palaiologou & Male, 2017; Howard *et al.*, 2019; Manns, 2019; Ho *et al.*, 2020). These authors explain, that this complete involvement, enables the ecological leader to gain the approval and confidence of followers. This increases their levels of participation and commitment, which allows for short-term objectives and long-term plans to be made a reality. The expertise of all workers is also incorporated and employed, which facilitates the change process.

Godfrey and Brown (2018) and Huijser *et al.* (2019) explicate that ecological leaders tend to also partner with research institutions, such as universities when introducing changes into an organisation or school. In this relationship, research from the universities informs the practice within the organisation, and in turn the practices within the organisation informs the research. These authors assert that this relationship allows for the rapid identification and resolution of problems, as well as the quick adoption of positive factors associated with the organisational change. A secondary goal of this relationship, is for organisations themselves to develop a culture of research and self-improvement, amongst all followers or stakeholders. Similarly, Koh and Hung (2018) explain that one of the goals of ecological leadership is to create self-improving, research-based organisations. One of the strategies utilised by ecological leaders to achieve this goal is to establish professional development plans for all followers and teams within the organisation or school.

King and Travers (2017), Manns (2019), and Ho and Tay (2020) posit that ecological leaders can mediate the introduction of macro-policies, with micro-contextual factors in an

organisation, school or system, because they can bridge the gap in power capabilities, between the different positions in the chain of command, by establishing links between the microsystem, mesosystem, macrosystem, exosystem and chronosystem. Godfrey and Brown (2018) propose that ecological leaders can successfully introduce change into an organisation, because they actively initiate collaboration and cooperation, between the different ecological levels. Hung *et al.* (2016) also affirm that ecological leaders can unify the broad policies from upper management, with the daily practices and implementation that occurs at the ground level.

King and Travers (2017), and Howard *et al.* (2019) further mention that the collaboration between the different levels, can be increased by a greater nexus of shared skills and resources. Ecological leaders are capable of managing the inter-relationships, between the human and material resources of the different ecological systems, and they can establish a balance and synchronisation of the requirements and expectations, of the different systems. Koh and Hung (2018) agree that knowledge, skills and experience, can be shared between the different ecological systems, which facilitates the alignment of efforts, from the different ecological levels. All of these resources that have been gained from collaboration within the organisation or school, are available to all other organisations or schools within the system to utilise, as well as other institutions, from different systems, thereby fostering a culture of open and communal learning (Toh *et al.*, 2014; Cletzer & Tech, 2020).

King and Travers (2017), as well as Mpu & Adu (2021) assert that ecological leaders can communicate effectively with followers in an organisation. Likewise, Koh and Hung (2018) mention that ecological leaders utilise varied forms of communication between the different systems. As a result they can integrate information, draw conclusions and thus align the different factors from the systems, in a more effective manner, whilst simultaneously mediating disparities and conflict to achieve a more harmonious ecological network (Hung *et al.*, 2016; King & Travers, 2017; Koh & Hung, 2018). Toh *et al.* (2014) and Hung *et al.* (2020) mention that ecological leaders establish more meaningful channels of communication, between the different hierarchal levels within a system by utilising, both top down and bottom up approaches. To further facilitate communication, they also utilise official and unofficial structures, and channels of interaction between the systems. All forms of communication adopted by ecological leaders use a two-way, reciprocal approach (Palaiologou & Male, 2017; Koh & Hung, 2018).

King and Travers (2017) as well as Ho *et al.* (2020) affirm that ecological leaders have the capacity to also develop forums for communication, where professionals can share their knowledge. These forums or structures are mostly decentralised structures, such as establishing informal communication and network channels in schools, between teachers of the same discipline in different institutions, as well as extending these networking channels to outside industries and universities, to avail a greater diversity of expertise (Toh *et al.*, 2014; Ho & Tay, 2020). Palaiologou and Male (2017) mention that the varied forms of communication utilised by ecological leaders, serves to align the efforts of organisational members towards the attainment of common objectives, goals and the overarching vision.

Toh *et al.* (2014), and Cletzer and Tech (2020) explain that ecological leaders can be also instrumental in causing followers in an organisation to believe in the value of their work, and the vision of the organisation. They themselves take pride in their work, and make the sacrifices and extra effort, which creates an example for other workers to follow. In addition, Makhasane and Khanare (2018) mention that violence by learners in South African schools is becoming increasingly prevalent. These authors elucidate that ecological leaders can better understand, and resolve learner violence in schools, because they are more knowledgeable about the factors at each ecological level, which can potentially lead to school violence.

3.4 System leadership

Mowat (2018) explains that the origins of system leadership, lie in self-improving school systems, but the theory of system leadership has grown and expanded, to include all levels within any organisation. Shaked and Schechter (2017), as well as Brown and Weli (2019) mention that system leadership focuses on the development of the entire system, and the efficient inter-related functioning of its different components. Brown and Greany (2018), as well as du Plessis (2021) explicate that the basis of system leadership, is a common purpose and a shared vision, between system members, which facilitates rapid organisational and system development.

Shaked and Schechter (2017) explain that there is a growing need for system leadership, as the world faces common mammoth problems, such as climate change, destruction of nature, failing economies, deteriorating out-dated educational systems and wars. Likewise, Boylan (2018) and

Mowat (2018) explain, that the complexity of the educational sphere has also dramatically increased in the 21st century. Any hope of minimising these problems will potentially require companies, societies and governments to unite under a common vision of improvement, and subsequently to openly collaborate on platforms of trust.

The goal of system leadership is too improve all organisations or schools within the system, and then possibly to spread these developments to other systems as well (Toh *et al.*, 2014; Simkins *et al.*, 2018; Courtney & McGinity, 2020). Boylan (2018) agrees that the utilisation of system leadership, can be a key factor in determining the success of individual organisations within the system, and the system as a whole. Likewise, Bryant (2018) proposes that system leadership can be particularly useful to schools, when introducing and enacting change. Shaked and Schechter (2017) affirm, that efficient and sustainable change in the educational sphere, can be achieved with the utilisation of system leadership. The correlation with system leadership, and effective interpretation and enactment of organisational change, is also affirmed by (Mowat, 2018; Brown & Weli, 2019).

Toh *et al.* (2014) and Simkins *et al.* (2018) posit that the basis of system leadership, is also cooperation, partnerships and teamwork, which must be established on trust and openness. Senge, Hamilton and Kania (2015) assert that President Nelson Mandela is a good example of a system leader, because he was able to unite many of the different organisations, within the South African system, by developing relationships based on forgiveness, trust and collaboration. Clarke *et al.* (2014), Brown and Weli (2019), as well as Shaked and Schechter (2020) affirm, that the effectiveness of system leadership is largely determined by the level of collaboration, respectful engagement and relationships, and the shared understanding of a common purpose, amongst all educational leaders and stakeholders. Boylan (2018) and Mowat (2018) explain that self-improving systems, can be developed through professional development, partner competence and collaborative capital. Brown and Greany (2018) also agree that the basis of system leadership is open, trustworthy collaboration, between system members.

Research by Toh *et al.* (2014) and Simkins *et al.* (2018) shows that it takes a substantial amount of time, for individual organisations or schools, to plan and implement large scale and intricate transformations. In order, for organisations or schools to implement sustainable transformations more quickly, the innovations should be based on self-improving systems

(Boylan, 2018; Brown & Weli, 2019; Harris, 2020). These authors affirm that system leadership has been associated with positive organisational development, over a relatively short period. System leadership should also begin on the premise, of acceptance and engagement of the change, by individuals and organisations within the system and this should be followed by strategies of alignment, with the fundamental principles of the common goal (Clarke *et al.*, 2014; Simkins *et al.*, (2018).

Brown and Greany (2018) remark that organisations, departments or schools in a self-improving system are only guided by centralised authorities, but initiate and manage their own improvement, as well as their resources and employment practices. One of the key features of effective self-improving systems, is that the individual organisations in the system, seem to continuously monitor and adjust their plans and actions, according to the broader vision of the system (Toh *et al.*, 2014; Simkins *et al.*, 2019). Each organisation or school, within the self-improving system, has the potential to be a source of development and improvement for other organisations (Shaked & Schechter, 2017). A further benefit of self-improving systems, is that the various, different types of expertise from the individual institutions, can be shared across an open, reciprocal and trustworthy platform, resulting in an increase in the collective complexity of the system (Bryant, 2018; Harris, Jones & Hashim, 2021). These authors further explain, that this platform can also develop the collective moral purpose of individual organisations. A self-improving system is united with other systems, by common values, philosophies and directives, but is still able to maintain its individuality and uniqueness, which is termed self-referentiality (Toh *et al.*, 2014; Starr, 2021).

School groups, clusters and districts are increasingly recognising the importance of system thinking and leadership, and appear to be adopting a system approach, to the interpretation and enactment of 21 CL, by aligning schools, departments, organisational structures, resources, and curriculums, towards the common goal of educational advancement (Brown & Greany, 2018; du Plessis, 2020). When a system approach is used to implement 21 CL, the collective improvement of the system becomes the focus, and this in turn facilitates the adoption of the change, by all schools within the system. Research from many countries, suggests that there is a growing global opinion that system leadership, is a crucial and necessary component in the change to 21 CL (Harris & Jones, 2017). Clarke *et al.* (2014) and Simkins *et al.* (2018) suggest that system leadership can benefit many schools, assist in the convergence of different innovations, mediate differences and tensions, effectively utilise resources and

comprehensively manage new dynamics, that might arise from the involvement of different role players. These benefits cross over the microsystem, mesosystem, exosystem, exosystem, macrosystem and chronosystem of ecological leadership. The characterisation of system leadership, across the ecological subsystems seems to be a relatively new avenue of research (Toh *et al.*, 2014; King & Travers, 2017).

System leadership can actively promote the vital 21 CL principles of autonomous, shared and genuine learning amongst members of the school community (Toh *et al.*, 2014; Simkins *et al.*, 2018). School principals and management members can utilise system leadership to actively communicate this vision to the staff, learners and parents. In addition, Toh *et al.* (2014 and Simkins *et al.* (2018) affirm that the transition to 21 CL, can then be actively adopted by the entire school which can maximise the effectiveness of its introduction, enactment and sustainability. Mowat (2018), as well as Courtney and McGinity (2020) also suggest, that school leaders can ensure that all role players in the individual schools, within the system, share a common function, and the different actions and accompanying factors, are aligned across the five different ecological systems.

The concept of centralised-decentralisation is a very useful mechanism of system leadership in organisations such as schools (Boylan, 2018; Simkins *et al.*, 2018). Mowat (2018) maintains that principals and teachers should be primarily responsible for decisions regarding change in their respective schools, as they are closely acquainted and knowledgeable about the contextual factors of their schooling environment. However, she also affirms that there still needs to be some form of centralised participation, in order to preserve the key characteristics of the system, and facilitate coherency. Brown and Greany (2018) avow that participating schools could therefore, still remain autonomous, and be afforded a great degree of flexibility and manoeuvrability in achieving change. However, centralised authorities can still guide these changes, through common goals of teaching and learning in the 21st century, and unify the different schools to form one identity, under one system. Clarke *et al.* (2014) and Shaked and Schechter (2020) concur that schools within a system, should be locally in charge of changes regarding 21 CL, and the use of technology, but support and guidance should be offered by a centralised body.

3.4.1 Characteristics of system leaders

System leaders can arise from different ranks, within the hierarchal structure of an organisation or school, and these individuals, tend to have a common goal of ongoing personal learning and development (Boylan, 2018; Bryant, 2018; Mowat, 2018). This is supported by Harris and Jones (2017), who explain, that middle and lower managers in an organisation, can also be proficient system leaders. Toh *et al.* (2014) and Harris (2020) propose that system leaders, continually strive to learn about new developments and advancements in aspects of leadership, as well as practice how to effectively utilise them in the correct context. Brown and Greany (2018), as well as Simkins *et al.* (2018) affirm that system leaders have inquiring minds, and constantly research innovative developments related to system development. Shaked and Schechter (2017) add that system leaders are multidimensional thinkers, and they are therefore, able to contemplate issues from different standpoints, and evaluate different facets of a topic.

Senge *et al.* (2015) suggest that system leaders are dedicated and committed individuals. They understand, that to bring about positive, meaningful and sustainable system change, requires a tremendous amount of effort and sacrifice, from themselves. Brown and Greany (2018) affirm that system leaders are highly knowledgeable and skilled individuals, who are prepared to make personal sacrifices for the greater good of the system. Boylan (2018) mentions that system leaders are also highly competent individuals, with good morals and high ethical standards. Mowat (2018) affirms that system leaders possess a broader moral standard, and they are therefore, concerned with whole system development. System leaders are also cognisant, that they themselves, are part of the individual organisations, and the wider system, and are therefore, part of the present reality of systems, as well as contributors to future changes of the system (Senge *et al.*, 2015). System leaders are also emotionally intelligent people, who appreciate, that if individual people or organisations are affected by problems, then the entire system is affected by the same problems, and the system can only be improved, if the problems of all its components are addressed (Clarke *et al.*, 2014; Boylan, 2018).

System leaders are introspective, reflective thinkers and continuously adjust their thinking and actions, in order to discard what is not working, and improve on what is working within the system (Senge *et al.*, 2015; Brown & Greany, 2018; Harris *et al.*, 2021). These authors further propose that system leaders are humble and open-minded individuals. If required they can understand, and admit their own faults and shortcomings. System leaders have detailed plans

but are still flexible, and can adapt these plans with changes within the system. Senge *et al.* (2015) further explain that system leaders are accommodating individuals, who create an equilibrium between promoting their own perspectives, with listening and appreciating the views of other individuals, and organisations within the system. These are individuals who are also efficient communicators, collaborators and implementers (Toh *et al.*, 2014; Simkins *et al.*, 2018). They open their hearts to listen to others, and open their will, to depart from preconceived plans if necessary, and do what is required to resolve any problems. Senge *et al.* (2015) advocate that system leaders understand, that they need allies who have the same mind-set as themselves. They realise that they can use the leadership knowledge and experience of these confederates, to advise and assist them to overcome challenging obstacles, and optimise organisational success.

System leaders believe that changing systems, involves changing relationships and individuals responsible for shaping the system. Instead of focusing on the change itself, system leadership focusses on establishing environments, which facilitate the change (Senge *et al.*, 2015; Starr, 2021). Systems leaders thus construct a space in the system, where transformation can take place. In this space, system leaders engage all concerned individuals, or organisations within the system, which results, over time, in the development of a combined acumen. This combined acumen has the potential to foster new avenues of thinking and behaving, as well as formulate innovative solutions to complex problems within the system (Brown & Greany, 2018). System leaders again acknowledge the importance of predetermined plans for change, but also appreciate that there needs to be an equilibrium, between these plans and the creation of a space for change, discussion and collaboration (Bryant, 2018).

Senge *et al.* (2015) go on to mention that system leaders use different tools, which enable them to appreciate the whole system, share this appreciation with others, encourage reflection and discussion, and establish spaces for change and collaboration. One of the tools that system leaders use to appreciate the complexity of the entire system is system mapping. System mapping involves representatives, from all organisations or schools, within the system coming together and discussing their views, perspectives, contextual dynamics, and potential plans, in relation to the overarching vision of the system. System mapping thus, allows all stakeholders access to information about the entire system, and directs their attention to factors that might not be very evident, in their specific domain within the system.

System leadership also uses peer shadowing to encourage reflection and discussion (Senge *et al.*, 2015; du Plessis, 2021). Peer shadowing involves individuals visiting different organisations, or schools within the system, and spending quality time, learning about the diverse aspects, unique to their peers respective work environments. Like system mapping, peer shadowing enables individuals to attain an in-depth, personal and professional understanding, of other components within the system, and this in turn, develops an appreciation for the ideology of, strength in diversity, and subsequently great unification. In addition, peer shadowing can resolve misconceptions and foster a better insight, into the reasoning and motivation behind people's thinking processes, decisions and actions.

Senge *et al.* (2015) and Harris (2020) explain that the third tool that system leadership utilises, is the harnessing of the combined acumen, for the creation of interesting common goals and long terms visions. In a system, there is usually a disparity between the present prevailing conditions and the envisaged future situations. In order, to bridge the gap between the two environments, system leaders endeavour to congregate individuals at conferences, where everyone contributes to the formulation of the goals and vision for the future, as well as plans on how to achieve these desired outcomes. In this manner, system leaders utilise the wisdom and expertise of numerous individuals within the system, to generate strategies to achieve a common vision, which is beneficial to everyone (Simkins *et al.*, 2018). Senge *et al.* (2015), and Courtney and McGinity (2020) explain that this approach, assists in moving organisations from only formulating short term reactionary solutions to immediate problems, to the creation of progressive plans for the future.

3.4.2 Abilities of system leaders

System leaders can achieve structural alignment within a system, by establishing structures across the ecological landscape of organisations, which facilitate social interaction, partnerships, reflection, and proficiency (King & Travers, 2017; Bryant, 2018; Brown & Weli, 2019; Shaked & Schechter, 2020). In schools, this could be achieved in the macrosystem, by representatives of the centralised body addressing school leaders, with respect to overarching goals, ideologies and support structures. Structural alignment in the mesosystem can be strengthened, by arranging meetings or forums, between the relevant teachers or leaders from the different participating schools, so that they can discuss different innovations of change and

professional development, as well as to share resources. School leadership could also provide teachers with ICT support, as well as sites for the storage of collaborative capital. In the exosystem, school leaders could engage universities to provide enrichment sessions to teachers. The underlying purpose of establishing, all of these platforms and structures, is to promote a culture of improvement, and achieve meaningful change. It is therefore, very relevant to the interpretation and enactment of 21 CL. Structural alignment could also be accomplished by programmes of professional development, as well as policy development, which penetrate through all the subsystems, and levels, of the school or institution environment (Boylan, 2018). Boylan (2018), as well as Brown and Weli (2019) explicate that system leaders can increase efficiency and productivity, within organisations in a self-improving system, because they communicate clear guidelines with definitive outcomes, and suitable timelines, to the followers in the organisation. This communication is multi-directional, and allows for effective and consistent communication, between all organisations, and individuals in the system (Mowat, 2018; Shaked & Schechter, 2020). Brown and Greany (2018), as well as Simkins *et al.* (2018) elucidate, that initially establishing effective channels of communication, between system members can be a challenge, but system leaders still begin this process early, because they are cognisant of the fact, that system success, is dependent on effective communication. These channels of communication involve the system leaders personally meeting with all followers, within their respective organisations in the system. Mowat (2018) adds, that the content of these meetings, should cover the following important aspects regarding organisational change: the overarching vision, input and buy in of followers, methods of interpretation and enactment, monitoring, analysis of progress, and feedback.

Harris and Jones (2017) also suggest, that this could practically take the form of individual schools, presenting short reports at cluster meetings, or seminars at conferences, which focus on resources, designs and approaches to change programmes. Clarke *et al.* (2014) concur with the above authors, and mention that these opportunities allow individual schools in the system, to frame their pedagogical advancements and digital innovations, within the context of the system, province, country, and globally. However, these presentations by school leaders should be well constructed in terms of the vision, objectives and plans, as well as non-prescriptive and flexible, to allow the different schools in the system, to contextualise their approaches to 21 CL, according to their own limitations and needs (Brown & Greany, 2018). Toh *et al.* (2014) affirms that innovations introduced into a self-improving system, must have unifying and overarching goals and values, but should still allow for varied pedagogical adaptations.

By communicating effectively, with followers in individual organisations, as well as the wider system, system leaders are also able to share their system's vision of the common good (Mowat, 2018; Simkins *et al.*, 2018; Brown & Weli, 2019). Senge *et al.* (2015) explain that system leaders appreciate diverse views of individuals, which are very dissimilar to themselves because they intentionally listen to others, and try to understand the world from their perspective. In doing so, they create relationships built on openness and trust. System leaders have the capacity to envisage the bigger system (Clarke *et al.*, 2014; Senge *et al.*, 2015; Simkins *et al.*, 2018). Individuals usually see, only those aspects of the system, that are relevant or beneficial to them, and as a result, conflict arises around who has the correct perspective. System leaders can communicate and show individuals all the different interrelated aspects of the system, and they then can appreciate the more complex problems, which they can jointly solve through collaboration (Shaked & Schechter, 2017; Simkins *et al.*, 2018; Brown & Weli, 2019; Harris, 2020). In this manner, this improves the entire system and not just individual organisations.

Self-improving systems have the ability to interact and integrate so effectively, that they can produce innovations which are different from the changes which initiated the system (Toh *et al.*, 2014; Harris *et al.*, 2021). System leaders have the capacity to harness these innovations, and disseminate them throughout the system. However, self-improving systems might have the tendency to increase inequality if driven by selfish interests (Clarke *et al.*, 2014; Simkins *et al.*, 2018). To prevent this from occurring system leaders formulate deliberate actions within the system, which promote alliances between schools already within the system, and other schools, which are in need of development or improvement (Boylan, 2018; Simkins *et al.*, 2018). These authors therefore, affirm that leaders of self-improving organisations, must have a universal perspective of transformation, to facilitate widespread and sustainable change.

Schools within a system, that are at the forefront of 21 CL and ICT aligned advancements, should be socially responsible, and share their successful strategies with schools that are still struggling with the challenges of change. Brown and Greany (2018) mention that system leaders play a crucial role in putting measures into place, which assist better performing schools to fulfil this moral obligation. These measures are not static but rather constantly changing according to the needs of the system, and they are timeously implemented to achieve maximum system development (Toh *et al.*, 2014; Simkins *et al.*, 2018). The proactive and deliberate actions of system leaders, also serve to reduce competition and promote collaboration, amongst

organisations in the system (Brown & Greany, 2018). This is an important contributing factor to the effectiveness of system leadership.

In order, to further facilitate collaboration, Boylan (2018) and du Plessis (2020) mention that system leaders establish many, varied channels or platforms, where followers in an organisation, can freely share, discuss and collaborate on their work experiences. Mowat (2018) and Simkins *et al.* (2018) mention that effective and consistent collaboration, between organisations in a system, is one of the pillars of productive system leadership. System leaders assist schools within a system, to operate as open institutions, which share improvements in an atmosphere of communal learning (Harris & Jones, 2017; Brown & Greany, 2018). Shaked and Schechter (2017), as well as Brown and Weli (2019) affirm that system leaders actively promote open, equitable and trustworthy collaboration, by organisations within the system. This could take the form of regular cross-pollination meetings between followers from different organisations, within the system. To further enhance collaboration between schools in a system, system leaders can forge strong relationships with university researchers (Toh *et al.*, 2014; King & Travers, 2017; Courtney & McGinity, 2020).

Toh *et al.*, (2014) and King and Travers (2017) also explain, that system leaders encourage researchers to establish on site research centres, which can analyse the implementation of innovations, and provide quick feedback to leaders from the different organisations, which facilitates increased productivity. Besides providing feedback, the universities can also use these platforms, to encourage school leaders to discuss their views and opinions about change, which could culminate in a more universally accepted perspective of change. Brown and Greany (2018), and Shaked and Schechter (2020) affirm that schools that are engaged with research, show greater levels of improvement and professional development. These authors also explicate that system leaders actively provide resources, and establish structures to facilitate research within the system. Similarly, Boylan (2018) mentions that to facilitate change, system leaders attempt to develop a culture of research, and professional learning communities in their organisations and systems.

System leaders further foster teamwork and cooperation, by arranging meetings of key players, from the different schools, at crucial junctures in the change process, so that they share ideas and support each other (Toh *et al.*, 2014). In each school, teachers, subject heads and principals, could also collaborate about problems and solutions regarding 21 CL, and in the process

develop a social network (Clarke *et al.*, 2014; King & Travers, 2017). System leaders maintain high levels of collaboration, by keeping the individuals within the organisation, interested and motivated. In order, to achieve this, system leaders establish a well-defined vision, convey this vision clearly to participants in the change process, and clearly outline the respective benefits of the change to all role players (Toh *et al.*, 2014; Simkins *et al.*, 2018; Starr, 2021). In addition, system leaders establish a balance between developing the system in its entirety, and still addressing the needs of the individual schools (Brown & Greany, 2018).

System leaders promote reflection and proactive discussions, which build the skills, erudition and competence of followers, within the system (Mowat, 2018). Profound reflection involves evaluating and assessing our thoughts, statements and actions. Senge *et al.* (2015) emphasises that this is a crucial initial phase that individuals must undergo, before they can understand and appreciate the beliefs and opinions of others. System leaders can also change the mind-set of individuals and organisations, from being reactive when developing solutions, to being proactive and creating sustainable strategies to attain their long-term goals and vision (Brown & Greany, 2018). These authors suggest that system leaders emphasise that organisations and systems, do not have to wait for problems to occur, before designing solutions. Rather, system leaders encourage individuals and organisations within the system, to communicate and collaborate about present situations, possible desirable future conditions, and how to develop innovative strategies to reconcile the two. Shaked and Schechter (2017) affirm that system leaders, can cause followers within the system, to shift their focus from individual organisational development and short-term goals, to overall system development and long - term strategies.

Harris and Jones (2017) as well as Bryant (2018) mention that system leaders are powerful mediators, who can effectively simplify, integrate and enact policies of transformation by centralised authorities, into the daily practices of followers at the ground level of a school, whilst still managing their concerns and difficulties. They can establish an equilibrium between the requirements of the macrosystem, with the contextual needs of the microsystem (King & Travers, 2017; du Plessis (2020). Boylan (2018) also mention that system leaders can arbitrate for equity and fairness within the working environment. System leaders also utilise the strengths and weaknesses of all stakeholders and followers in the transformation process (Toh *et al.*, 2014). Bryant (2018) suggests that system leaders, are also capable of reuniting divided

departments within a system or school, as well as integrating short term reactionary plans with long-term strategies.

System leaders are dedicated individuals, who can lead within their own organisations, but who also interact with the broader context of change (Boylan, 2018; Courtney & McGinity, 2020). Shaked and Schechter (2017) agree that system leaders can be viewed as organisational leaders, who are actively involved in achieving change, within and beyond, their own organisations. This interaction can be an important factor in achieving meaningful organisational change. Clarke *et al.* (2014) and Starr (2021) explain that the main attribute of a system, is the degree of interaction of the different system components. These authors affirm that system leaders can change, improve and mentor other schools, besides their own, even those facing major obstacles. System leaders appreciate the broader context of change, and facilitate the interaction amongst various self-improving organisations in the system. In this process, system leaders effectively manage any tensions that might arise between the system components, and foster a climate of positive development (Toh *et al.*, 2014; Shaked & Schechter, 2020). Boylan (2018) mentions that system leaders share their commitment to improvement with followers, within the different organisations, and can increase their level of participation in the change, within their own organisations as well as others, within the system.

After organisations within a system have successfully adopted innovations, according to their unique contexts, system leaders then design strategies of diffusion, where improvements and resources can be shared with other organisations, from other systems (Toh *et al.*, 2014; Harris *et al.*, 2021). Shaked and Schechter (2017) further explain, that system leaders not only focus on how innovations can be shared with other systems, but also on the sustainability of these innovations, once they are shared.

3.5 Transformational leadership

Hasija, Mehtani and Mehtani (2020) explain that transformational leadership is necessary, when an organisation or school, experiences a radical change in its ideologies and practices. Transformational leadership is an approach, that is characterised by change and reform of all individuals, relationships and structures, within the organisation or school environment, as well as affiliated structures outside the organisation (Quin, Deris, Bischoff & Johnson, 2015;

Ninkovic & Floric, 2018; Starks, 2018; Ismail & Mydin, 2019; Lee & Kuo, 2019; Ndiritu *et al.*, 2019; Zengin & Akan, 2019). Ibrahim, Ghavifekr, Ling, Siraj & Azeez, (2014), as well as Muhindi, Ngui & Awuor (2020) agree, that the focus of transformational leadership is to challenge and change present systems, to new more effective ones, and to motivate followers to pursue a different vision, which has potential benefits for the individual, and the organisation.

Starks (2018), Ismail and Mydin (2019), Lee and Kuo (2019) and Lyonga (2019) affirm, that the focal points of transformational leadership, are involving followers within an organisation in a significant process of change, with the goal of attaining a new envisaged future. Similarly, Anderson (2018) and Okoth (2018) explicate that transformational leadership changes, both the thinking and actions of followers, within an organisation, as well social and physical structures. Munir and Aboidullah (2018), as well as Zengin and Akan (2019) elucidate that transformational leadership motivates and prepares followers, within an organisation, for change and it can increase organisational productivity.

Okoth (2018) and Ndiritu *et al.* (2019) add that transformational leadership involves an interactive relationship, between the leader and followers in an organisation, as they embark on a journey of positive change. Similarly, Niessan, Mader, Stride and Jimmieson (2017) affirm, that the foundation of transformational leadership, is the multifaceted, innovative and purposeful interaction, between leaders and followers, which is vision driven. Allen, Grigsby and Peters (2015), Starks (2018), as well as Lyonga (2019) further acquiesce, that transformational leadership increases follower commitment, and unites all followers in an organisation, under the tenets of one common vision.

Sun and Henderson (2017), Ismail and Mydin (2019), Lee and Kuo, 2019, as well as Zengin and Akan (2019) explain that transformational leadership, strives to create a culture of collaboration in the workplace, decisively use information on follower performance, and determinedly involve external partners. These authors also mention, that some of the benefits of transformational leadership, to an organisation, include increased job satisfaction, improved standards of work, and higher levels of collaboration. Starks (2018), and Kitur, Choge and Tanui (2020) reiterate, that transformational leadership stimulates the personal growth of followers, which leads to better work attitudes and this fosters organisational improvement.

The change to 21 CL, by schools and educational systems, is a major shift in philosophy and operations, and could therefore be facilitated by the application of transformational leadership (Lyonga, 2019; Zengin & Akan, 2019). The change to 21 CL, could also be expediated by transformational leadership, because it has the potential to unify individuals under a collective vision (Hussain *et al.*, 2016; Munir & Aboidullah, 2018; Ismail & Mydin, 2019; Ndiritu *et al.*, 2019; Zengin & Akan, 2019; Anthony & Hermans, 2020). Anderson (2018) and Starks (2018) mention that transformational leadership, is also relevant to 21 CL, because it can reassure, inspire, assist, and galvanise followers when change is implemented. Research by Quin *et al.* (2015) and Lyonga (2019) affirm that transformational leadership, can revolutionise the thinking and behaviours of individuals, within an organisation when change is enacted, and it is therefore, crucial to any restructuring process. These authors, further explain that principals of schools, which produce good results, use principles of transformational leadership in their practice, more frequently than those principles in schools which produce poor results.

Anderson (2018), Starks (2018), as well as Rahman, Nor, Wahab and Suliman, (2020) affirm, that the utilisation of leadership practices, including those that are transformational in nature, are positively correlated, with increased learner achievement, improved teacher involvement, as well as more efficient all-round school management. Research by Nyenyembe, Maslowski, Nimrod and Peter (2016), of secondary schools in Tanzania, further affirms this relationship, by suggesting that effective transformational leadership, improves employment satisfaction, which in turn increases the productivity of the teaching and learning process.

Research by Ibrahim *et al.* (2014), as well as Ninkovic and Floric (2018) also positively correlates the use of efficient transformational leadership practices, with greater teacher dedication and devotion to their profession, as well as improved learner performance. These authors, also propose that transformational leadership provides principals, with the theoretical knowledge and practical skills, which are necessary for them to navigate their duties, in the new, changed and modern educational environment. The positive correlation, between teacher job satisfaction and improved learner outcomes, with the utilisation of transformational leadership by school management, is further substantiated the research of secondary schools in Somalia and Cameroon (Ali & Dahie, 2015; Lyonga, 2019).

Research by Allen *et al.* (2015), of school principals in Texas, together with research by Zengin and Akan (2019), of schools in Turkey, further substantiate the view that there is a link between

the use of transformational leadership, and the development of a positive school climate, teacher job satisfaction, and convalescence efforts within schools. Okoth (2018), as well as Ndiritu *et al.* (2019) affirm, that the utilisation of transformational leadership, by principals in Kenyan secondary schools, strengthens the school culture, climate and entire school environment. Likewise, the research by Berkovich and Eyal (2017), of schools in Israel, links transformational leadership, to substantial and sustained whole school improvement. Research of schools in Malaysia, Taiwan, and America, also promote the correlation between transformational leadership, and significant, positive school development and progress (Starks, 2018; Ismail & Mydin, 2019; Lee & Kuo, 2019).

3.5.1 Characteristics of transformational leaders

Transformational leaders are effective managers of the instructional program, who can efficiently monitor, evaluate, and modify, the teaching and learning process (Hussain *et al.*, 2016; Starks, 2018; Lee & Kuo, 2019; Zegin & Akan, 2019; Cansoy, 2020). Okoth (2018) affirms, that transformational leaders, possess the knowledge and expertise, to implement and sustain productive instructional programs. Similarly, Ninkovic and Floric (2018) mention that transformational leaders, are competent managers, who continually improve the aspects of the instructional program, such as staffing, curriculum content and resources. They are also researchers, who identify the changes that happen globally, as well as nationally, and can introduce these changes, into an organisation, while still considering the contextual factors of the institution (King & Travers, 2017; Ismail & Mydin, 2019; Lee & Kuo, 2019; Zengin & Akan, 2019).

Transformational leaders are alluring and captivating individuals, who can convince followers in an organisation or school, to believe in their romanticised vision (Ibrahim *et al.*, 2014; Niessan *et al.*, 2017; Starks, 2018; Thomas, Tuytens, Devos, Kelchtermans & Vanderlinde, 2018; Lee & Kuo, 2019; Ndiritu *et al.*, 2019; Zengin & Akan, 2019). They are individuals who stand out in a crowd, and are not afraid to air their views, and share their opinions. They are charismatic people, who can influence a group of individuals, to adopt their way of thinking (Allen *et al.*, 2015; Anderson, 2018; Ismail & Mydin, 2019; Lyonga, 2019; Li & Liu, 2020). Nyenyembe *et al.* (2016) and Lyonga (2019) further explain, that transformational leaders have strong personalities, and they can therefore, voice their opinions with authority, and sway an

audience, in their favour, but still be accommodating and understanding, of the views of others. Munir and Aboidullah (2018) concur, that transformational leaders are mesmerising, charming and persuasive individuals, who can convince followers, of the merit of striving towards their broader vision. Okoth (2018) affirms that transformational leaders are enthralling individuals, who pass on their enthusiasm, for their vision onto followers. Ali and Dahie (2015) reiterate, that the inspirational character of transformational leaders, is pivotal to their success, at changing and enhancing organisations.

Transformational leaders are effective communicators (Nyenembe *et al.*, 2016; Starks, 2018; Lee & Kuo, 2019; Zengin & Akan, 2019; Prasetia, Melfayetty & Dewi, 2020). Munir and Aboidullah (2018) agree that transformational leaders, can clearly convey the objectives, vision, ideologies, and values of the organisation, to the followers. Ibrahim *et al.* (2014), Ismail and Mydin (2019), together with Lyonga (2019) agree that transformational leaders are excellent speakers, and listeners and being proficient conversationalists, they are able to communicate efficiently with their followers. Allen *et al.* (2015) substantiate this view, by explaining that transformational leaders, can articulate their plans and visions to their followers, in a coherent and succinct manner. Similarly, Okoth (2018) affirms that transformational leaders, are efficiently articulate, and convey their thinking and reasoning to their followers.

Nyenembe *et al.* (2016) and Starks (2018) mention, that transformational leaders tend not to micromanage, and they afford followers enough independence, to execute their duties in a professional manner without interference. They also tend to be more democratic in their approach to leadership, and to foster open and transparent avenues of communication. Allen *et al.* (2015) and Lyonga (2019) also suggest, that the decisions taken by transformational leaders, involve a participative and collective approach. Hussain *et al.* (2016), Lee and Kuo (2019) and Ndiritu *et al.* (2019) concur, that transformational leaders have two-way communication channels, between themselves and followers, especially when discussing plans, goals and new visions. Similarly, Ali and Dahie (2015), as well as Ismail and Mydin (2019), explicate that transformational leaders have a variety of communication platforms, with which to engage their followers in two-way communication.

Okoth (2018) and Sabwami *et al.* (2020) agree, that transformational leaders do not use a top-down approach to communication, but rather lateral forms of communication, which are based

more on partnerships, between individuals, where everyone has a chance to contribute to discussions. Furthermore, Thomas *et al.* (2018) and Starks (2018) mention that lateral forms of communication, and bottom-up communication are crucial tools which assist the transformational leader, in unifying the actions of followers, at the ground level, with the common vision of the organisation. Ninkovic and Floric (2018) together with Lee & Kuo (2019) mention, that this increases the levels of engagement of followers, within an organisation, and increases the pool of available knowledge, experience and expertise. These authors also mention, that this approach to communication, establishes a positive climate in the workplace, which is based on mutual respect and trust. Sun and Henderson (2017) as well as Hermans (2020) further explicate, that this ethos, can also facilitate teamwork and cooperation amongst followers.

Starks (2018), Lee and Kuo (2019), Ndiritu *et al.* (2019), and Hasija *et al.* (2020) propose that transformational leaders are emotionally intelligent individuals, who take the individual requirements of followers into consideration. Munir and Aboidullah (2018), as well as Ismail and Mydin (2018) agree that transformational leaders listen to, and deliberate on the individual requests of followers, because this strengthens the trust relationship between the two parties. Thomas *et al.* (2018), as well as Zengin and Akan (2019) further affirm, that transformational leaders, show sincere concern for the individual needs of followers. Ali and Dahie (2015) affirm, that transformational leaders are more people-centred and less task-centred. Anderson (2018) advocates, that transformational leaders are more democratic, than autocratic in their leadership approach, and this strengthens the emotional ties with followers in an organisation, which can lead to greater collaboration.

Quin *et al.* (2015), Starks (2018), Lee and Kuo (2019), as well as Muhindi *et al.* (2020) suggest that transformational leaders, are emotionally intelligent leaders, who can develop relationships, based on trust, with other members of staff, and this subsequently establishes a united and cheerful school environment. Transformational leaders tend to focus on increasing the dignity, self-respect, self-confidence, and pride of followers (Nyenembe *et al.*, 2016; Lyonga, 2019). Transformational leaders achieve this, by crediting the accomplishments of followers, and actively engaging them in the making of major decisions, in the organisation or school (Ismail & Mydin, 2019; Zengin & Akan, 2019; Kitur *et al.*, 2020). This all-round personal development, increases job gratification and tends to improve the commitment and

work levels of followers, within the organisation (Ali & Dahie, 2015; Sun & Henderson, 2017; Starks 2018; Lyonga, 2019).

Hussain *et al.* (2016) together with Lee and Kuo (2019) also suggest, that transformational leadership addresses issues of improving perceptions of self-worth, and self-image, because the perceptions that individuals have of themselves, can directly affect their levels of performance. Allen *et al.* (2015), and Anthony and Hermans (2020) similarly explain, that transformational leaders tend to also delegate crucial responsibilities to followers, and show a high degree of confidence in them, which again serves to build them emotionally, and facilitates a better work ethic. Likewise, Berkovich and Eyal (2017), Ismail and Mydin (2019), together with Zengin and Akan (2019) elucidate that transformational leaders are empathetic and caring individuals, who can effectively identify and interpret the emotions of followers, within an organisation. They then, actively manage the emotional well-being of followers in the work environment, by introducing measures to reduce stress and conflict, and which promote harmony and tranquillity (Niessan *et al.*, 2017; Starks (2018); Lyonga, 2019; Ndiritu *et al.*, 2019).

Ibrahim *et al.* (2014), Starks (2018), Lee and Kuo (2019) and Lyonga (2019) mention that transformational leaders are stimulating instigators, who motivate followers to not only achieve their personal vision, but to be more ethical and accountable. Likewise, Hussain *et al.* (2016), Ismail and Mydin (2019), and Zengin and Akan (2019) assert that transformational leaders are inspirational individuals, who can motivate followers, to not only improve their practices, but also to improve their moral standing and ethical frameworks. Sun and Henderson (2017), as well as Ndiritu *et al.* (2019) affirm that transformational leaders, encourage followers to shift their focus from only personal gain, to higher-order beliefs, such as the greater good of organisational improvement. Furthermore, Anderson (2018), Starks (2018), as well as Lyonga (2019) also propose, that transformational leaders, also purposefully develop the ethical and moral character of followers. Munir and Aboidullah (2018), Lee and Kuo (2019), as well as Rahman *et al.* (2020) agree that transformational leaders, motivate and inspire followers, by taking on the responsibility of being role models with high ethical standards.

In addition, Nyenyembe *et al.* (2016) and Cansoy (2020) explicate that transformational leaders can motivate followers, to not only value their own needs, but also to value the needs of the organisation. This can increase collaboration between stakeholders because it can cause

stakeholders to understand, that although the interests of individuals might differ, the vision shared by everyone, within the organisation might be the same (Sun & Henderson, 2017; Lyonga, 2019). This has the potential, not only to achieve the organisational objectives, but also to produce long lasting quantifiable change. Ibrahim *et al.* (2014) agree that transformational leaders encourage followers, to not only focus on themselves, but to be interested in the plans and aims of the organisation, as well as their own individual goals. Berkovich and Eyal (2017) and Starks (2018) concur that transformational leaders enlighten followers, to go beyond being self-driven, and rather to be conscious of the development of others within the group, or organisation, as well as the progression of the organisation itself. Hussain *et al.* (2016), and Li and Liu (2020) concur, that transformational leadership can firstly assist followers in establishing realistic personal goals, and then aligning these goals with the vision of the organisation. Thomas *et al.* (2018), and Lee and Kuo (2019) also mention that transformational leadership can assist followers, in understanding the context of the goals of other individuals, within the organisation.

Allen *et al.* (2015) and Ismail and Mydin (2019) further explain, that transformational leaders can inspire their followers, to change their mind-set and actions, and to completely align themselves, with the new vision of the leader. Similarly, Okoth (2018) affirms that transformational leaders motivate followers in an organisation, to move beyond being purely self-centred, to be more community orientated, and to appreciate the broader vision of the organisation. Similarly, Ninkovic and Floric (2018) affirm that transformational leaders are experts, in inculcating the ideal of wider organisational progress, amongst followers. Furthermore, Thomas *et al.* (2018) propose, that principals can motivate teachers who are beginning their careers, by addressing their basic human needs such as independence, proficiency and kinship, through communication, assistance and advice. As a result, younger teachers would feel less stressed, and more secure in their profession, and the levels of teacher attrition could be reduced.

3.5.2 Abilities of transformational leaders

Quin *et al.* (2015), Starks (2018), together with Lyonga (2019) mention that transformational leaders, can also design goals, increase the participation and competence of staff, restructure the school environment, as well as administer the curricular program. Sun and Henderson

(2017), together with Lee and Kuo (2019) explain that transformational leaders build the positive ethos of the institution, by consistently highlighting achievements, whilst underpinning accepted principles and ethics. Okoth (2018), Ismail and Mydin (2019), Lee and Kuo (2019), Zengin and Akan (2019), and Prasetia *et al.* (2020) explain, that there are five core abilities of transformational leaders. These are stimulating a collective vision, leading and directing the way forward, contesting present activities, facilitating participation by others, and attending to the emotional aspects of followers.

Quin *et al.* (2015), Starks (2018) and Lyonga (2019) explain, that the development of a communal vision, allows all individuals to be directly involved in planning and decisions, and followers are therefore more inclined to meet the goals of the organisation. Ninkovic and Floric (2018), Ismail and Mydin (2019), as well as Lee and Kuo (2019) elucidate that the fostering of a common vision amongst followers, is a key ability of transformational leaders. Ibrahim *et al.* (2014), as well as Zengin and Akan (2019) mention the development a common vision, can also lead to a sense of belonging or community. Hussain *et al.* (2016) and Sabwami *et al.* (2020) affirm, that the followers, tend be more active in the change process, if their input is considered in forming the vision of the organisation, because they feel that their contribution is acknowledged and valued.

Sun and Henderson (2017), as well as Lee and Kuo (2019) add that a common vision amongst followers in an organisation, increases commitment, work ethic and collaboration. A shared vision, also allows staff to be more knowledgeable about available resources, which results in more efficient use of them (Starks, 2018; Zengin & Akan, 2019). In addition, a collective vision allows staff to critically analyse current teaching and learning processes, and to provide educated, critical and constructive feedback, on present activities within the organisation (Quin *et al.*, 2015; Lyonga, 2019; Hermans, 2021). A collective vision, also enables individual aims, plans and ambitions, to be aligned under one unified purpose, for the greater good of the organisation (Allen *et al.*, 2015; Ismail & Mydin, 2019; Lee & Kuo, 2019; Ndiritu *et al.*, 2019; Zengin & Akan, 2019).

These authors further explain, that the development of a common vision concentrates all actions and resources, on the enhancement of the organisation, as a whole and maintains the focus on academic excellence. It can also establish a positive working environment, and inspire followers, to increase their levels of commitment and proficiency. Ibrahim *et al.* (2014) and

Starks (2018) affirm, that the establishment of a common vision, by transformational leaders, can revitalise and stimulate teachers, to continually professionally develop. Okoth (2018) and Hasija *et al.* (2020) further explain, that a transformational leader can develop a common vision, by actively sharing his or her captivating envisaged future with followers, enlightening followers about new trends and developments that affect the work environment, intricately explaining how all the followers benefit by attaining the common vision, and sincerely communicating a deep appreciation for all the work done by them.

Okoth (2018), Starks (2018), Lee and Kuo (2019), together with Zengin and Akan (2019) explain that transformational leaders, direct the pathway forward, by firstly establishing a well-defined set of ethics and beliefs, for individuals within the organisation to follow. Ninkovic and Floric (2018) as well as Ndiritu *et al.* (2019) mention that transformational leaders, not only actively communicate these ideals to their followers, but also follow them when executing their own work-related duties. Similarly, Munir and Aboidullah (2018), Ismail and Mydin (2019), as well as Muhindi *et al.* (2020) elucidate, that transformational leaders, actively and purposely behave as role models, who utilise inspirational strategies, to improve the morale of followers within the organisation.

Likewise, Allen *et al.* (2015) and Lyonga (2019) also point out, that transformational leaders, set and follow, the moral and ethical standards within the organisation. Hussain *et al.* (2016) also explicate, that transformational leaders, clearly lay out the path and direction, in terms of ethical frameworks, and actual work-related strategies, for followers to pursue. Similarly, Sun and Henderson (2017) affirm, that transformational leaders, place the ethical development of their followers, as a top priority, in their list of duties. Nyenyembe *et al.* (2016) and Lyonga (2019) elucidate, that transformational leaders, are also the first to sacrifice, and action difficult decisions, so that they can show their followers, that they believe in their cause. Munir and Aboidullah (2018), as well as Ismail and Mydin (2019) explain that this potentially builds, both credibility and loyalty, with followers in a school, and they therefore, venerate, and tend to follow transformational leaders more readily.

Ibrahim *et al.* (2014) together with Zengin and Akan (2019) concur, that transformational leaders, behave and act, according to the same belief systems, that they profess, and they are therefore, revered and esteemed by their followers. Niessen *et al.* (2017) also mention that followers emulate the behaviour of transformational leaders, thus creating a positive ethos in

the workplace. Hussian *et al.* (2016), as well as Sun and Henderson (2017) concur, that the act of transformational leaders, leading by example, is a strong incentive, for followers to respect and follow them. Anderson (2018), Ismail and Mydin (2019), and Lee and Kuo (2019) affirm, that the ethical behaviour of transformational leaders, together with them being prepared to make personal sacrifices first, causes followers to admire, respect, trust, and whole-heartedly obey them.

Allen *et al.*, (2015) and Kitur *et al.* (2020) mention that followers closely monitor the behaviour of their leaders, and if they feel that the behaviour of their leaders is lacking, then the trust that they have in them, is reduced and this can lower levels of participation and loyalty. Conversely, these authors add, that if followers perceive the behaviour of their leader in a positive light, this increases their view of the organisational climate, and fosters greater participation. Munir and Aboidullah (2018) explain, that as role models, transformational leaders, establish a community of trust and respect, in the work environment, which facilitates change, and the adoption of a shared vision.

Quin *et al.* (2015), Lee and Kuo (2019), as well as Ndiritu *et al.* (2019) elucidate that transformational leaders challenge existing thought processes, and ways of doing things, with the goal of experimenting with new innovative ideas and practices, which could possibly result in more effective functioning of the organisation. King and Travers (2017), as well as Zengin and Akan (2019) mention that transformational leaders, challenge the status quo within organisations, and actively promote change, improvements and progress. Munir and Aboidullah (2018) mention that there have been rapid and far reaching digital, social and cultural changes in the 21st century. Transformational leaders prime their followers, to accept and manage change, by challenging present norms and practices, and encouraging novel, ground breaking thinking, and approaches (Starks, 2018, Ismail & Mydin, 2019; Zengin & Akan, 2019; Anthony & Hermans, 2020). In schools, they therefore, encourage their followers to be creative, learn new skills, such as new teaching methods, introduce new mind-sets to learning processes, make errors and action their ideas (Allen *et al.*, 2015; Lyonga, 2019).

Ibrahim *et al.* (2014) also agree, that transformational leaders continually inspire the originality, imagination and inventiveness of followers, by exposing them to global advancements in education. Sun and Henderson (2017), accompanied by Lee and Kuo (2019) elucidate, that transformational leaders communicate to followers, that disappointments and

mistakes are acceptable in the work environment, as they form crucial points of learning, on the journey towards success. Anderson (2018), as well as Ismail and Mydin (2019) add that transformational leaders can also challenge the status quo, by they themselves continually researching new ideas, and practices, to improve the organisation. Hussain *et al.* (2016) and Rahman *et al.* (2020) affirm, that transformational leaders are constantly reforming, restructuring and remodelling present systems, to enhance the productivity, within an organisation. Likewise, Ninkovic and Floric (2018) explicate that transformational leaders are agents of change, who expose their followers to ingenious and inventive developments, on an ongoing basis. Similarly, Niessan *et al.* (2018) and Thomas *et al.* (2018) explain that transformational leaders expose followers to change, to develop their intellect, and foster ingenuity and problem-solving abilities. Furthermore, Sun and Henderson (2017) affirm, that transformational leaders, constantly urge followers to experiment with new methods and tactics in the workplace, in order to realise increased levels of productivity.

That fourth core ability that Okoth (2018) elaborates on, is that of causing others to act. Starks (2018), Lee and Kuo (2019), Ninkovic and Floric (2018), and Ndiritu *et al.* (2019) mention that transformational leaders, firstly establish progressive working environments in organisations, which are built on ideals of cooperation, collaboration, as well as trust. Ibrahim *et al.* (2014), Ismail and Mydin (2019) and Lyonga (2019) agree, that the ethos and environment of a school, can be developed positively, by fostering the values of mutual respect and partnerships. In these environments, followers feel more confident to introduce change, and this leads to greater participation and involvement (Lee & Kuo, 2019; Zengin & Akan, 2019; Li & Liu, 2020). In organisations such as schools, this could result in enhanced performance, by both teachers and learners (Anderson, 2018; Starks, 2018; Ismail & Mydin, 2019; Lee & Kuo, 2019). Followers also feel secure, to move beyond the realm of only fulfilling their duties, and are motivated to becoming leaders as well. Hussain *et al.* (2016), as well as Zengin and Akan (2019) emphasise, that one of the core competencies of transformational leaders, is the development of individuals, within the organisation, so that they can use their knowledge and experience, to act more effectively.

This can be achieved through workshops, seminars, in-service training, and formal professional and academic studies (Lee & Kuo, 2019; Lyonga, 2019; Zengin & Akan, 2019). Transformational leaders might even develop individual professional development plans for followers (Ninkovic & Floric, 2018). They use performance information of followers in the

organisation, to identify their strengths and weaknesses, and then design programs and support for them (Sun & Henderson, 2017; Prasetya, 2020). The provision of these opportunities, allows followers to develop to their full potential, which facilitates the attainment of organisational goals (Ismail & Mydin, 2019; Lyonga, 2019). Allen *et al.* (2015) and Starks (2018) affirm, that the empowerment of followers, is positively linked to increased levels of dedication and performance, and transformational leaders therefore, constantly remind followers that professional development is ongoing, and the concept of lifelong learning must be adopted. Nyenyembe *et al.* (2016) also explain that staff participation, can also be increased by leaders, adopting a vigorous management approach, as well as continually developing their followers intellectually. Ibrahim *et al.* (2014), and Lee and Kuo (2019) agree that transformational leaders, also build the capacity of their followers to act, by bridging the gap between new educational developments, and their present educational practices, which results in more teachers achieving more of their goals. Transformational leaders therefore, stimulate followers mentally, and academically, to go beyond their comfort zones, and experiment with new educational innovations (Lyonga, 2019; Sabwami *et al.*, 2020). Allen *et al.* (2015), as well as Lee and Kuo (2019) further mention, that transformational leaders are able to distinguish, between the strengths and weaknesses of individuals, within the organisation, and are thus, able to create working environments, suitable to the needs of their followers, and this can result in optimum overall results.

Emotions are a strong driving force, within organisations and schools, and therefore, Quin *et al.* (2015), Starks (2018); Lee and Kuo (2019), as well as Ndiritu *et al.* (2019) explain, that the last core ability of transformational leaders possess, is that of nurturing the emotional well-being of their followers. If followers are motivated, feel appreciated, secure, and generally happy, this tends to increase their level of effectiveness within the organisation (Berkovich & Eyal, 2017; Niessan, 2017; Lee & Kuo, 2019; Lyonga, 2019; Zengin & Akan, 2019, Hermans, 2021). Ali and Dahie (2015), Ismail and Mydin (2019), together with Zengin and Akan (2019) agree, that transformational leaders prioritise issues regarding the needs of followers, above those that are task related, because they believe that addressing followers' needs, can potentially result in much higher levels of competency and proficiency. Nyenyembe *et al.* (2016), Lyonga (2019) and Hasija *et al.* (2020), concur, that efficacious management of emotions, by transformational leadership, can increase job satisfaction in an organisation or school.

Munir and Aboidullah (2018), together with Zengin and Akan (2019) explain, that transformational leaders communicate with their followers, to establish their suggestions and needs, and try to incorporate their input, so that followers will be spurred on to complete the plans and vision, of the organisation or school. Ali and Dahie (2015), Ismail and Mydin (2019), and Lyonga (2019) further elucidate, that attempting to address the individual needs of followers, increases the trust and respect, that followers have for their leaders, and this potentially results in greater efficiency. Transformational leaders therefore use inducements, awards and acknowledgement, to actively encourage followers to achieve their aims (Quin *et al.*, 2016; Starks, 2018; Lyonga, 2019; Zengin & Akan, 2019). Ibrahim *et al.* (2014) and Muhindi *et al.* (2020) affirm, that fulfilling the emotion needs of followers, by acknowledging and motivating them, increases their levels of job satisfaction. Allen *et al.* (2015), Berkovich and Eyal (2017), as well as Kitur *et al.* (2020) explain, that transformational leaders attempt to understand causes of negative emotions of followers, within a working environment, and deliberately change conditions, in order to foster positive emotions, which seems to correlate with increased levels of performance. To better satisfy the emotional needs of followers', transformational leaders also actively, and personally communicate to their followers, the idea, that they are more than just employees, but friends and colleagues, who are working together for the greater good, of everybody within the organisation (Allen *et al.*, 2015; Starks, 2018; Lee & Kuo, 2019; Lyonga, 2019; Ndiritu *et al.*, 2019; Anthony & Hermans, 2020, Cansoy, 2020).

3.6 Strategic leadership

Chatchawaphun *et al.* (2016), Abdo and Edgar (2019), Afey (2019), Coban, Ozdemir and Pisapia (2019), as well as Usman, AR, Marlina and Irani (2020) explain, that the focus of strategic leadership is the formulation of a realistic, but competitive vision, for an organisation, that involves all role players, and is accompanied by strategic plans, as well as effective change management. Israel (2016) and Dogru (2019) agree, that strategic leadership develops a sense of purpose within an organisation, by establishing a captivating vision of the future, whilst still efficiently managing short-term activities. Likewise, Mohamad & Ismail (2018) who conducted research in Malaysian schools, propose that strategic leadership involves the establishment of a vision for an organisation or school, details plans on how to achieve it, and inspiration to followers, to collectively work together to realise it. Prasertcharoensuk and Tang

(2017), who conducted schools-based research in Thailand, concur that strategic leadership is centred on alignment and direction, strategy and implementation, as well as long-term planning and vision formulation.

Similarly, Chan (2018) and Al-Rawi (2020) mention that strategic leadership involves informed decision-making, regarding aims, objectives and measures in changing environments within organisations. Likewise, Dyer and Dyer (2017), as well as Cobbinah and Agyemang (2019) explicate that the main directive of strategic leadership, is the meticulous execution of planned strategies, to achieve an envisioned future. Strategic leadership also entails the leader effectively communicating their objectives, plans and overall vision for the organisation, to followers in the work environment (Chatchawaphun *et al.*, 2016; Abdo & Edgar, 2019; Afey, 2019; Coban *et al.*, 2019; Dogru, 2019; Cobbinah, 2020). Another key feature of strategic leadership, is that it can establish feasible long-term plans, as well as short-term activities, all of which are aligned under a common vision.

Strategic leadership is therefore, often utilised within organisations and schools, because it is considered as a crucial approach, in the reformation of an institution, as it facilitates greater efficiency, competence and effectiveness (Prasertcharoensuk & Tang, 2017; Cobbinah & Agyemang, 2019; Dogru, 2019; Kunalan & Ali, 2020). These authors further explain, that the type and size of an organisation or school, determines how, when, and to what extent, strategic leadership is utilised. Chan (2018), Afey (2019) and Coban *et al.* (2019) affirm, that strategic leadership can align resources, personnel and activities, within a school during periods of transition, under a common vision to maximise productivity. Lyon, Cook, Brown, Locke, Davis, Ehrhart, and Aarons (2018) mention, that because strategic leadership unifies followers under a collective vision, it causes followers to not only work towards the attainment of their own goals, but also to work for the greater good of the organisation.

Dyer and Dyer (2017) add that the common vision promoted by strategic leaders, allows followers to gage their thinking and behaviour, in a broader context of the organisation. Strategic leadership has been found to be very useful when organisations are in a period of volatility, and uncertainty, as it assists followers in remaining focused on the vision, and guides followers when they are adapting to any changes (Schutte & Barkhuizen, 2016; Singphen *et al.*, 2019; Alayoubi, Alshobaki & Abu-Naser, 2020). These authors in addition, mention that consequently, the period of instability and uncertainty, that usually accompanies change, is

substantially reduced. Strategic leadership also fuses the practical expertise, with theoretical knowledge, to produce viable solutions to problems (Coban *et al.*, 2019).

Israel (2018), Cobbinah and Agyemang (2019), Dogru (2019), and Afey (2019) propose, that strategic leadership, can profoundly influence all structures and aspects of an organisation, and it therefore, has a crucial role to play, especially when organisations embark on significant modifications, designed for improvement. These authors further mention that strategic leadership, has been positively correlated, with improved follower performance, and job satisfaction, increased achievement of organisational outcomes, and greater organisational growth. Prasertcharoensuk and Tang (2017), together with Abdo and Edgar (2019) elucidate, that strategic leadership is multidimensional and multifunctional, and it can thus, be instrumental in assisting organisations and schools, in managing the continuous changes in the education sector, resulting from globalisation. Chan (2018) affirms, that the multifaceted structure of strategic leadership, is necessary for schools to survive and flourish in the 21st century. Strategic leadership therefore, has the potential to play a pivotal role in the interpretation and enactment, of the new paradigm of 21 CL in schools.

Chatchawaphun *et al.* (2016), Coban *et al.* (2019), as well as Mohammed and Kadhem (2020) propose, that strategic leadership is a pivotal mechanism, in the successful management of large schools, because it provides educational leaders, with skills to deal with teachers, learners, parents, and members, of affiliated organisations. These authors also mention, that strategic leadership is positively correlated with more effective management processes, teacher participation and learner achievement within schools. Mohamad and Ismail (2018) agree, that strategic leadership, has the potential, to substantially increase learner's levels of achievement, as well the effectiveness of teachers.

Prasertcharoensuk and Tang (2017), as well as Cobbinah and Agyemang (2019) further affirm, that strategic leadership can improve learner's behaviour, motivation, and attitude, to studying; all of which contribute to the attainment of higher academic standards. Likewise, Truitt *et al.* (2017) and Cobbinah (2020) mention, that strategic leadership increases the efficiency, at which educational policies are introduced and enacted in schools, resulting in an improvement in academic standards, and results. Similarly, Chan (2018) and Singphen *et al.* (2019) propose, that the use of strategic leadership in schools, is positively correlated with meaningful, whole school improvement.

3.6.1 Characteristics of strategic leaders

Schutte and Barkhuizen (2016), Singphen *et al.* (2019), as well as Rajagpal, Barathi, Parimoo, Narayanan and Salimath (2021) explicate, that a strategic leader, is learned professional, who is knowledgeable about his or her organisation, as well as all factors, that affect it, both directly and indirectly. Lyon *et al.* (2018) and Coban *et al.* (2019) mention that, strategic leaders are conversant, with the various aspects, related to introducing and sustaining organisation change. Chan (2018), together with Cobbinah and Agyemang (2019) elucidate that, strategic leaders are erudite about recent developments in leadership and management, as well as the changes brought about by globalisation, in the 21st century. Prasertcharoensuk and Tang (2017), together with Dogru (2019) affirm that strategic leaders are knowledgeable about an organisation's core, and peripheral features, as well as internal and external influences. Mohamad and Ismail (2018), and Cobbinah (2020) also explain, that strategic leaders are well informed about all aspects within their organisations, including recent developments, especially regarding technological advancements. In addition, these authors mention that in a school environment, an educational leader would be well informed about all aspects of school life, such as teacher's strengths and weaknesses, learner's abilities and problem areas, as well parental influences.

Strategic leaders are also aware of external cultural, social and economic factors, which directly and indirectly, affect the organisation or school. A strategic leader is a lifelong learner, who is usually involved with formal studies, or undergoes training related to leadership (Chatchawaphun *et al.*, 2016; Abdo & Edgar, 2019; Dogru, 2019; Singphen *et al.*, 2019; Ucar & Dalgic, 2021). These authors mention, that this leadership development, addresses all aspects of leadership, such as detailed planning, communication, character, and feelings, and it is also continuous, so that the strategic leader is kept abreast of latest advancements, and remains relevant in an ever-changing modern era. Furthermore, these authors mention that this, is especially relevant, to educational leaders, who are responsible for guiding their institutions, towards success, and increased productivity, in a rapidly changing educational environment, and therefore, need to possess a high level of leadership expertise. These leaders, need to apply this knowledge and skills to educational activities, within the school, to ensure that goals are timeously attained. Besides being learned individuals, strategic leaders are also creative and inventive, and encourage their followers to be as well (Mohamad & Ismail, 2018, Abdo & Edgar, 2019; Dogru, 2019; Cobbinah, 2020).

Chatchawaphun *et al.* (2016), Cobbinah and Agyemang (2019), as well as Zakaria *et al.* (2020) elucidate that a strategic leader is a moral and principled individual, who adheres to an ethical framework of a high standard. Israel (2016) and Coban *et al.* (2019) explain that, through the behaviours of the strategic leader, followers are inspired to imitate his or her actions. Prasertcharosensuk and Tang (2017), as well as Dogru (2019) agree that strategic leaders, accentuate ethical conduct, and can effectively develop followers' moral character and ethical standards. Similarly, Lyon *et al.* (2018) mention that strategic leaders act as role models for followers in an organisation, by adhering to a strict moral code. Ubogu (2018) and Usman *et al.* (2020) mention, that they can also forge strong relationships with their followers, and motivate them to achieve the organisational goals.

Prasertcharosensuk and Tang (2017), and Al-Rawi (2020) also explain, that strategic leaders have well developed relational and social skills, which allow them to establish dynamic, positive and gratifying working environments, within schools and organisations. Strategic leaders are emotionally intelligent and understand followers' work, and personal situations, and are prepared to assist where possible (Israel, 2016; Coban *et al.*, 2019; Dogru, 2019; Singhen *et al.*, 2019; Cobbinah, 2020). In doing this, they demonstrate genuine feelings of care for their followers, and create a positive working or organisational culture, of trust and empathy. Furthermore, strategic leaders believe in mutual respect, trust and cooperation. Prasertcharoensuk and Tang (2017) and Kunalan and Ali (2020) explain, that this authentic interest of strategic leaders in their followers, causes them to invest time and resources in the development and improvement of followers, within the school, so that they can continually progress within the organisation.

Ubogu (2018), Cobbinah and Agyemang (2020), Dogru (2019), as well as Alayoubi *et al.* (2020) mention, that strategic leaders are also committed, dedicated, and well-planned individuals, who can design a suitable and attainable vision for the organisation. Dyer and Dyer (2017), and Coban *et al.* (2019) affirm that the steadfastness and devotion of strategic leaders, is one of the vital factors in determining the success of an organisation. Likewise, Prasertcharoensuk and Tang (2017), as well as Mohammed and Kadhem (2020) explain that strategic leaders are ambitious individuals, whose thoughts and actions revolve around calculated objectives and targets. These authors also mention, that strategic leaders are

individuals of action, who not only intensively plan, but also methodically execute their strategies.

Schutte and Barkhuizen (2016), together with Singphen *et al.* (2019) also assert that strategic leaders, are people of action, who devise calculated plans and timeously execute them, in the pursuit of a common vision for an organisation or school. They can effectively communicate this vision in an inspirational manner to followers (Cobbinah & Agyemang, 2019; Rajagopal *et al.*, 2021). Strategic leadership also has the potential to increase community involvement, within schools and organisations (Prasertcharoensuk & Tang, 2017; Truitt, 2017; Ucar & Dalgic, 2021). Mohamad and Ismail (2018), Coban *et al.* (2019) and Singphen *et al.* (2019) explicate that as strategic leaders, principals can effectively communicate and collaborate with teachers and administration staff.

Strategic leaders are forward thinkers, who can foresee potential problems and create solutions, or alternative methods (Chatchawaphun *et al.*, 2016; Lyon *et al.*, 2018; Zakaria *et al.*, 2020). Chan (2018) assert that strategic leaders are also reflective thinkers, who cogitate on the different organisational problem areas. They encourage their followers to also reflect on these obstacles, and they then engage in open discussions, with all stakeholders, to try and resolve the difficulties. Prasertcharoensuk and Tang (2017), and Usman *et al.* (2020) affirm, that strategic leaders have foresight and prescience, and they are therefore, able to intuitively solve problems and direct their organisations, through change towards success. Mohamad and Ismail (2018), Dogru (2019), as well as Cobbinah (2020) explain that strategic leaders, are not only visionary leaders, but also expert managers, who supervise the day-to-day operations, and the achievement of short-term objectives.

3.6.2 Abilities of strategic leaders

Schutte and Barkhuizen (2016), Dogru (2019) and Usman *et al.* (2020) explain that strategic leaders have several abilities, which include thinking, affective and psychomotor abilities. These authors mention that intellectual abilities, embroil strategic leaders gathering, analysing and assessing information, pertaining to their organisation, and designing innovative and viable plans, which will positively develop their organisation so that they remain ahead of their competitors. Likewise, Prasertcharoensuk and Tang (2017), Coban *et al.* (2019) and Afey

(2019) assert, that strategic leaders can scrutinise and evaluate numerous factors, that relate to an organisation or school, and then generate innovative schemes, which assists in the accomplishment of goals, and the attainment of the organisational vision. Chan (2018) and Cobbinah (2020) explain that strategic leaders, can achieve this because they are able to learn, remember, and comprehend substantial amounts of information. These authors further mention, that strategic leaders can contemplate the organisation in its entirety, as well as understand how the different components function and interact.

In addition, they are also reflective thinkers, who are able to form links between past, present and future trends in organisations. Strategic leaders can also apply their empirical knowledge, to thinking critically and analytically, when assessing positive and negative aspects, of an organisation, to generate new innovative products or educational developments (Afey, 2019; Cobbinah & Agyemang, 2019; Dogru, 2019; Al-Rawi, 2020). This includes, changing the climate, ethos, ethical framework and vision of an organisation (Prasertcharoensuk & Tang, 2017; Coban *et al.*, 2019; Kunalan & Ali, 2020).

Affective abilities, involve strategic leaders, effectively managing the trepidations and apprehensions of followers in an organisation, during periods of instability or change (Schutte & Barkhuizen, 2016; Cobbinah & Agyemang, 2019; Alayoubi *et al.*, 2020). Strategic leaders are also able to manage followers' emotions, by actively addressing their individual concerns, and then trying to find solutions (Israel, 2016; Coban *et al.*, 2019; Dogru, 2019). They are also able to cope with the feelings of stress and anxiety, which followers in an organisation might have, during periods of unpredictability. Schutte and Barkhuizen (2016), together with Cobbinah and Agyemang (2020) mention that strategic leaders can accomplish this, because they can effectively communicate with followers, by not only expressing their views, but by also being intent listeners, which leads to a greater understanding of followers' emotions. Lyon *et al.* (2018) and Cobbinah (2020) explain that strategic leaders, also constantly assess the levels of productivity, of crucial areas of the organisation, and provide followers with continuous feedback, so that they can comprehend, for themselves, the progress of the organisation as a whole, in attaining the long-term vision. Dyer and Dyer (2018) and Dogru (2019) affirm, that the consistent and immediate feedback, offered by strategic leaders to followers, is extremely effective in increasing their productivity and work ethic.

In addition, strategic leaders create an egalitarian and participative work environment, where all suggestions and viewpoints, are considered and valued (Chatchawaphun *et al.*, 2016; Singphen *et al.*, 2019). Chan (2018) and Cobbinah (2020) concur, that strategic leaders do not believe in top-down approaches to communication, but they rather tend to adopt multi-directional approaches to communication, which is always mutual in character. Strategic leaders also develop active channels of communication and networks, with individuals and institutions outside the organisation, which can assist in increasing productivity (Coban *et al.*, 2019; Dogru, 2019; Mohammed & Kadhem, 2020). Prasertcharoensuk and Tang (2017) explicate that strategic leaders often divide followers, within an organisation, into groups to teams, to facilitate greater communication and cooperation. Chan (2018), together with Cobbinah and Agyemang (2019) affirm, that strategic leaders actively promote the ideal of active, meaningful, and transparent collaboration, between followers in an organisation. Prasertcharoensuk and Tang, as well as Cobbinah (2020) assert, that strategic leaders have the capability to unify followers, within an organisation, despite their differences, so that they consistently work together as a team to achieve the common vision.

Similarly, Dyer and Dyer (2017), as well as Abdo and Edgar (2019) propose that the establishment of a shared vision, facilitates collaboration, as individuals from different sections of the organisation, meet to discuss their interpretation and experience of the vision. Chatchawaphun *et al.* (2016), Coban *et al.* (2019) and Rajagopal *et al.* (2020) also propose, that strategic leaders are self-assured, and assertive individuals, who are willing to undergo change, and are also able to collaborate with others. Mohamad and Ismail (2018) and Cobbinah (2020) affirm that strategic leaders are amenable, and can readily adapt to change, as well as attempt corrective procedures to the organisation or school, if the change is not very successful. This attribute, tends to build respect and loyalty amongst followers in a school, during periods of transition (Dogru, 2019; Singphen *et al.*, 2019).

Israel (2016), together with Ucar and Dalgic (2020) also propose, that strategic learners undertake research, and educate themselves, about aspects regarding an organisational transition, and are the first individuals to experiment with it, thereby creating a direction for others to follow. This author also mentions, that strategic leaders consistently expose their followers to recent developments and advances, which can enhance an organisation. Similarly, Lyon *et al.* (2018), Abdo and Edgar (2019), as well as Dogru (2019) mention that strategic leaders, also actively encourage and motivate their followers, to experiment with innovations

and change. Strategic leaders are also aware of the political climate, and can assess how this might affect their followers in the work environment. Strategic leaders, in addition, can develop and execute plans of influence and persuasion, which can change and align the emotional make-up of followers, to increase motivation and participation in the workplace (Chatchawaphun *et al.*, 2016; Zakaria *et al.*, 2020; Usman *et al.*, 2020).

These authors further mention, that strategic leaders express the aims and strategies of the organisation to followers, in a captivating and compelling manner, so that followers are spurred on, into working together to achieving them. Mohamad and Ismail (2018), together with Al-Rawi (2020) agree, that strategic leaders can persuade followers to perform duties and make choices, which are more aligned with the vision of the organisation. Prasertcharoensuk and Tang (2017), as well as Dogru (2019) also affirm, that strategic leaders can influence and empower followers within an organisation, to take the initiative, embrace change and become leaders themselves. Strategic leaders furthermore, usually have their own strong, positive belief systems, or ideologies, and they try to get their followers to adopt these as well.

Psychomotor abilities, entail strategic leaders combining hands-on knowledge of the working environment, and related factors, with theoretical research-based knowledge, to create successful improvements, developments and plans (Schutte & Barkhuizen, 2016; Coban *et al.*, 2019; Dogru, 2019, Kunalan & Ali, 2020). These authors also explicate, that strategic leaders can accomplish this, because they are perceptive individuals, who can quickly decipher, decode, and interpret information, in the work environment of an organisation, and merge this with the theoretical aspects. Prasertcharoensuk and Tang (2017), and Cobbinah (2020) affirm, that strategic leaders are flexible and adaptable, and can therefore adjust to changing working conditions.

Mohamad and Ismail (2018), as well as Cobbinah and Agyemang (2019) explain, that strategic leaders, also have the psychological, corporeal and emotive qualities, to respond to the different situations, that might arise in an organisation. These authors, further mention, that strategic leaders can combine their practical knowledge and experience, with theoretical content and research, to enact multifaceted actions to solve problems, and develop new strategies. Chatchawaphun *et al.*, (2016) and Dogru (2019) affirm, that strategic leaders make informed decisions, taking into account all relevant information. Schutt and Barkhuizen (2016), as well

as Alayoubi *et al.* (2020) explain, that they can even adapt their learnt behaviours, to the context of different situations, and action new original behaviours.

Strategic leaders can balance their personal commitments with their work commitments, and are able to teach followers, within an organisation to do the same (Dogru, 2019; Cobbinah, 2020; Mohammed & Kadhem, 2020). These authors, go on to mention that strategic leaders are efficient managers, who can balance the dynamics of the existing work environment and current organisational policies, and merge these factors, to produce a high level of commitment and productivity from followers. Strategic leaders then use this positive environment, to diplomatically and tactfully, introduce their appropriate innovative plans of improvement, which are aligned with the overarching vision of the organisation. Israel (2016), Abdo and Edgar (2019), together with Dogru (2019) affirm, that strategic leaders can not only consider present intrinsic and extrinsic factors, which affect the organisation, and steer it in the correct direction, but also contemplate future internal and external factors, and design plans for future organisational pathways. Mohamad and Ismail (2018), Coban *et al.* (2019) and Rajagopal *et al.* (2020) concur, that strategic leaders can work in prevailing working environments, and maximise the use of existing resources and expertise, to produce increased levels of proficiency, which facilitates any change, because it constructively bridges the present organisation features, with the future envisaged changes.

Dyer and Dyer (2017), as well as Ucar and Dalgic (2020) also propose, that strategic leaders can shift their mind-sets from future organisational goals, which could bring success, to present realities, that need to be overcome, and then clinically execute actions, to merge the two thought processes. Chan (2018) and Zakaria *et al.* (2020) assert that strategic leaders, use all organisational resources efficiently and effectively, to increase productivity. In designing, the plans and approaches, strategic leaders consider statistical data, human resource management, risk management, and technological advancements, regarding the organisation or school (Ubogu, 2018; Cobbinah & Agyemang, 2019; Singphen *et al.*, 2019; Usman *et al.*, 2020).

In addition, these authors propose, that whilst strategic leaders are practically changing the work environment, they can also simultaneously change the organisation policies. Correspondingly, Mohamad and Ismail (2018), and Al-Rawi (2020) also mention, that whilst strategic leaders are introducing new and different strategies, into an organisation, they also change the organisational climate as well, so that plans can be successfully implemented.

Prasertcharosensuk and Tang (2017), together with Kunalan and Ali (2020) assert that strategic leadership, not only modifies the organisational climate, but changes the organisational culture as well, because it tends to change, both the major and minor practices, within an organisation. Similarly, Lyon *et al.* (2018), Dogru (2019), and Alayoubi *et al.* (2020) affirm that strategic leaders, can facilitate integral positive developments in the working environment of an organisation.

4. Conclusion

Research on the theories of ecological leadership, system leadership, transformational leadership, and strategic leadership, indicates that they positively influence most aspects, of the interpretation and enactment of 21 CL in schools. Each leadership theory has its own unique set of ideologies, characteristics, and abilities, which are beneficial to 21 CL, but there are also common leadership ideologies, characteristics and abilities, pertaining to 21 CL that emerge from literature. The literature review of 21 CL, ICT and school leadership in chapter two, and the review of the leadership theories in this chapter, guided and informed the rest of the study. The next chapter provides a detailed account of the research methods adopted by the study. This includes a comprehensive discussion of the research paradigms, research design, data collection, and data analysis methods employed.

CHAPTER FOUR

RESEARCH METHODOLOGY

4.1 Introduction

The previous chapter discussed the dominant leadership theories used to facilitate 21 CL. This chapter explicates the research methodology. It begins with describing the research paradigms, which form the basis of the research methodology, and guides the entire research. The research design, research strategy, sampling techniques, methods of data collection, and data analysis procedures are then explained. This chapter also elucidates, the reliability and validity of the study, ethical considerations, limitations of the study, and conclusion of the chapter. The main aim of this study, was to develop a leadership model for the interpretation and enactment of 21 CL, in private secondary schools in KwaZulu-Natal. A mixed methods research approach was adopted, so that this aim could be achieved. All the components of the research methodology were chosen to facilitate the realisation of this aim.

4.2 Research paradigms

A paradigm can be considered as a constellation of critical beliefs, shared by a specific discipline of researchers, which serves to direct the content, practice and interpretation of their research (du Plooy-Cilliers, Davis, and Bezuidenhout, 2016; Friedrich, Schlauderer, Weidinger, & Raab, 2017; Corry, Porter & McKenna, 2018; Held, 2019). A paradigm can also be considered, as a set of shared philosophies, of how phenomena are understood, as well as how potential problems are addressed and resolved (Albusaidi, 2019; Brown & Duenas, 2019; Nguyen, 2019; Kumatongo & Muzata, 2021). A paradigm therefore, guides and determines all aspects of the research process, from the beginning to the end (Ryan, 2018; Darby & Fugate, 2019). A research paradigm, underpins the researcher's view of the world, research objectives, research questions, research methodologies, how the findings are analysed and interpreted, as well as the conclusions and recommendations of the study (Heeks & Wall, 2018; Kovacs, Kiss, Kassai, Pados, Kalo & Jozsef, 2019; Nguyen, 2019).

The choice of the correct paradigm, for a research study, is therefore, considered, as the most important and crucial step in the research process, as it determines the success of the research (Albusaidi, 2019; Brown & Duenas, 2019; Darby & Fugate, 2019). The four common research paradigms are positivism/post-positivism, interpretivism/social constructivism, emancipatory/critical and pragmatism/postmodernism (Albusaidi, 2019; Brown & Duenas, 2019; Held, 2019; Nguyen, 2019; Kumatongo & Muzata, 2021).

To fully achieve the objectives of the study both quantitative and qualitative data was collected. The study is therefore, underpinned by both the positivist paradigm, as well as the interpretivist paradigm. du Plooy-Cilliers *et al.* (2016), Corry *et al.* (2018) and Kovacs *et al.* (2019) explain, that the key elements of a paradigm, are the epistemological, ontological axiological assumptions and beliefs. Brown and Duenas (2019), Held (2019) and Nguyen (2019) concur, and describe epistemology as the nature of knowledge, ontology as the nature of reality, and axiology as the nature of truth. Epistemology, ontology and axiology can be constructed objectively, subjectively, or even by a combination of both schools of thought (Brown & Duenas, 2019; Heeks & Wall, 2019). The nature of these three terms, therefore, vary depending on the research paradigm chosen. A researcher should thoroughly reflect on the epistemological, ontological and axiological assumptions of the research, prior to engaging with the research (Brown & Duenas, 2019; Darby & Fugate, 2019; Nguyen, 2019).

4.2.1 Positivism

Positivist research, usually focuses, mostly on the interpretation, analysis and evaluation of mathematical or numerical data, and is based on proven facts and theories, through hypotheses, experimentation and observation (Ryan, 2018; Albusaidi, 2019; Song & Shen, 2019). Positivism is objective, independent of human influence and associated with quantitative research (Heeks & Wall, 2018; Ryan 2018; Nguyen, 2019; Phothongsunan, 2019). The assumptions of positivism are therefore that ontology, axiology, and epistemology, already exist, are all singular and the same for everybody (Corry *et al.*, 2018; Brown & Duenas, 2019; Held, 2019). The reality, truth, and knowledge, generated by the study, is therefore unaffected by the physical, social or cultural context of the study, or by the individual perspectives of the participants (Albusaidi, 2019; Nguyen, 2019; Song & Shen, 2019).

Positivists, also consider the epistemology, ontology and axiology of the study, as being totally independent and impervious, to the researcher's beliefs and values (Dean, 2018; Ryan, 2018; Darby & Fugate, 2019). The researcher is thus, considered as an outside entity, and only an observer of the phenomenon, which is often investigated through experimentation, that can subsequently be duplicated, tested and verified (Corry *et al.*, 2018; Phothongsunan, 2019; Kumatongo & Muzata, 2021).

Kovacs *et al.* (2019), as well as Song and Shen (2019) add, that positivism is also characterised by quantitative data, which is metrically presented and deductively analysed. Some of the pros of the positivism paradigm, is that vast amounts of quantitative data can be analysed intricately, and the objective findings can be generalised to larger populations (Phothongsunan, 2019). Whereas, some of the cons of positivism, are that it is usually selected for the study of only observable behaviour, with a limited amount of variables, and that it tends to dehumanise people when they are investigated (Nguyen, 2019; Song & Shen, 2019). The positivist paradigm was selected, because quantitative data from the online questionnaires was required from the participants, in order to investigate the interpretation and enactment of 21 CL, together with the accompanying leadership development. The quantitative data was also used to select the sample of the study, from the population.

4.2.2 Interpretivism

Interpretative research, attempts to gain an in-depth understanding of a particular phenomenon, from the perspectives of individuals, who have experienced the phenomenon (Friedrich *et al.*, 2017; Nguyen, 2019; Tilley, 2019). Interpretivism is subjective, and associated with qualitative research (Heeks & Wall, 2018; Albusaidi, 2019; Darby & Fugate, 2019). It emphasises the researcher's influence on the research process and findings, by contextualising it with the researcher's worldviews (Dean, 2018; Kovacs *et al.*, 2019). Interpretivists view the knowledge generated in the study, as a product of the researcher's beliefs and values (Ryan, 2018; Darby & Fugate, 2019; Brown & Duenas, 2019). Albusaidi (2019) and Kushkiev (2019) concur, that all components of the research methodology, are substantially influenced by the ontological, axial, and epistemological views and beliefs, of the researcher.

Interpretivism describes knowledge as relative, and prescribes multiple realities and truths (du Plooy-Cilliers *et al.*, 2016, Ryan, 2018). In interpretivism, participants construct their own subjective knowledge, realities, and truths, based on their own contextual interpretation of the phenomenon, and researchers use these different interwoven interpretations to critically analyse a phenomenon (Brown & Duenas, 2019; Darby & Fugate, 2019; Kushkiev, 2019; Kumatongo & Muzata, 2021). Kovacs *et al.* (2019) and Nguyen (2019) add, that interpretivism is characterised by qualitative data with a human influence, is represented discursively and analysed inductively.

This paradigm is suitable for this research because although the quantitative data from the online questionnaire provided critical information, the qualitative data was necessary to fully achieve the aim of this study. Phothongsunan (2019) and Tilley (2019) agree, that although the positivist paradigm provides a useful approach to research, through the rigorous analysis of quantitative data, the interpretivist paradigm is especially relevant to the educational sphere, because it provides deeper insights, into the complex issues of individuals, in the schooling community. Some of these insights were unravelled, by interpretively and qualitatively, investigating the perspectives of different school leaders.

Some of the pros of the interpretative paradigm, are that it allows for in-depth analysis of complex human behaviour, with many undefined variables, whereas, some of the cons include, that it can produce conflicting findings, of the same phenomenon, and the findings cannot be sometimes generalised to other contexts (Albusaidi, 2019; Nguyen, 2019; Phothongsunan, 2019).

4.3 Research approaches

The research approach that is used in a study, must be guided by the research questions and objectives, so that the main aim of the study can be achieved (Goerres, Siewert & Wagemann, 2019; Onghena *et al.*, 2019; Pardede, 2019). A research design consists of the aims, objectives, paradigms, theoretical frameworks, data collection methods, and data analysis methods, used in the study (Blair, Cooper, Coppock & Humphreys, 2019; Indu & Vidhukumar, 2020).

The three types of research approaches are quantitative, qualitative and mixed methods (Block & Vis, 2019). All three research approaches offer their own unique benefits when examining phenomena, associated with their individual beliefs, principles and methodologies.

4.3.1 Quantitative research approaches

The paradigm of positivism forms the basis of quantitative research approaches (Hesse-Biber, 2016; Tilley, 2019). A quantitative research approach therefore, has an objective view of epistemology, ontology and axiology (Hesse-Biber, 2016; Heeks & Wall, 2018; Nguyen, 2019). Its aim is therefore, to prove a hypothesis or theory, through scientific inquiry or mathematical analysis, with the assumption that there will be one reality, one truth and one type of knowledge produced (Hesse-Biber, 2016; Indu & Vidhukumar, 2020). Some of the different quantitative research methods are surveys, questionnaires, tests, and experiments (Zapper-Hollman & Duff, 2018; Aspers & Corte, 2019). Quantitative research approaches are adopted for the investigation of phenomena, which are numerically and statistically orientated, or for scientific phenomena which can be proven through experimental investigation (Zapper-Hollman & Duff, 2018; Aspers & Corte, 2019). Quantitative data was collected in this study, in order, to attain crucial numerical and statistical information from the respondents, which was necessary to achieve the research objectives.

4.3.2 Qualitative research approaches

Qualitative research approaches are aligned with interpretivism because they allow the researcher to investigate a phenomenon, in its natural setting by interpreting, it from the meanings that participants have assigned to it (Hesse-Biber, 2016; Block & Vis, 2019; Tilley, 2019). Qualitative research approaches therefore, also assume that knowledge, reality and truth are contextual and can have many meanings (Ryan, 2018; Zapper-Hollman & Duff, 2018). They are usually adopted to describe and investigate phenomena, which are not easily measurable, in terms of numbers or statistical analysis, but are rather utilised to investigate social phenomena and human behaviours (Zapper-Hollman & Duff, 2018; Aspers & Corte, 2019; Indu & Vidhukumar, 2020). Some of the different qualitative research methodologies are ethnography, grounded theory, case studies, phenomenology, and narrative research (Hesse-Biber, 2016; Aspers & Corte, 2019). Since qualitative research is naturalistic,

interpretative, and uses research methods that are relatively long in duration, it allows phenomena to be studied intensively (Hesse-Biber, 2016; Zapper-Hollman & Duff, 2018). Qualitative data was collected in this study because it allowed for a more in-depth analysis of 21 CL, and the roles of school leadership in its interpretation and enactment.

4.3.3 Mixed methods research approaches

Mixed methods research approaches combine quantitative and qualitative research styles (Hesse-Biber, 2016; Block & Vis, 2019; Onghena, Maes, & Heyvaert, 2019). They adopt both singular and multiple views of reality, knowledge and truth, since they incorporate both research approaches (du Plooy-Cilliers *et al.*, 2016; Hesse-Biber, 2016; Phothongsunan, 2019). Initially, qualitative research was considered as a competitor or rival to quantitative research, but more recently the two research approaches are perceived as complimentary to each other, and when used together, can result in the more in-depth investigation, of a particular phenomenon, which produces richer findings (Hesse-Biber, 2016; Zapper-Hollman & Duff, 2018). Kushkiev (2019) and Pardede (2019) advocate for a mixed methods research approach, because it allows the researcher to critically evaluate quantitative and qualitative data, from a positivist and interpretivist perspective respectively, and then compare and contrast the data, which increases the depth of the findings. There has therefore, been a move towards research, using both research approaches (Pardede, 2019; Kumatongo & Muzata, 2021).

This study adopted a mixed methods research approach because both quantitative and qualitative data was required to achieve the research objectives. It was necessary to attain the numerical data from the online questionnaires to investigate the extent of exposure of school leaders to 21 CL, ICT and leadership development. This data was then used to select schools for qualitative data collection. The qualitative data, from the individual and focus group interviews, were necessary to determine in-depth views and opinions, which would not have come through, the quantitative data alone. The quantitative research and qualitative research components therefore, served to triangulate the findings of the research, and provide a more in-depth investigation into the interpretation and enactment of 21 CL in private secondary schools, in KwaZulu-Natal, and the roles that leadership played in this process.

Mixed methods research approaches are usually classified into six main types which are the convergent/parallel mixed methods design, explanatory sequential mixed methods design, exploratory mixed methods design, embedded mixed methods design, transformative mixed methods design, and the multiphase mixed methods design (Pardede, 2019; Kumatongo & Muzata, 2021). The mixed method research design for this study was an explanatory sequential mixed methods design. The aim of this mixed method research design, is to produce in-depth information about the phenomenon under investigation, and it begins with the collection of quantitative data, and then continues with the collection of qualitative data, to assist in the elucidation of the quantitative data (Pardede, 2019; Kumatongo & Muzata, 2021). It allows for an intensive, detailed and comprehensive study of a phenomenon, incorporating both quantitative and qualitative research approaches (Onghena *et al.*, 2019).

4.4 Research strategy

The research strategy used in this research was a case study. In a case study a specific case is chosen, and a single enclosed theme within this case, is comprehensively studied within its natural environment (Ridder, 2017; Phothongsunan, 2019; Kumatongo & Muzata, 2021). This singular theme is restricted by the context of time, place and participants. A case study was therefore, chosen because it was suitable to qualitatively investigate the central theme of the roles of leadership in the interpretation and enactment 21 CL, in private secondary schools in KwaZulu-Natal. This study employed the multiple case study design, because school leaders from different private schools, were researched, using questionnaires, semi-structured interviews, and focus group interviews, regarding the singular theme of the influence of leadership on the interpretation and enactment of 21 CL. The multiple case study design allowed for cross-case analysis, which allowed the findings from each school to be integrated (Ridder, 2017; Kumatongo & Muzata, 2021).

4.5 Population and sampling methods

du Plooy-Cilliers *et al.* (2016) describe a population, as all of the individuals or units, from which information is required. Whereas Baltes and Ralph (2020) describe a population, as group of entities of interest or significance. Fifty-five private secondary schools were identified in KwaZulu-Natal, in 2018 using an online database. The population in this research included

the school leaders, from all of the fifty-five private secondary schools. In the context of this study school leaders included principals, deputy principals and subject heads. Private secondary schools in KwaZulu-Natal, range from being very small to very large schools, in terms of number of learners, subject departments, staff, and management members. The structure of the management teams at these schools can also vary. Consequently, the number of school leaders, from the individual private secondary schools, can therefore, also differ greatly, from one school to the next. The data in this study was collected in two phases. Table 4.1 on the next page illustrates the phases in the data collection process.

Table 4.1: Phases involved in the data collection process

Steps	Phase one (Quantitative)	Phase two (Qualitative)
1	Contact was established with the fifty-five private secondary schools in KwaZulu-Natal (1st February 2018 – 31 st March – 2018)	
2	Emails requesting permission were sent to principals of the schools. (April 2018)	
3	Consent letters from the schools, were collected, and follow up measures were undertaken for those schools that did not respond to the first email request (1 st May 2018 - 30 th June 2018)	
4	An online questionnaire was sent to the twenty-five schools, which granted permission for the research to be conducted. (1 st July - 30 th September 2018)	
5		Data from the online questionnaires were analysed and six schools were purposely selecte as the sample for the individual and focus group interviews. (October 2018)
6		Individual and focus group interviews were conducted at five schools (at a late stage, one school declined the interviews to have interviews. (November 2018)

In phase one of the research, data was collected from an online questionnaire, which was sent to the fifty-five private secondary schools in KwaZulu-Natal, in a cross-sectional survey. In this phase of the research, the physical addresses and telephone numbers of the fifty-five private secondary schools, together with the email addresses of the school principals, or their personal assistants, were researched and documented. Each school was then contacted telephonically, and the details of the research were explained to either the principal, their personal assistants, or one of the deputy principals. Information about the study, and permission letters were then emailed to the schools. Twenty-five, of the fifty-five private secondary schools in KwaZulu-Natal, confirmed their participation in the research study, by returning the consent letter.

In phase two, data was collected on the subjective perspectives and experiences of school leaders, from five of the participating private secondary schools. These school leaders had completed the online questionnaire in phase one, and in phase two, participated in individual and focus group interviews. A sample is described by Luciani, Campbell, Tschirhart, Ausili and Jack (2019), as well as Baltes and Ralph (2020), as a subsection of the population, which is deemed to represent the population. The time frame of this study allowed for a limited number of private secondary schools, to participate in phase two of the research. The original sample in this research, consisted of the school leaders from six private secondary schools. The data collected from the online questionnaire, was analysed and used to purposively select six schools, from the twenty-five schools, that filled in the online questionnaire, for phase two of the data collection.

Sampling is divided into probability sampling which does not utilise randomness, and includes simple random, systematic, stratified and multi-stage sampling methods, and non-probability sampling, which utilises randomness and includes accidental, convenience, purposive, quota, snowball, and volunteer sampling methods (du Plooy-Cilliers *et al.*, 2016; Baltes & Ralph, 2020). Purposive sampling was used in this research. It involves purposefully selecting a sample, using a well-defined set of criteria, which is based on the data required from the population, to achieve the research objectives (Luciani *et al.*, 2019; Baltes & Ralph, 2020). Only six schools met the criteria for phase two of the research.

The request given to the participating schools, was that the online questionnaire, be completed, by as many of the school leaders as possible. One of the criteria used to purposively select

schools, for phase two of the research, was a minimum of five questionnaires/responses from school leaders. The amount of information collected, from the five or more questionnaires/responses, allowed for more in-depth analysis. The second criterion, was that there must have been representation, of all three categories of school leaders, namely, the principal, deputy principal, and subject heads, amongst the five or more questionnaires/responses. This allowed the researcher to investigate the phenomenon, from the perspectives, of different categories of school leaders, which resulted in insights that were more meaningful. At a very late stage in the interview process, one of the six schools, chosen for the interviews, declined to have interviews, because of imminent examinations. The researcher did contact the principal repeatedly regarding the interviews, but was not successful in convincing the principal to his school to participate, in phase two. At this stage, it was not possible to schedule interviews at an alternative school, and in addition, there were only six schools that met the criteria for phase two.

Besides the principal, one deputy principal, and the ICT head, from each of the five schools were selected to be interviewed individually. If there were responses from more than one deputy principal from a specific school, then the deputy principal, who manages the academics of the school, was chosen for the semi-structured interview. This was because the deputy in charge of academics, would be able to inform further, on the responses received in the online questionnaires, regarding any transformation towards technologically driven 21 CL. Leadership training and development at schools, is usually a shared responsibility of senior school leadership teams, with the principal managing this portfolio.

21 CL and ICT are closely linked, because besides ICT skills being 21st century competencies, ICT forms a crucial component, in most of the other facets, of 21 CL. The ICT head/teacher was therefore, also chosen for the individual semi-structured interviews, because the individual would be knowledgeable about ICT transformations, which are aligned with 21 CL, as well as the leadership practices and developments, regarding 21 CL at the respective school. Finally, focus group semi-structured interviews, were conducted with the subject heads who had filled in the online questionnaire, but these focus group interviews also included subject heads who did not fill in the questionnaire, depending on their availability, during the school day. The data obtained from the school leaders in the online questionnaire, was triangulated with the data collected from the individual and focus group interviews.

4.6 Data collection methods

This study adopted a mixed methods research approach, and incorporated both quantitative and qualitative data collection methods (Hesse-Biber, 2016). It therefore, utilised online questionnaires in a cross-sectional survey, semi-structured interviews and focus group interviews, to collect data. An online questionnaire was a suitable data collection method in this study, because it ensured that all the schools, in the different regions of the province, involved in the research were researched, in a relatively short period of time. Semi-structured interviews served as an apt qualitative data collection method, to elicit more in-depth information, about school leadership practices regarding 21 CL, from the participants involved in the research study. This is because the nature of semi-structured interviews allows the participants to share the ideas, concerns, experiences, views, opinions and attitudes (Phothongsunan, 2019).

The focus group interview was another qualitative data collection method, which allowed the researcher, to interact with subject heads, and gain further insight, into 21 CL, and the roles of leadership, in its interpretation and enactment. The data from the individual online questionnaires, individual interviews, and focus group interviews, was triangulated during the analysis of the data, which allowed a deeper understanding of the topic. Document reviews, did not form a secondary method of data collection in this study, because none of the five schools in phase two of the research, had formal minutes, documents, or policies available, which outlined their approach to 21 CL, or the accompanying leadership development strategies.

4.6.1 Questionnaires

Surveys are used to collect information from a large population, or sample of participants, using a sequence of questions, which can be qualitative, quantitative or a combination of both (du Plooy-Cilliers *et al.*, 2016). A cross-sectional survey design was suitable to this research, because it assisted in establishing a global depiction, of the interpretation and enactment of 21 CL, and the influence of leadership on the process, at a singular point in time.

After the fifty-five private secondary schools in KwZulu-natal were contacted telephonically, an email (Appendix A) containing a summary of the research details was subsequently sent to the school principals, requesting the participation of their schools in the research study. A word document containing the complete research details (Appendix B), and a consent letter that needed to be signed by the school principal, and returned (Appendix C), were also attached to the email. The time for schools to respond to the request, to participate in the research, varied. Schools that did not respond, were continually contacted telephonically, and the original email requesting permission was re-sent. Twenty-five, of the fifty-five private secondary schools in KwaZulu-Natal, confirmed their participation in the research study, by returning the consent letter. An email was then sent to principal, or the principal's personal assistant, at these twenty-five schools, containing the link to the online questionnaire, in the form of a Google Form. This link was distributed, to all the school leaders, within the school for them to complete.

The online questionnaire, used in the cross-sectional survey of the twenty-five private secondary schools, participating in the research can be found in Appendix E. The different types of survey designs include the cross-sectional, before and after, and longitudinal survey designs (du Plooy-Cilliers *et al.*, 2016). A cross-sectional survey is administered once, and is used to provide information about a phenomenon at a particular point in time (du Plooy-Cilliers *et al.*, 2016). Questionnaires are an efficient method of data collection, for both quantitative and qualitative data, and this data can then be statistically analysed using relevant software packages (Phothongsunan, 2019). The online questionnaire, used in the cross-sectional survey collected the data from the twenty-five private secondary schools, efficiently in a relatively short period. The quantitative questions in the questionnaire, were designed to establish the level, to which participants were exposed to 21 CL, ICT, and leadership training and development. The qualitative questions in the questionnaire, were designed to collect, more in-depth knowledge, of how participants viewed and interpreted, the training and development regarding 21 CL, ICT and leadership development.

The online questionnaire was designed by the researcher, to meet the objectives of the study. It was divided into four sections, with each section containing questions related to a specific objective. After the questionnaire was designed, it was reviewed by a qualified statistician, who was informed of all details pertaining to the study, especially the research objectives, and analysis of the data. The questionnaire was thereafter finalised.

The first section was the biographical section containing six questions about age, gender, current teaching position, subject speciality, total years of experience in secondary school education, and highest tertiary qualifications. This data was used to establish the background of the participants, but it was also, later used in the analysis of the data, in explaining some of the insights revealed by the research.

ICT is a crucial component in the interpretation and enactment of 21 CL. The second part of the questionnaire, comprised of fifteen questions regarding the experiences of school leaders of the use of ICT in their respective schools. The questions pertained to the school's ICT strategy, forms and types of ICT used, how this was used, and the types of training provided. The questions ranged from yes or no answers, to multiple-choice questions, with more than one option as an answer. Finally, the second section concluded with an optional qualitative question, which required a longer response.

The third part of the questionnaire, consisted of twenty-two questions, which focused on the experiences of school leaders, about the interpretation and enactment of 21 CL, in their respective schools. The questions related to the participant's understanding of 21 CL, their school's 21 CL strategy, how was 21 CL interpreted and enacted, to what extent was 21 CL enacted, and the types of training provided. The types of questions, were the same as part two of the questionnaire, with two optional qualitative questions.

The fourth part of the questionnaire contained thirty questions, related to the participants' experiences of leadership, as well as leadership training and development, in general, and leadership training specifically linked to 21 CL. The questions revolved around the types, and effectiveness, of the general school leadership training and development that was provided. As well as the leadership training and development, specifically in transformational leadership, strategic leadership, system leadership, and ecological leadership, in the context of 21 CL. The type of questions was again similar to part one, two and three of the questionnaire, with five optional qualitative questions.

The closing date for the submission of online questionnaires was the 31st of August 2018. The data collected from the questionnaires, was triangulated with the data from the individual interviews, and the focus group interviews, during the analysis of the data.

4.6.2 Semi-structured interviews

All participants in the individual semi-structured interviews, as well as the focus group interviews, were provided with consent letters, to sign, prior to the interviews commencing. This consent letter can be found in Appendix D. In semi-structured interviews, the interviewer does have a set of prepared open-ended questions, but these only serve only to guide the interview process, and there is ample opportunity and space, for the interviewee to formulate and communicate their own ideas (Angelo, Kinung'hi, Buza, Mwanga, Kariuki & Wilson, 2019; Staunton, Willgoss, Nelsen, Burbridge, Sully, Rofail & Arbuckle, 2019). Semi-structured interviews can be a rich source of data, as deeper underlying issues, pertaining to the research can be probed and unravelled, through the views, perspectives, and interpretations of the interviewee (Dias & Aylmer, 2019; McGrath, Palmgren & Liljedahl, 2019). The interpretivist approach of using semi-structured individual interviews was to investigate the interpretation and enactment of 21 CL, as well as the roles of leadership in this process, more deeply, by analysing the experiences and interpretations of the participants.

An interview schedule was created, by the researcher, for the individual semi-structured interviews, which can be found in Appendix F. The interview schedule contained thirty-five questions, which were divided into same four sub-sections, as the online questionnaire. The questions were similar to the questions in the online questionnaire, and focused on the same objectives. However, some of the questions were more open-ended, and only used only to guide the interviews, allowing the participants the freedom, to expand and elaborate on their responses. Some the other questions, involved short, yes and no responses, whilst others, were follow up, probing questions. This variation in the type of questions, allowed data pertaining to all the questions, to be collected. The interview process was used to probe, the data provided, in the online questionnaires from the respective schools.

Interview times were requested and scheduled telephonically. The school leadership, from the five schools participating, in the interviews, allowed the researcher to visit the schools during a normal school day. Interviews were conducted with the school principals, deputy principals associated with academics, and the ICT subject heads, at each school when they were available. Prior to the interviews being conducted, participants were briefed about the details of the research, were provided with a copy of the interview schedule, and an informed consent letter with the researcher's details for them to sign. Interviews were conducted in offices and

boardrooms. The interviews, on average, lasted thirty six and were recorded, and then transcribed. Table 4.2 below indicates the date of the individual interviews, position of the participants, and the coding, used to represent them in the qualitative findings.

Table 4.2: Information for individual interviews

School	Date	Position	Codes used in qualitative findings
1	03-11-2018	Principal	<i>P1</i>
1	03-11-2018	Deputy Principal	<i>DP1</i>
1	03-11-2018	ICT Head	<i>ICT1</i>
2	09-11-2018	Principal	<i>P1</i>
2	09-11-2018	Deputy Principal	<i>DP2</i>
2	09-11-2018	ICT Head	<i>IC2</i>
3	16-11-2018	Principal	<i>P3</i>
3	16-11-2018	Deputy Principal	<i>DP3</i>
3	16-11-2018	ICT Head	<i>ICT3</i>
4	23-11-2018	Principal	<i>P4</i>
4	23-11-2018	Deputy Principal	<i>DP4</i>
4	23-11-2018	ICT Head	<i>ICT4</i>
5	30-11-2018	Principal	<i>P5</i>
5	30-11-2018	Deputy Principal	<i>DP5</i>
5	30-11-2018	ICT Head	<i>ICT5</i>

4.6.3 Focus group interviews

A focus group interview, is usually conducted by a facilitator, with a small group of people, to gain insights into a specific phenomenon, from the perspectives of the different members of the group (Angelo *et al.*, 2019; Staunton *et al.*, 2019). Focus group interviews can also be considered, as a group discussion of a selected topic, using semi-structured, open-ended questions, which a group moderator uses to steer the conversation (McGrath *et al.*, 2019; Sim & Waterfield, 2019). It can produce a large quantity of rich, and varied data, because each interviewee, contributes their individual interpretation of the phenomenon, and these interpretations can be discussed and analysed within the group (Sim & Waterfield, 2019).

Focus group interviews in the study, proved to be very informative, because the perspectives of the subject heads, provided further insights, into the interpretation and enactment of 21 CL, and the role of leadership, in this process. This was especially valuable, since these perspectives, served a different source of information, than the information provided in the individual semi-structured interviews. Focus group interviews were conducted during the same day when the researcher visited the respective schools, for the individual semi-structured interviews. An interview schedule was created to guide the focus group interviews, and can be found in Appendix G. It was designed, by the researcher, in the same way, as the interview schedule for the individual interviews, with the same objectives and sub-sections as the questionnaire, but the questions were more open-ended, and allowed for in-depth discussion of the participant's responses.

The same pre-interview procedures were undertaken, as the individual interviews, and the same semi-structured interview format was used. Follow up questions were again used to probe some responses. The focus group interviews were conducted, when the group of participants were available, and took place in offices or boardrooms, at the different schools. The responses from the questionnaires, were used to guide the selection of the subject heads, for the focus group interviews, in phase two of the research, so that data from the questionnaire could be elaborated upon. However, there were subject heads present in some of the focus group interviews, who did not fill in the questionnaire. The focus group interviews provided a rich source of information, as the views of the participating subject heads, within the group, sometimes reinforced each other, but sometimes were contradictory to each other. This provided for a

deeper analysis of the phenomenon. The focus group interviews, on average, lasted forty seven minutes, were recorded, and then transcribed.

The data from the focus group interviews, were triangulated with the data from the online questionnaire, and the individual interviews during the analysis of the data. Table 4.3, on the next page, indicates the date and duration of the individual interviews.

Table 4.3: Information for focus group interviews

Schools	Date	Subject Heads in Focus group	Codes in qualitative findings
1	03-11-2018	1	<i>FG1A</i>
		2	<i>FG1B</i>
		3	<i>FG1C</i>
		4	<i>FG1D</i>
2	09-11-2018	1	<i>FG2A</i>
		2	<i>FG2B</i>
		3	<i>FG2C</i>
		4	<i>FG2D</i>
		5	<i>FG2E</i>
		6	<i>FG2F</i>
3	16-11-2018	1	<i>FG3A</i>
		2	<i>FG3B</i>
		3	<i>FG2C</i>
		4	<i>FG3D</i>
		5	<i>FG3E</i>
4	23-11-2018	1	<i>FG4A</i>
		2	<i>FG4B</i>
		3	<i>FG4C</i>
		4	<i>FG4D</i>
5	30-11-2018	1	<i>FG5A</i>
		2	<i>FG2B</i>

4.7 Data analysis

This study adopted a mixed methods research approach, using, both quantitative and qualitative, data collection methods (Hesse-Biber, 2016). The two sets of data, required

different data analysis methods, for the scrutinization, presentation and interpretation of the results (Onghena *et al.*, 2019).

4.7.1 Analysis of quantitative and qualitative data from the online questionnaire

The quantitative data collected, from the online questionnaire, was analysed using descriptive and inferential statistics. The SPSS computer software package was used in this study. Statistical analysis of data allows for the accurate analysis of raw data, which can be presented in visual formats which can be easily understood and interpreted (Lemenkova, 2019). The SPSS computer package, is used commonly throughout the world in a variety of fields, in the social sciences, and its statistical functions are considered, as both intensive and comprehensive (Peiyun, Chunxiao, Chuanqin, Jiayu, Xingqi, Xuezhi, Yanren & Ting, 2019). The SPSS computer package used the Chi-square goodness-of-fitness-test and the binomial t-test, in the inferential statistical analysis. Correlations between nonnumeric variables, can be determined, with the use of the Chi-square goodness-of-fitness-test (Turhan, 2020). Whilst, the binomial t-test is used to compare the observed distribution, to the expected distribution, when there are only two categories (Pramanik, Johnson & Bhattacharya, 2021). The responses for each quantitative question was represented, as a percentage, in the form bar graphs or tables, and this data was then explained and interpreted. The responses for each qualitative question from the questionnaire, were grouped into categories, which were represented as percentages, and illustrated in tables. The results of the both the qualitative and quantitative questions, from each sub-section of the questionnaire, were then used individually and collectively, to answer the research questions of the study.

4.7.2 Qualitative analysis of data from individual and focus group interviews

The individual semi-structured interviews and the focus group interviews were recorded and transcribed. Thematic analysis, involves the analysis of usually textual data, from the transcripts of interviews, with the aim of identifying common threads of information, which can be coded, and used to formulate themes, which have the potential to be integrated (Bennett, Barrett & Helmich, 2018; Roberts, Dowell & Nie, 2019). It is a qualitative method of recognising, analysing, classifying and, presenting large quantities of data, to facilitate interpretation (Vaismoradi, Jones, Turunen & Snelgrove, 2016; de Carvalho & Skipper, 2019).

A theme itself, can be considered as a concept or notion that emerges as a common thread, from the data, which is significant in answering the research questions (Vaismoradi *et al.*, 2016; Roberts *et al.*, 2019). Thematic analysis was therefore, used to scrutinise the transcripts from both types of interviews, to unravel important information, from the transcripts, and to discover possible common threads, between the transcripts. The transcripts were read through repeatedly, and important ideas and concepts were categorised, coded, and later grouped together into themes (de Carvalho & Skipper, 2019).

A deductive approach to thematic analysis refers to the researcher preparing categories, codes and themes prior to the analysis of the data, and then identifying the codes and themes within the raw data set (Vaismoradi *et al.*, 2016; Bennett *et al.*, 2018). An inductive approach to thematic analysis, involves the researcher analysing the raw data, and developing themes that emerge from it (du Plooy-Cilliers *et al.*, 2016; Roberts *et al.*, 2019). The researcher adopted a deductive approach to the thematic analysis, by formulating the three broad themes of ICT implementation, the interpretation and enactment of 21 CL, and the roles of school leadership in this process. This served to guide the analysis. The researcher adopted an inductive approach to thematic analysis, to a much greater extent, by allowing for the coding and development of unanticipated subthemes, which emerged from the data that could assist in answering the research questions. By adopting a dual approach to thematic analysis, the researcher was able to deductively guide the analysis of the data, whilst inductively, still allowing for the exploration of new relevant subthemes. Verbatim quotations were utilised to evidence all the emergent ideas and themes. The information from the themes assisted in answering the research questions.

The three sets of data from the online questionnaire, individual interviews, and focus group interviews, were finally triangulated, and used to achieve the objectives of the research study, by answering the research questions.

4.8 Reliability, validity and issues of trustworthiness

The rigour of a study refers to the academic quality, and standard of the entire research, as well as its moral and integrous context (Langtree, Birks & Biedermann, 2019). This research ensured reliability and validity, in the analysis of the quantitative data and trustworthiness in

the qualitative data, by comprehensively addressing issues of credibility, transferability, dependability and confirmability.

The term reliability and validity are terms, which usually address quantitative data (Phothongsunan, 2019). Cohen, Manion, and Morrison (2011), as well as Phothongsunan (2019) explain, that reliability can be considered, as the degree of consistency, in terms of the study, producing the same quantitative data if duplicated. Reliability was achieved by the participants in the cross-sectional survey, receiving the same questionnaire to answer, and the participants in the interviews, being asked the same open-ended questions, in the same order. Validity is concerned, with whether the research design, and collected data, correctly describe the phenomenon, which is being studied, or whether the research actually achieves the study objectives (Cohen *et al.*, 2011; Onghena *et al.*, 2019; Langtree *et al.*, 2019). Validity was attained, by ensuring that the selected paradigms, research approaches, research design, data collection methods, and analysis methods, were aligned with the research objectives and these research components were fine-tuned and synchronised.

Credibility, transferability, dependability, and confirmability, are terms which usually address qualitative data (Dumisani, Mthimunye & Daniels, 2019). du Plooy-Cilliers *et al.* (2016), and Zapper-Hollman and Duff (2018) refer to credibility, as the measure of trustworthiness, and accuracy of the collected results. Langtree *et al.* (2019) add, that credibility is similar to validity in quantitative research, because it is concerned, with whether the researcher's interpretations, are a correct representation of the data. Credibility was ensured, by choosing the appropriate research design for the study and returning the interview transcripts, to the participants for them to verify that their contributions were correctly noted. Credibility was also ensured by the triangulation of data from multiple data sources, instruments and data collection methods. Transferability refers to the applicability of the results, of a study, to similar situations, or the extent of generalisation of the findings to other contexts (Langtree *et al.*, 2019; Nyirenda, Kumar, Theobald, Sarker, Simwinga, Kumwenda, Johnson, Hatzold, Corbett, Sibanda & Taegtmeier, 2020). Transferability was upheld, by providing comprehensive accounts, of the role of leadership in the interpretation and enactment of 21 CL, as well as details, of the contexts, in which this relationship exists. Other researchers can then establish the degree, to which this study is relevant, to their own research.

Langtree *et al.* (2019) and Nyirenda *et al.* (2019) mention, that dependability, focuses on the properness, of how the different aspects of the research designs, are assimilated and the level of consistency, throughout the research process. Dependability was established, by completely and clearly explaining, the entire research design, as well as by making all the data collection instruments readily available. Confirmability addresses the accuracy of the collected data, and the conclusions made by the researcher (Nyirenda *et al.*, 2019; Langtree *et al.*, 2019). Confirmability, was addressed by the triangulation of information, from different data collection methods, a clear and objective analysis of the data, the use of verbatim quotations of the participants, and the returning of the findings of the study, to the participants for verification and review (Nyirenda *et al.*, 2019; Phothongsunan, 2019).

4.9 Ethical issues

Gaining permission from participants, gate keepers and institutions are usually a requirement for all research (Zapper-Hollman and Duff, 2018, Dumisani *et al.*, 2019). Permission of all participants, in the research and affiliated institutions, is ethically correct as it informs all stakeholders of the content, procedures, and implications of the research, prior to their involvement (Navalta, Stone & Lyons, 2019; Sim & Waterfield, 2019). Ethical clearance to conduct the study was firstly obtained from the Humanities and Social Sciences research Ethics Committee of the University of KwaZulu-Natal (Protocol reference number: HSS/0380/018D). Permission letters were also emailed to the principals, of the respective participating schools, and signed consent forms were subsequently collected. This can be found in Appendix A and Appendix B respectively. The introduction of the online questionnaire, contained all the information about the research, together with the measures employed for anonymity and confidentiality. The questionnaire can be found in Appendix C. The participants in the individual semi-structured interviews, as well as the focus group interviews, were provided with informed consent letters, prior to the interviews explaining the content and structure of the interviews, together with the anonymity and confidentiality measures. This letter can be found in Appendix D. All of the information in the informed consent letter, was also explained verbally to the interviewees before the interview. This included permission from the participants to record interviews.

Responses to the online questionnaire, were anonymous and did not reflect any confidential information about the participants. The use of pseudonyms, protects the identity of the participants, which allows them to feel secure, to provide data without the fear of prejudice (Sim & Waterfield, 2019). The names of the participating schools, and the participants in the individual, and focus group interviews, was kept confidential using pseudonyms, instead of the actual names. Participation remained voluntary throughout the study.

4.10 Limitations of the study

The population in this study consisted of all the private secondary schools in KwaZulu-Natal. One of the limitations of the research, was that some schools, responded very quickly with a negative response, to conduct the research. This could, potentially be, because schools are generally very busy environments, with many different things happening at once, resulting in principals, and staff, not wanting additional tasks to complete. Another limitation of the research was that one of the six selected schools for the interviews, declined to have the interviews at a very late stage in the research process. Although this school provided information in the online questionnaire, the qualitative data from the interviews, would have added to the richness of the findings.

In the online questionnaire, questions 2.2 to 2.9 related to cross-curricular, thinking schools, research skills, and 21 CL programs, and the teams, who managed these programs at schools. There were conflicting results, regarding these programs and managing teams, from the different respondents. Consequently, the quantitative data, for these questions, was not presented because it could not be analysed. However, these questions were posed to participants, in the individual semi-structured and focus group interviews, and this qualitative data was presented and analysed.

4.11 Conclusion

This chapter explained the research methodology of the study. It began with a description of the research paradigms, research approaches, and research designs that were employed in the study. This followed with an explanation of the population and sampling, data collection, and data analysis methods. The chapter concludes with describing the reliability, validity, and

issues of trustworthiness, ethical considerations, and limitations of the study. The following chapter will present the quantitative data, collected from the online questionnaires that was sent to schools. It will also present, the qualitative data from the individual interviews with the school principals, deputy principals involved with 21 CL, and ICT heads, as well as the focus group interviews with the subject heads as well.

CHAPTER FIVE

PRESENTATION OF RESULTS

5.1 Introduction

In the previous chapter, the research methodology of the study was presented. The positivist and interpretivist paradigms, the mixed methods research approach, and the explanatory sequential mixed methods design, were described. An explanation of the purposive sampling method, data collection methods and data analysis methods followed. Chapter Four concluded, by outlining the issues pertaining to the reliability, validity, issues of trustworthiness and the limitations of the study.

Data collection occurred in the last quarter of 2018, prior to the beginning of the COVID-19 pandemic. The findings of the data collection are presented in this chapter. Due to the mixed methods research approach chosen for this study, both quantitative and qualitative data was collected. The quantitative data was collected data from online questionnaires, and the qualitative data was collected from individual and focus group interviews. The quantitative data from the online questionnaire, will be presented first, in the form of graphs and tables derived from descriptive and inferential statistical analysis. The qualitative data from the online questionnaire, will be presented in the form of tables, because the percentages of the suggestions, for the different training courses, could be easily represented. The qualitative data from the interviews will thereafter be presented, in the form of themes and sub-themes, using verbatim quotations of the participants. The data is presented according to themes that were deductively and inductively formulated.

The main aims of the study were to investigate the utilisation of ICT in schools, the interpretation and enactment of 21 CL in schools, and the role of school leadership in this process. The intention was to develop a leadership model by answering the following research questions:

- How is ICT utilised to facilitate 21 CL in private secondary schools in the province of KwaZulu-Natal?

- How is 21 CL being interpreted and enacted in private secondary schools in the province of KwaZulu-Natal?
- What are the roles of school leadership in the interpretation and enactment of 21 CL in private secondary schools in KwaZulu-Natal?
- How can a leadership model be developed for the interpretation and enactment of 21 CL in private secondary schools in KwaZulu-Natal?

5.2 Quantitative data

To collect the data emails requesting permission to conduct the research together with research information and consent letters were sent in 2018 to the principals of all fifty-five private secondary schools in KwaZulu-Natal. The management from twenty-five schools responded positively, they participated in the research. This is a response rate of 45%. One hundred school leaders across all the participating schools completed the survey. The quantitative data was analysed using the SPSS software package. The online questionnaire was divided into four sections which comprised of the biographical information and three objectives. The first objective investigated the use of ICT in the context of 21 CL, the second objective investigated the interpretation and enactment of 21 CL and the third objective investigated the leadership training and development of school leaders regarding 21 CL.

5.2.1 Demographic profiles of the respondents

The demographic details of the respondents which include the ages, gender, current teaching positions, years of experience in secondary education and qualifications are represented in Figure 5.1. One hundred respondents, from the twenty five participating private secondary schools, answered the online questionnaire. Sixty-seven percent of the sample were female and 77% were over the age of forty. Fifty-eight percent of the respondents were subject heads/heads of department. Sixty-one percent had an excess of twenty years' experience and the most common qualification was an undergraduate degree.

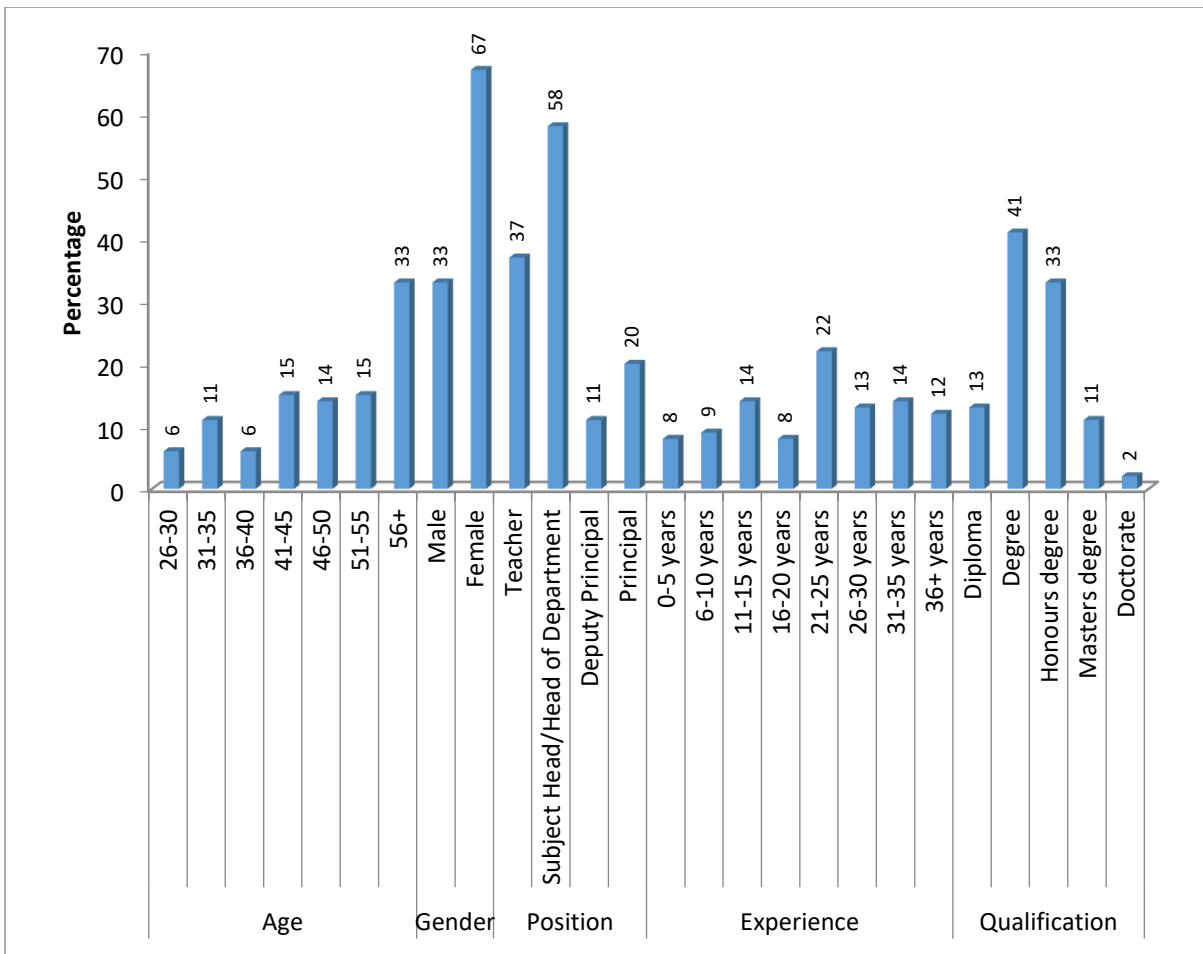


Figure 5.1 Demographical data of respondents

5.2.2 The implementation and use of information and communication technology at schools

The rapid development of ICT has revolutionised all spheres of modern-day life including education (Hashim *et al.*, 2019). The use of ICT, is considered as an integral part, of the interpretation and enactment of 21 CL in schools (Hines & Lynch, 2019). In the second section of the questionnaire, respondents were asked to answer questions regarding the implementation and use of ICT.

5.2.2.1 Official information and communication technology teams and programs

Respondents were asked, whether their respective schools, have an ICT program in place, and whether there is a team to manage it. The data that is presented in Figure 5.2 shows that 82% of schools had an ICT program and 96,3% of those schools had an ICT team to manage it.

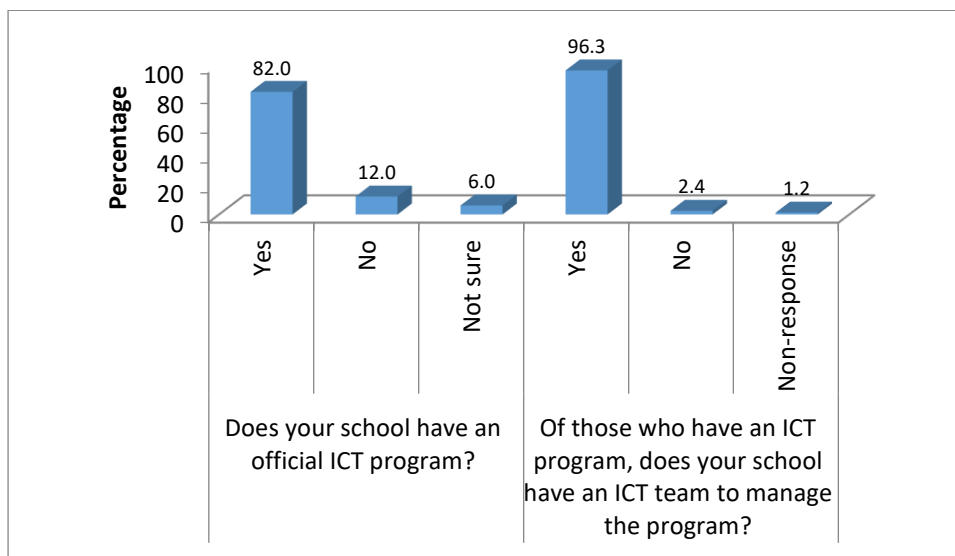


Figure 5.2: Schools having an ICT program and ICT team

5.2.2.2 The use of information and communication technology by school leaders

The data represented in Figure 5.3, shows that a significant 94%, $p < .0005$ of school leaders used ICT regularly and actively in their job situation. The results of a chi-square goodness-of-fit test, reveal that of the 94%, who indicated that they do use ICT, actively and regularly for their job, a significant 88,3%, $p < .0005$ used it for both teaching and administration.

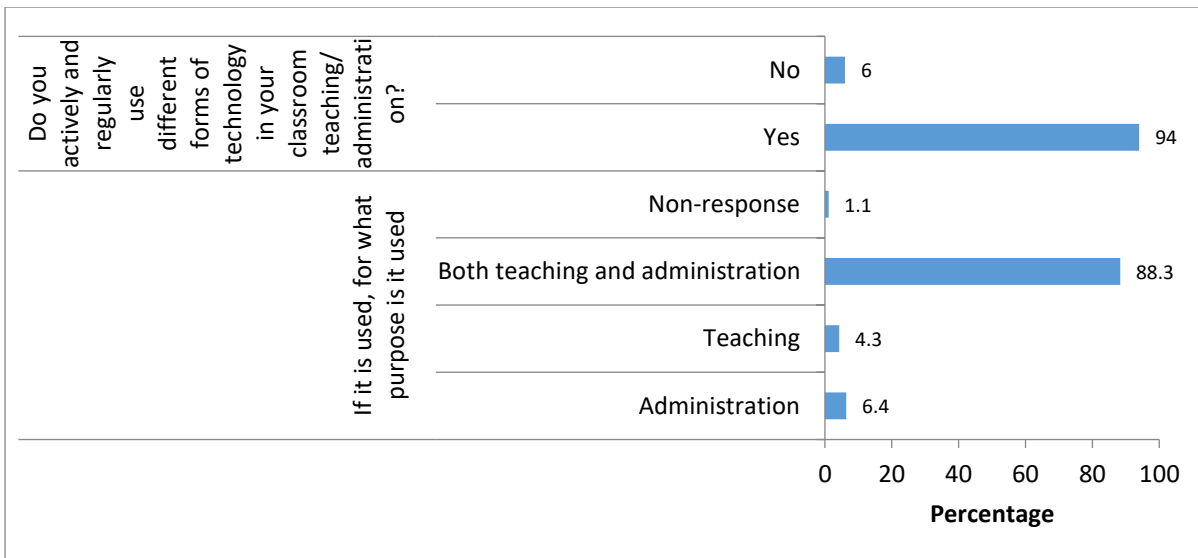


Figure 5.3: The use of ICT by school leaders

5.2.2.3 The different forms and platforms of information and communication technology used by school leaders and learners

Figure 5.4 shows the data, for the different forms and platforms of ICT, used by school leaders and learners. The results of a binomial test performed, for the forms of ICT used by school leaders, reveal that a significant 87%, $p < .0005$ indicated that they use wi-fi devices for their teaching/administration; a significant 84%, $p < .0005$ indicated that they use digital projectors; a significant 83%, $p < .0005$ indicated that they use laptops; a significant 64% $p = .007$ indicated that they use cell-phones, and a significant 62%, $p = .021$ indicated that they use iPads/tablets. The results of a binomial test, performed for the ICT platforms used by school leaders, reveal that a significant 74%, $p < .0005$ indicated that they use Google drive for their teaching/administration, and a significant 65%, $p = .004$ indicated that they use Google classroom.

The results of a binomial test, performed for the forms of ICT used by learners reveal that a significant 74%, $p < .0005$ indicated that they use wi-fi devices for their classwork/homework, and a significant 65%, $p = .004$ indicated that they use iPads/tablets. The results of a binomial test performed for the ICT platforms, used by learners, reveal that a significant 81%, $p < .0005$ indicated that they use internet for their classwork/homework; a significant 73%, $p < .0005$ indicated that they use Word; and a significant 63%, $p = .012$ indicated that they use Power

Point. Another binomial test, on data about school leaders requiring learners to do online assessments, revealed that 51% of respondents require students to do online assessments, and 49% do not require their students to do online assessments. The results of a chi-square goodness-of-fit test, showed that a significant 57%, $p < .0005$ of the sample, believed that 60 to 80 percent of the teachers, actively and regularly use technology in their teaching. The rapid and colossal changes in ICT, have revolutionised all spheres of life, including education and specifically 21 CL (Varghese *et al.*, 2019). The effective use of ICT in schools, is considered to be one of the determining factors, in the success of 21 CL, because many of the facets of 21 CL are dependent on ICT (Shanmugam & Balakrishnan, 2019). The above results, indicate that both school leaders and learners, use a wide variety of ICT devices and platforms. This provides a good foundation for the interpretation and enactment of 21 CL.

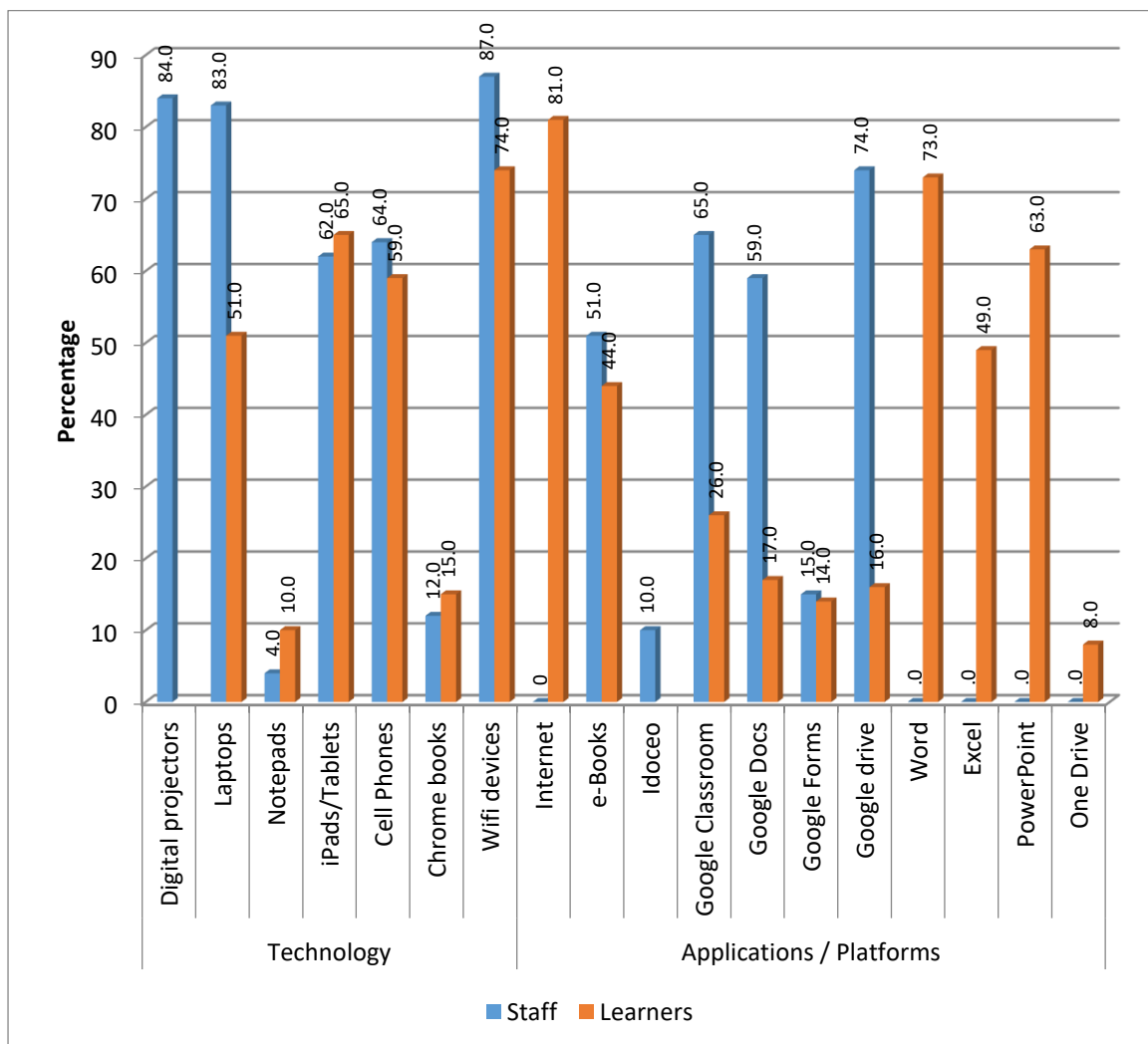


Figure 5.4: Different forms and platforms of ICT used by school leaders and learners

5.2.2.4 Information and communication technology courses/seminars/programs attended by school leaders

Figure 5.5 presents the data for the ICT courses/seminars/programs attended by school leaders. Results of a chi-square goodness-of-fit test, show that a significant 88%, $p < .0005$ of the sample have attended courses, seminars or programs which focused on the use of technology in schools.

Eighty-eight of the 100 respondents indicated that they attended some form of ICT training. Of these 88 respondents, 53 (60.2%), $p < .0005$ indicated the courses had been organised both internally and externally; 56 (63.6%), $p = .011$ said they were randomly arranged; and 50 (56.8%) rated them as 'good', $p < .0005$. The results indicate that most of the respondents attended some form of ICT training and 31,8% considered the training to be adequate.

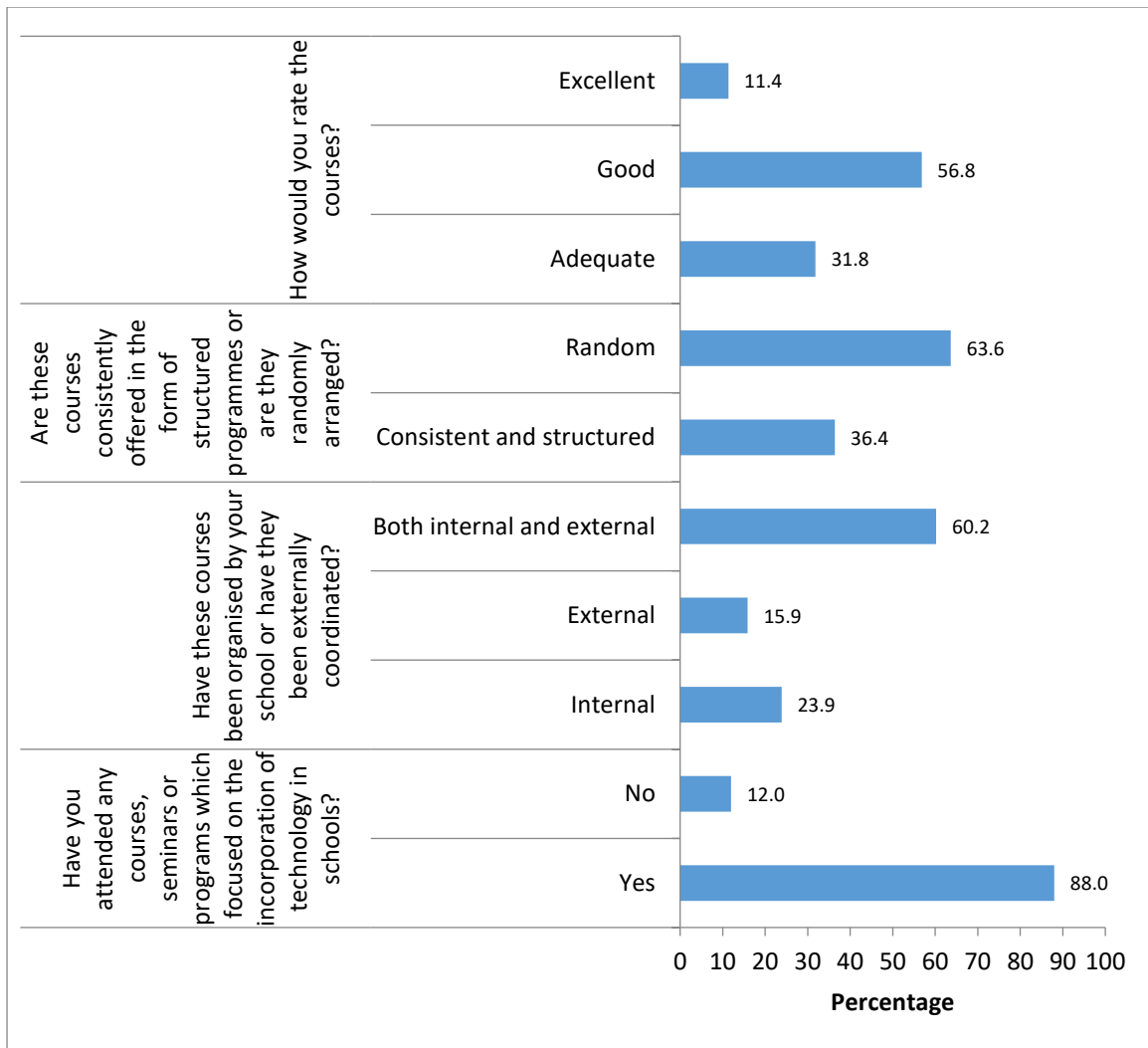


Figure 5.5: ICT courses/seminars/programs attended by school leaders

The data depicted in Table 5.1 contains suggestions from respondents, to improve the ICT courses. Respondents were asked, what should be maintained and what should be improved, regarding the ICT courses that they attended. 54% of the responses to this question indicated that the courses should be more regular, 23% that the courses should be more subject specific, and 11% that the courses should be more interactive.

Table 5.1: Suggestions to improve ICT courses

Applications/Platforms	Percentage
Courses should be more regular	54%
Courses must be subject specific	23%
Courses should be interactive	11%
Not applicable	12%

5.2.3 The interpretation and enactment of twenty first century learning

In the third section of the online questionnaire respondents were asked to respond to questions about the interpretation and enactment of 21 CL.

5.2.3.1 School leaders' experience of twenty first century learning

Figure 5.6 presents the data, for the experience of school leaders about 21 CL. Evidently, 52% of respondents stated that their experience was 'good', 34% stated that it was 'fair', 9% stated that it was 'excellent', and 3% stated that their experience was 'poor'.

Results of a chi-square goodness-of-fit test revealed that a significant 86%, $p < .0005$ of the respondents, rated their experience of 21 CL as either 'fair' or 'good'.

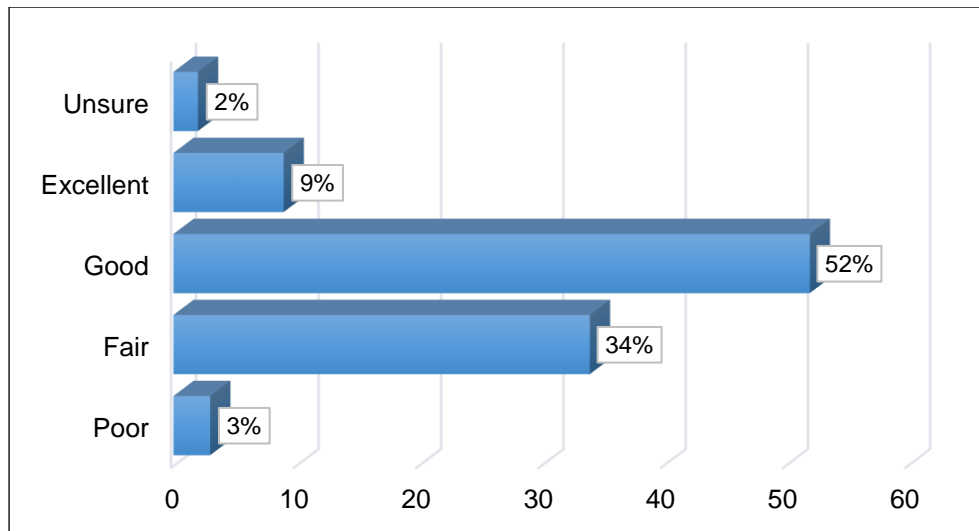


Figure 5.6: Rating of school leaders' experience of 21 CL

5.3.2.2. Inquiry-based and cross-curricular school assessments

Inquiry-based and cross-curricular assessments are components of 21CL (Hines & Lynch, 2019). Figure 5.7 shows the percentage of respondents that use school assessments, which are inquiry-based or cross curricular. The results of a chi-square goodness-of-fit test, revealed that a significant 82%, $p < .0005$ indicated that there are inquiry-based learning strategies; while a significant 67%, $p < .0005$ said there are assessments/exercises that are cross-curricular.

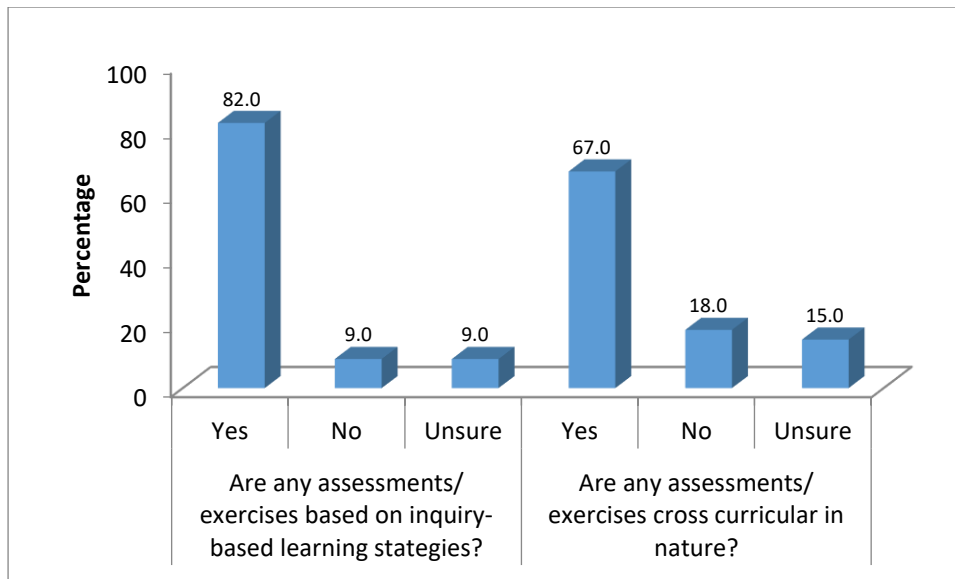


Figure 5.7: Inquiry-based and cross-curricular school assessments

5.3.2.3 Incorporation of twenty first century competencies in teaching

School leaders were asked, whether they formally incorporate 21st century competencies, into their lesson plans when teaching. Figure 5.8 presents this data. The results of a chi-square goodness-of-fit test, showed a significant 73%, $p < .0005$ indicated that they, or other teachers formally incorporate 21st century competencies into their teaching. The results of a binomial test on the 21st century competencies, that were incorporated into teaching by school leaders, showed that a significant 94,5%, $p < .0005$ used critical thinking in their teaching; a significant 83,6%, $p < .0005$ used global awareness; a significant 80,8%, $p < .0005$ used collaboration; a significant 79,5%, $p < .0005$ used communication; a significant 76,7%, $p < .0005$ used innovative thinking; a significant 69,9%, $p = .001$ used social proficiency; a significant 68,5%, $p = .002$ cross cultural skills, and a significant 64,4%, $p = .019$ used information skills. The above results indicate that many 21st century competencies are being formally taught to learners.

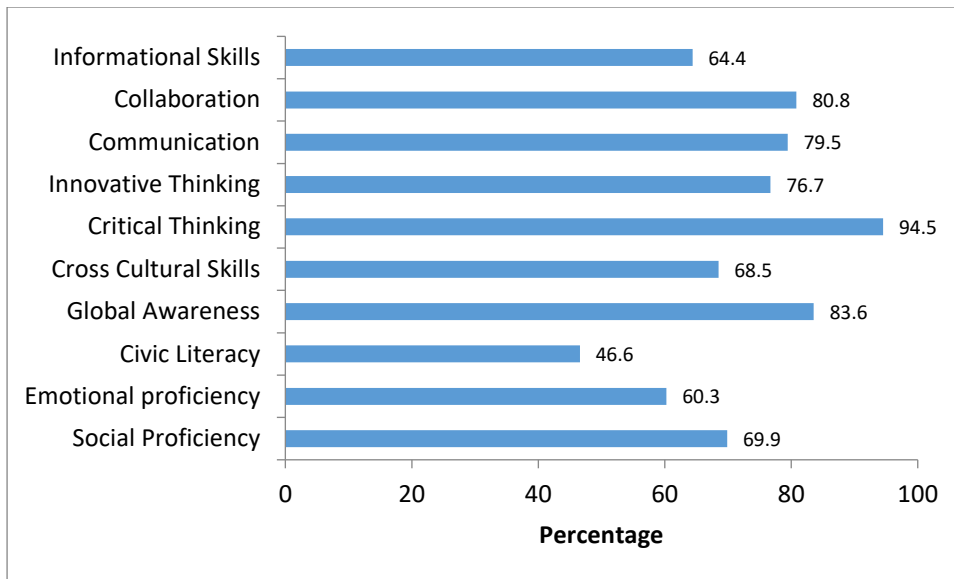


Figure 5.8: Incorporation of 21st century competencies in teaching

School leaders were asked in which grades they formally incorporate 21st century competencies. Figure 5.9 presents the data obtained. The results of a chi-square goodness-of-fit test, revealed that a significant 46%, $p < .0005$ indicated that they incorporate 21st century competencies in grade eight and grade twelve.

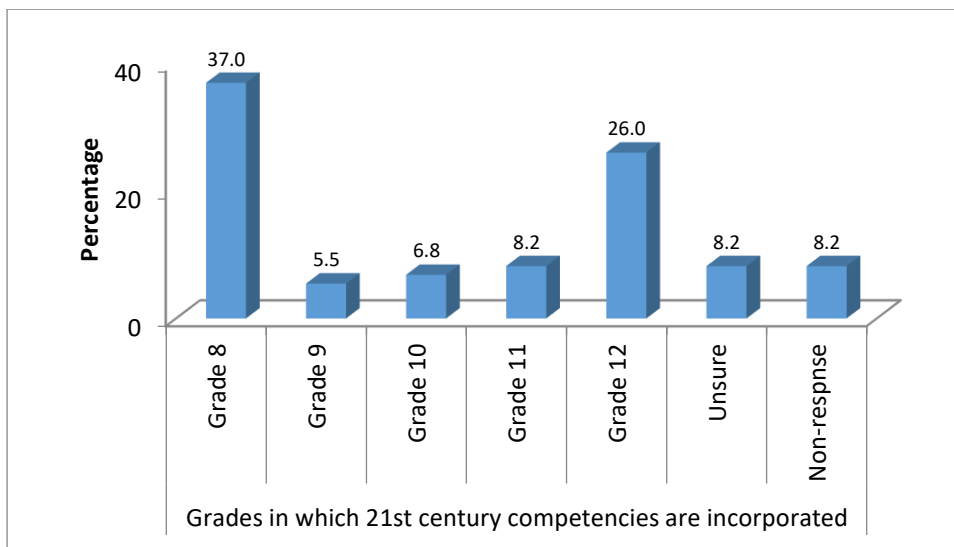


Figure 5.9: Grades in which 21st century competencies are incorporated

Table 5.2 presents the data collected, regarding different methods, in which teachers incorporate 21st century competencies, in their teaching. Emphasising 21st century competencies in the teaching of subject matter (34%), and the use of different classroom/teaching activities (32%), feature prominently, when teachers incorporate 21 CL competencies in their teaching.

Table 5.2: Methods in which 21st century competencies are incorporated in teaching

Methods of incorporation of 21 st century competencies in teaching	Percentage
Emphasising 21 st century competencies in the teaching of subject matter	34%
Use of objective questions, discussions, research essays, debates and presentations, projects, assignments and experiments	32%
Teaching learners specifically about 21 st century competencies	18%
Cross curricular learning	16%
Learners working with partners or in groups	14%
Use of ICT	9%
Testing 21 st century competencies in formal assessments	7%
Teachers familiarising themselves with international trends in education	4%
Leadership programs for learners	4%
Use of real-world problems and data analysis	4%
Alignment and assimilation	2%
Thinking maps	2%
Use of the flipped classroom concept	2%
Outreach projects	2%

School leaders were further asked, in their opinion, what percentage of their staff actively use 21 CL in their teaching practice. The results of a chi-square goodness-of-fit test, showed that a large number 23% were unsure of this; however, a significant 44%, $p < .0005$ indicated that the

percentage of staff ,who actively use 21 CL in their teaching practice, was more than 40% but less than 100%.

5.3.2.4 Courses on twenty first century learning and related fields attended by school leaders

Figure 5.10 presents the data obtained from school leaders, about their attendance of course/seminars/workshops on 21 CL, cross-curricular studies, thinking schools, or inquiry-based learning. Analysis of the data showed that none of these courses have been attended by a significant number of the sample.

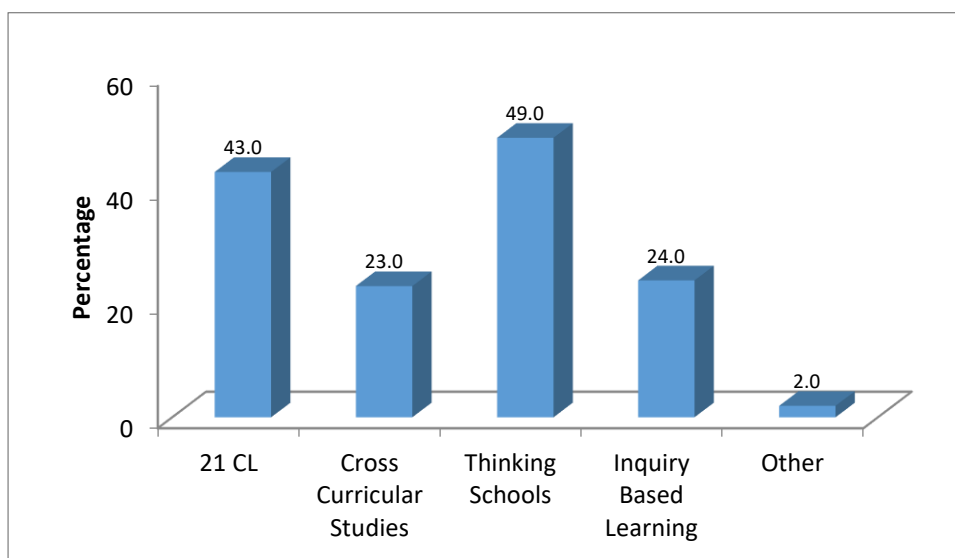


Figure 5.10: Courses on 21 CL and related fields attended by school leaders

Figure 5.11 presents further data about courses on 21 CL, and related fields attended by respondents. The results of a chi-square goodness-of-fit tests showed that a significant 74,4%, $p < .0005$ of these courses were arranged externally only, or both externally and internally; a significant 61,3%, $p < .0005$ were randomly arranged; and a significant 66,7%, $p < .0005$ were rated as ‘good’. The results indicated that although few school leaders attended any sort of training in the above courses, those that did attend, considered the training as beneficial.

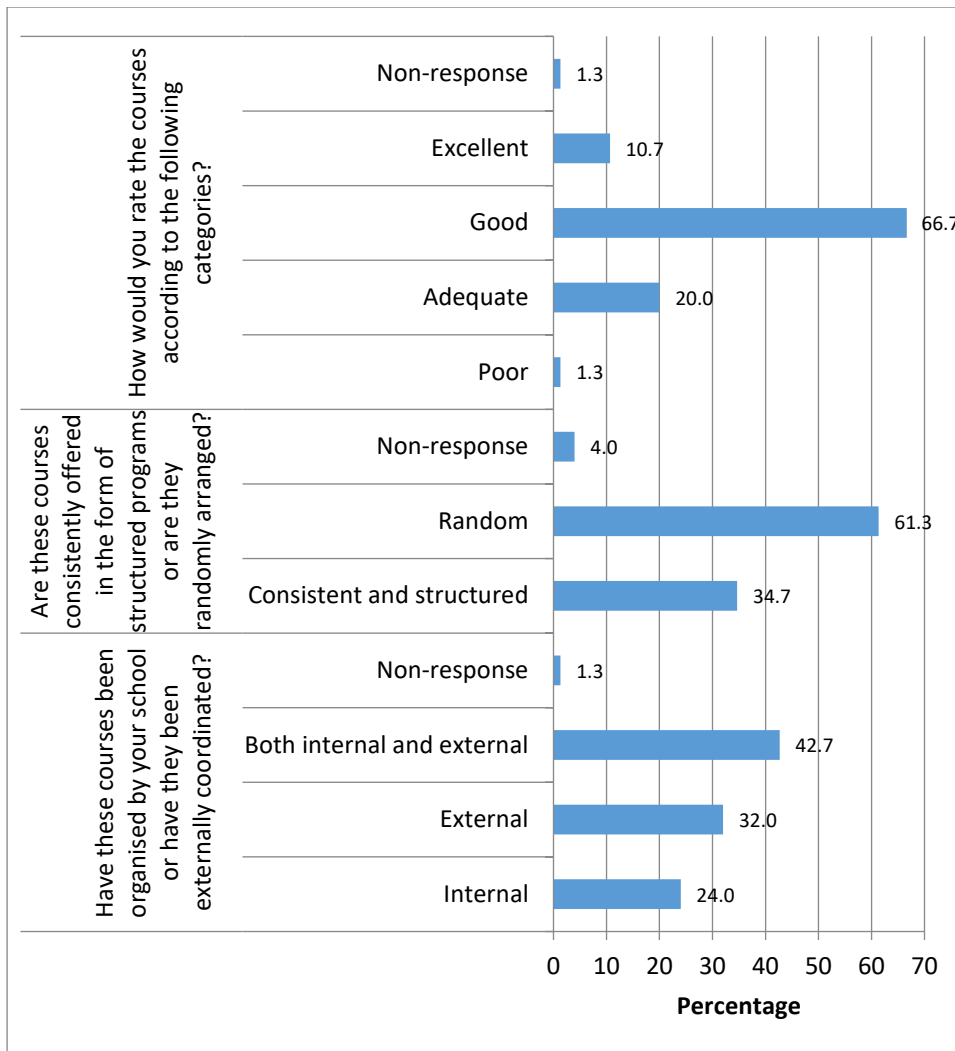


Figure 5.11: Data on courses on 21 CL and related fields attended by school leaders

The data depicted in Table 5.3 suggests ways that the courses can be improved. Twenty percent of the responses indicated that there should be refresher or follow up courses, 16% that courses should be more regular, 14% that the courses should be more affordable, and 12% that the courses should provide more assistance, in the aspects pertaining to implementation and practicality.

Table 5.3: Feedback on 21 CL courses

Maintain		Improve	
Good instructors	6%	Time off to attend	6%
Good structure and content	8%	Consistency of courses	9%
Maintain new courses	6%	Refresher/follow-up courses needed	20%
		Affordability	14%
		More regularly offered	16%
		More courses offered	8%
		More subject-specific	6%
		Lack of structure	4%
		Assistance in implementation and practical application	12%

5.2.3 School leader’s experiences of leadership practices pertaining to the interpretation and enactment of twenty first century learning

In the context of the study, school leadership refers to the principal, deputy principal and subject heads/heads of department. Effective school leadership is a crucial component, in the interpretation and enactment of 21 CL (Ajmain *et al.*, 2019). This is because school leadership affects every part of the change process (Hines & Lynch, 2019). Consequently, many countries have purposely developed their school leadership teams, to facilitate the change to 21 CL (Howard *et al.*, 2019). The use of ecological leadership, system leadership, strategic leadership, and transformational leadership, feature prominently in literature, when countries have initiated the change to 21 CL (Lee & Kuo, 2019; Manns, 2019). In light, of the important role that effective school leadership has in facilitating 21 CL, respondents were asked in the fourth section of the online questionnaire, to respond to questions about their leadership experiences regarding the interpretation and enactment of 21 CL.

5.2.3.1 Leadership/management qualifications and courses

Management usually refers to a position of authority, where individuals supervise others, to achieve organisational objectives, whereas leadership usually refers to motivating and influencing others, to work towards an organisation's vision (Bowen, 2022). Table 5.4 shows the data collected from the respondents, regarding their leadership/management qualifications, and the leadership/management courses/seminars/programs, which they attended. The results of two different binomial tests, showed that while a significant 75%, $p < .0005$ do not have a certificate, diploma or degree in management or leadership studies, a significant 66%, $p = .002$ have attended courses on them. The results of two different chi-square goodness-of-fit tests revealed a significant 90% of the respondents indicated that these courses were organised either externally or both internally and externally and a significant 56,3%, $p < .0005$ rated the course(s) as 'good'. The results revealed that many school leaders do not have formal leadership or management qualifications, but they have attended some sort of training in these disciplines.

Table 5.4: Leadership/management qualifications and courses

Question	Categories	Frequency (%)	p-value
Do you possess a certificate/ diploma/ degree in leadership or management studies?	<i>Yes</i>	25 (25%)	<.0005*
	<i>No</i>	75 (75%)	
Attended courses	<i>Yes</i>	66 (66%)	.002*
	<i>No</i>	34 (34%)	
Organised ...	<i>Internally</i>	7 (10.9%)	<.0005*
	<i>Externally</i>	24 (37.5%)	
	<i>Both internally and externally</i>	33 (51.6%)	
Offered in the form of...	<i>Consistent and structured programs</i>	26 (40.6%)	.134
	<i>Random programs</i>	38 (59.4%)	
Course rating	<i>Poor</i>	-	<.0005*
	<i>Adequate</i>	12 (18.8%)	
	<i>Good</i>	36 (56.3%)	
	<i>Excellent</i>	16 (25.0%)	

The data depicted in Table 5.5 suggests ways that the leadership courses can be improved. Twenty-three percent of the responses indicated that the leadership courses should be more consistent, 19% that the content of the courses should be more relevant, 19% that the courses should be more structured and continuous with follow-up strategies, and 16% that the courses should provide more assistance in the aspects pertaining to implementation and practicality.

Table 5.5: Feedback on leadership/management courses attended by school leaders

Maintain		Improve	
Useful content	6%	Consistency	23%
Good external facilitators	3%	More teachers trained	3%
		Include effective team building	3%
		Introduction of formal studies	3%
		More practical applications	16%
		More courses	10%
		More structure, continuity and follow up	19%
		More time allocation	6%
		More relevant content	19%
		Inclusion of online components	3%
		More collaboration	3%

5.2.3.2 Transformational Leadership

Transformational leadership is used, when organisations or schools are undergoing fundamental changes, in their foundational theories, practices, structures, personnel, and vision (Hussain *et al.*, 2016). This makes it extremely relevant when schools begin to interpret and enact 21 CL (Allen *et al.*, 2015). When transformational leadership has been used to switch to 21 CL, it has provided higher academic standards for learners, greater teacher morale and improved the efficiency of the school management team (King & Travers, 2017).

Table 5.6 shows the data collected from the respondents pertaining to transformational leadership. The results of a chi-square goodness-of-fit test revealed that a significant 67%, $p < .0005$ of respondents indicated that their experience of transformational leadership was ‘fair’ or ‘good’. The results of a binomial test indicated showed that a significant 30%, $p < .0005$ of respondents, attended courses on transformational leadership in the context of 21 CL. The results of two different chi-square goodness-of-fit tests revealed that a significant 93,3%, $p = .006$ of the respondents indicated that these courses were organised either externally, or both internally and externally, and a significant 70%, $p < .0005$ rated the course(s) as ‘good’. The results reveal that many school leaders had experience of transformational leadership and an

understanding of it. The results also show, that there was a limited amount of transformational leadership courses in the context of 21 CL, available to school leaders, and therefore fewer school leaders attended these courses. Many of those that did attend this training, considered it beneficial. This information about transformational leadership is important and pertinent when designing a leadership model for 21 CL.

Table 5.6: Data on transformational leadership

Question	Categories	Frequency (%)	p-value
Rate your experience of transformational leadership	<i>None</i>	5 (5%)	<.0005*
	<i>Poor</i>	13 (13%)	
	<i>Fair</i>	31 (31%)	
	<i>Good</i>	36 (36%)	
	<i>Excellent</i>	7 (7%)	
	<i>unsure</i>	8 (8%)	
Attended courses	<i>Yes</i>	30 (30%)	<.0005*
	<i>No</i>	70 (70%)	
Organised ...	<i>Internally</i>	2 (6.7%)	.006*
	<i>Externally</i>	16 (53.3%)	
	<i>Both internally and externally</i>	12 (40%)	
Offered in the form of...	<i>Consistent and structured programs</i>	13 (43.3)	.585
	<i>Random programs</i>	17 (56.7%)	
Course rating	<i>Poor</i>	-	<.0005*
	<i>Adequate</i>	5 (16.7%)	
	<i>Good</i>	21 (70%)	
	<i>Excellent</i>	4 (13.3)	

The data depicted in Table 5.7 suggests ways that the transformational leadership courses can be improved. Twenty-five percent of the respondents mentioned that the leadership courses should be more consistent, and 17% stated that there should be more courses on offer.

Table 5.7: Feedback on transformational leadership courses

Maintain		Improve	
ISASA courses	8%	Consistency	25%
		More relevant, practical content	8%
		More feedback	8%
		More dialogue	8%
		More time allocation	8%
		More courses	17%
		Maintain online workshop	8%

5.2.3.3 Strategic Leadership

Strategic leadership involves the formulation of a vision for an organisation or school, comprehensive plans on how to achieve it, as well as the inspiration, persuasion, and motivation of followers, to cooperatively work together to realise it (Mohamad & Ismail, 2018). Strategic leadership is multifaceted, and has proved to be very useful to organisations, such as schools during periods of significant change like the adoption of 21 CL (Prasertcharoensuk & Tang, 2017). The use of strategic leadership has been correlated with improved learner behaviour and achievement, as well as teacher motivation and effectiveness (Chatchawaphun *et al.*, 2016).

Table 5.8 shows the data collected from the respondents pertaining to strategic leadership. The results of different chi-square goodness-of-fit tests revealed that a significant 66%, $p < .0005$ of respondents indicated that their experience of strategic leadership was ‘fair’ or ‘good’, and a significant 79%, $p < .0005$ of respondents did not attend courses on strategic leadership in the context of 21 CL. The results of another chi-square goodness-of-fit test revealed a significant 70%, $p = .002$ of the respondents, that attended courses on strategic leadership, rated the course(s) as ‘good’. The results show that many of the school leaders had experience of strategic leadership and an understanding of it. The results also establish that strategic

leadership courses in the context of 21 CL, were limited, and as a result most of the school leaders did not have any training of strategic leadership in the context of 21 CL. Since research shows that strategic leadership facilitates the interpretation and enactment of 21 CL, these results are important and germane when constructing a leadership model for 21 CL.

Table 5.8: Data on strategic leadership

Question	Categories	Frequency (%)	p-value
Rate your experience of strategic leadership	<i>None</i>	10 (10%)	<.0005*
	<i>Poor</i>	-	
	<i>Fair</i>	27 (27%)	
	<i>Good</i>	39 (39%)	
	<i>Excellent</i>	5 (5%)	
	<i>unsure</i>	19 (19%)	
Attended courses	<i>Yes</i>	21 (21%)	<.0005*
	<i>No</i>	79 (79%)	
Organised ...	<i>Internally</i>	-	.127
	<i>Externally</i>	14 (70%)	
	<i>Both internally and externally</i>	6 (30%)	
Offered in the form of...	<i>Consistent and structured programs</i>	8 (40%)	.371
	<i>Random programs</i>	12 (60%)	
Course rating	<i>Poor</i>	-	.002*
	<i>Adequate</i>	2 (10%)	
	<i>Good</i>	14 (70%)	
	<i>Excellent</i>	4 (20%)	

Overall, only 21% attended courses/seminars/programs on strategic leadership in the context of 21 CL. The respondents' suggestions in Table 5.9, show that the strategic leadership courses can be improved by improving consistency (50%), having more continuity, whereby courses flow and lead into each other, and feedback strategies (25%), and keeping abreast of recent changes (25%).

Table 5.9: Feedback on strategic leadership courses

Maintain		Improve	
		Consistency	50%
		Continuity and feedback strategies	25%
		Keep abreast of recent changes to stay relevant	25 %

5.2.3.4 System Leadership

System leadership focuses on the development of the entire system, and the efficient inter-related functioning of its different components (Brown & Weli, 2019). It focuses on the development of all school within the system (Simkins *et al.*, 2018). The basis of system leadership, and system thinking, is a common purpose and a shared vision between system members (Brown & Greany, 2018).

System leadership has been used by school leaders, when changing their educational systems to 21 CL (Brown & Greany, 2018). It has enhanced the change process, and led to improvements, in many areas of school life after the change (Boylan, 2018). Table 5.10 shows the data collected from the respondents pertaining to system leadership. The results of different chi-square goodness-of-fit tests, revealed that 53%, $p < .0005$ of respondents indicated that their experience of system leadership was 'good', or that they were 'unsure' of it, and a significant 90%, $p < .0005$ of respondents did not attend courses on system leadership in the context of 21 CL.

In comparison to transformational leadership and strategic leadership, the results show that fewer school leaders, had substantial experience or knowledge of system leadership. The

results also show that training in system leadership, in the context of 21 CL was limited, as only a few school leaders attended this training. These results are relevant because it indicates that although system leadership is an effective leadership style , when interpreting and enacting 21 CL, it has not been extensively utilised by school leaders, in private secondary schools in KwaZulu-Natal. It could thus be added to the change process, to advance it, especially when designing a leadership model.

Table 5.10: Data on system leadership

Question	Categories	Frequency (%)	p-value
Rate your experience of system leadership	<i>None</i>	13 (13%)	<.0005*
	<i>Poor</i>	15 (15%)	
	<i>Fair</i>	16 (16%)	
	<i>Good</i>	23 (23%)	
	<i>Excellent</i>	3 (3%)	
	<i>unsure</i>	30 (30%)	
Attended courses	<i>Yes</i>	10 (10%)	<.0005*
	<i>No</i>	90 (90%)	
Organised ...	<i>Internally</i>	-	1.000
	<i>Externally</i>	5 (50%)	
	<i>Both internally and externally</i>	5 (50%)	
Offered in the form of...	<i>Consistent and structured programs</i>	5 (50%)	1.000
	<i>Random programs</i>	5 (50%)	
Course rating	<i>Poor</i>	-	.150
	<i>Adequate</i>	3 (30%)	
	<i>Good</i>	6 (60%)	
	<i>Excellent</i>	1 (10%)	

Given that only 10% of respondents attended courses/seminars/programs on system leadership, in the context of 21 CL, there were very few responses in terms of how it can be improved. The results also indicate that courses on system leadership, in the context of 21 CL, was limited and

therefore few school leaders were able to attend them. Suggested improvements included more continuity, whereby courses are more developmentally structured (67%), and formal studies (33%).

Table 5.11: Feedback on system leadership courses

Maintain		Improve	
		Continuity	66%
		More formal studies	33%

5.2.3.5 Ecological Leadership

Manns (2019) describes ecological leadership, as the different relationships within a social system, such as a school. The microsystem refers to activities with the classroom, the mesosystem refers to activities outside the classroom but within the school environment, the exosystem refers to all outside factors and bodies associated with the school, the macrosystem refers to all national and global factors, that influence the school, and the chronosystem refers to how the ecological landscape changes over time (Huijser *et al.*, 2019). Ecological leaders are able to introduce changes, like the interpretation and enactment of 21 CL, across the ecological levels, and better understand the different interrelated factors which affect the change (Hung *et al.*, 2016).

Ecological leadership has been used by school leaders, when changing to 21 CL, and it has facilitated and expedited the change, producing long lasting positive development (Koh & Hung, 2018). Table 5.12 shows the data collected from the respondents pertaining to ecological leadership. The results of different chi-square goodness-of-fit tests revealed that a significant 73%, $p < .0005$ of respondents indicated that their experience of ecological leadership was 'none' or 'poor', or that they were 'unsure' of it, and a significant 95%, $p < .0005$ of respondents did not attend courses on ecological leadership in the context of 21 CL. The low attendance of ecological leadership courses in the context of 21 CL, reveal that these courses were very few in number. The results also indicated that most school leaders, had limited experience or knowledge of ecological leadership. These results are pertinent because it shows us that,

although research shows that ecological leadership, has been positively used in the interpretation and enactment of 21 CL, it may not been widely used, by school leaders in private secondary schools in KwaZulu-Natal when introducing 21 CL. However, it can still be assimilated into the change process, and the design of a leadership model to produced better results and streamline the process.

Table 5.12: Data on ecological leadership

Question	Categories	Frequency (%)	p-value
Rate your experience of ecological leadership	<i>None</i>	19 (19%)	<.0005*
	<i>Poor</i>	27 (27%)	
	<i>Fair</i>	14 (14%)	
	<i>Good</i>	10 (10%)	
	<i>Excellent</i>	3 (3%)	
	<i>unsure</i>	27 (27%)	
Attended courses	<i>Yes</i>	5 (5%)	<.0005*
	<i>No</i>	95 (95%)	
Organised ...	<i>Internally</i>	1 (20%)	.819
	<i>Externally</i>	2 (40%)	
	<i>Both internally and externally</i>	2 (40%)	
Offered in the form of...	<i>Consistent and structured programs</i>	1 (20%)	.180
	<i>Random programs</i>	4 (80%)	
Course rating	<i>Poor</i>	-	.819
	<i>Adequate</i>	1 (20%)	
	<i>Good</i>	2 (40%)	
	<i>Excellent</i>	2 (40%)	

Given that only 5% of respondents attended courses/seminars/programs on ecological leadership, in the context of 21 CL, there were very few responses in terms of how it can be improved. Suggested improvements included continuity, where one course leads onto another (50%), and more formal studies (50%).

Table 5.13: Feedback on ecological leadership courses

Maintain		Improve	
		Continuity	50%
		More courses	50%

5.3 Qualitative data

The qualitative data of the study was collected through semi-structured interviews and focus group interviews, conducted at five purposively selected schools, from September 2018 to November 2018. It is important to note that this research was done prior to COVID-19. The principal, deputy principal managing the academic program and/or 21 CL, and the ICT head at each school were interviewed individually. The focus groups, at each school, were comprised of varying numbers of different subject heads/heads of department. The reasoning behind interviewing different school leaders, was to gain different views, interpretations, and opinions about ICT, 21 CL and school leadership, including the relationship between these three aspects. The recordings of both the individual interviews, and the focus group interviews, were then transcribed by a skilled transcriber. The transcripts were read, comprehensively studied, and thematically analysed by the researcher. Thematic analysis involves the analysis of textual data from interviews, to identify common thoughts and ideas, which can then be coded to develop interwoven themes, which are aligned with the objectives of the study (Roberts *et al.*, 2019). The researcher adopted a deductive, and inductive approach, to the thematic analysis of the transcripts.

5.3.1 Semi-structured and focus group interviews

The school leaders' answers to the interview questions provided valuable and essential data, which contributed to achieving the objectives of the study. They were eager to assist and were willing to share their knowledge and experience. The major themes and sub-themes arising from the semi-structured interviews are presented in this chapter and are evidenced by verbatim quotations of the participants.

5.3.2 Demographic profiles of respondents for semi-structured interviews

Table 5.14 shows the demographic profiles of the fifteen participants who participated in the individual semi-structured interviews.

Table 5.14: Demographic profiles of participants in the semi-structured interviews

Key Characteristics	Category	Number of participants	Codes in qualitative findings	Percentage of participants
Rank	Principal	5	<i>P1, P2, P3, P4, P5</i> represent the principals from the five different participating schools.	33.33
	Deputy principal	5	<i>DP1, DP2, DP3, DP4, DP5</i> represent the principals from the five different participating schools.	33.33
	ICT head	5	<i>ICT1, ICT2, ICT3, ICT4, ICT5</i> represent the principals from the five different participating schools.	33.33
Gender	Females	8		53.33
	Males	7		46.47
Race	White	13		86.67
	Indian	2		13.33
Work experience (in years)	0-10	2		13.33
	10-20	3		20
	20-30	4		26.67
	30-40	5		33.33
	40-50	1		6.67

The principals, deputy principals and ICT heads, formed equal percentages of the total participants, because the number of individuals of the same rank, were interviewed at each school. Females (53,33%) formed a slightly higher percentage of management positions at participating schools than males (46,67%). Most of the management positions were occupied

by White individuals (86,67%) followed by Indians (13,33%), whilst there were no African, or Coloured participants. Most of the participants, had twenty year or more years of experience working in education. This correlates with seniority and years of experience being contributing factors in individuals being promoted to school leadership positions (Zelvys *et al.*, 2019). Table 5.15 shows the demographic profiles of the fifteen participants who participated in the individual semi-structured interviews.

Table 5.15: Demographic profiles of participants in the focus group interviews

Focus group	Number of participants	Codes in qualitative findings	Gender	Race	Work experience (in years)
1	4	<i>FG1A, FG1B, FG1C, FG1D</i>	Female - 4	White – 4	10 to 20 - 2
					20 to 30 - 2
2	6	<i>FG2A, FG2B, FG2C, FG2D, FG2E, FG2F</i>	Male -3	White – 3	10 to 20 - 2
					20 to 30 - 2
			Female - 3	Indian - 3	30 to 40 - 1
					40 to 50 - 1
3	5	<i>FG3A, FG3B, FG3C, FG3D, FG3E</i>	Female - 5	White - 4	10 to 20 - 2
					20 to 30 - 1
				Indian - 1	30 to 40 - 1
					40 to 50 - 1
4	4	<i>FG4A, FG4B, FG4C, FG4D</i>	Male - 2	White - 3	10 to 20 - 2
			Female -2	Indian - 1	20 to 30 - 2
5	2	<i>FG5A, FG5B</i>	Male - 1	Indian - 2	10 to 20 - 2
			Female - 1		

There were 21 subject heads/heads of department, who participated in the focus group interviews. The subject heads/heads of department were mostly female (71,43%), White (66,67%), and all of them had more ten than years of experience. This again correlates with seniority, and years of experience, being contributing factors to individuals being promoted to school leadership positions (Zelvys *et al.*, 2019).

5.3.3.1 Subtheme 1: Information and communication technology programs as curriculum subjects

All the participants indicated that their schools had official ICT programs. The ICT programs varied from school to school. However, all of the ICT programs were structured as part of the school curriculum, in the form of ICT related subjects. These subjects included Computer, Technology, Media Science, CAT and IT lessons.

“We have computer technology lessons up to the end of grade 9... after that they have the ITSI program (Institute for Technology Strategy and Innovation) where they use e-books.”
(P3)

“IT and CAT are optional subjects that are taught in the FET for us, but in terms of a curriculum that is followed in grade 8 and 9, its through media science.” (DP2)

“We have ICT lessons up until the end of grade 8 where they learn how to use technology. That’s part of the official curriculum... and from grade 9 they are hopefully using the technology to learn.” (DP3)

The idea of ICT programs being components of the school curriculum was further substantiated by the responses below.

“I suppose it starts in grade 8 and 9 where they have to take technology as a subject...to learn basic skills... From that point forward, there isn’t a formal program in the school.”
(DP4)

“We do have the Go-Lab for the junior students where they have compulsory technology lessons as well as the Mac Room with computers.” (FG2C)

Compulsory ICT lessons for the junior grades, and optional ICT lessons for the senior grades featured prominently in the responses. In the compulsory ICT lessons for the junior grades, learners were taught about the ICT devices, platforms, and applications, used in the individual

schools, with the expectation that they would use, and improve this knowledge in the senior grades. Other participants supported this view and further added that:

“We have policies in place within our school where we have grade eight to grade twelve learners using iPads and they have e-books and we as educators we push resources on to their tablets especially in compulsory technology lessons in grades 8 and 9.” (DPI)

“Up until grade 9 (ICT programs), they have formal lessons.” (ICT 3)

“The grade eights and nines have tablets which they are taught use.” (FG3D)

In reviewing the participant’s responses, from the five different schools, it was evident that their approach to official ICT programs, was through the school’s curriculum, in the form of official time-tabled ICT related subjects. This would have been done, to probably formalise the ICT plans, and because it is easier to incorporate ICT, in the school’s academic curriculum. More formalisation and structure were evident in the junior grades. This is probably because students needed to be taught the necessary ICT knowledge, and skills required at the secondary school, in their beginning years, before using it effectively, and as well as enhancing it the senior grades. Grade eight and grade nine learners also do the same subjects across the grade, so it is easier to introduce subjects, like media science, technology, and computer lessons, to all learners within the grade, in allocated timetabled lessons. Grades ten to twelve do different subject packages, which would make this option more difficult. IT and CAT were optional subjects offered in the senior grades. However, ICT support for all the grades, appeared to be available, but this was optional. The media science, library and computer rooms were accessible to all learners and teachers.

5.3.3.2 Subtheme 2: Smaller information and communication technology teams and the need for more staff

One of the interviewed schools, only had one individual, who was the ICT teacher/head managing the ICT program, two schools had two individuals, one three and the remaining one had six. The ICT teams were comprised of the ICT teacher/head, a non-academic technical

support staff member, and teachers who were ICT enthusiasts, joined the teams that had more than two staff members.

“We have one person who is our main IT teacher. He has someone working with him as well, from the technical side. So, they do all the trouble shooting.” (DP1)

Yes (ICT team), not very formally... there are two staff employed by the IT department and one other staff member also assists.” (ICT 3)

“We have our, I would say program for the students ... There are two members of staff in charge of it.” (FG5B)

Participants from the larger private secondary schools, indicated that the present ICT teams were too small to manage the school ICT programs, and that there was a need for additional ICT members.

“We have a technician here that works with us all day and then we have a teacher who is CAT (computer applications technology) trained. She does the teaching and we have the head of science who also drives ICT. I think the responsibilities of the team are really many... Possibly our team could be bigger... this is one area where we need to grow at least another staff member.” (P3)

“Essentially, we do have technical support with (Name) and (Name) as the ICT integrator but, we definitely are short staffed, in that sphere.” (DP2)

The school with six ICT members were comprised of the following personnel:

So essentially, we have an ICT team which comprises of the network manager and one of the support staff from the network side of the school, the manager of the media centre, myself as well, the subject head of IT, she has been tasked with staff training and I manage it, and one other IT teacher.” (DP4)

This larger team, would seem to have enough individuals, to effectively manage the different components, of a comprehensive ICT program for the school. However, although this ICT

team, comprised of many more members than the other schools, the roles and contributions of the individuals, were not clearly outlined as evident from the principal of the school's response:

“The whole team is quite a loose team... So, it's a group of interested teachers that get together now and then... They use ICT at different levels within their own teaching and then share what they know.” (P4)

When analysing the responses of the participants in totality, smaller ICT team, with essential technical support, and ICT teachers/heads as members, was the norm. The principal from *School Five*, indicated that his school only had one staff member, managing the ICT program, because of the small size of the school, and budget constraints prevented the hiring of more staff, to form an ICT team. The ICT head/teacher, and the ICT technician probably featured in all the other schools, because the on-site technician, is necessary to resolve learner and teacher ICT issues, which arise on a daily basis, and the ICT head/teacher, has the ICT knowledge and practical skills, which they can share with the rest of the school community. The size of ICT teams in private secondary schools, is mainly determined by the number of learners. In the smaller schools that were interviewed, one ICT person, or two individuals comprising the team, were sufficient to manage the ICT program, for the entire school. However, the participants from the larger schools that were interviewed, recognised the need for larger ICT teams, to cater to the different needs, of the larger student population. *School 4* had the largest ICT team, but the principal's response, indicates that, although this team was larger than the other teams, the functionality of it, was similar to the smaller teams of the other schools.

5.3.3.3 Subtheme 3: The different forms and platforms of information and communication technology used by school leaders and learners

ICT is advancing at an incredible pace (Varghese *et al.*, 2019). These rapid and radical technological changes, are constantly modifying and improving pedagogical approaches (Nouri *et al.*, 2019). The two major role players, that constantly develop educational ICT, are Google and Microsoft. The responses of the participants, about the forms/types and platforms of technology, utilised in schools, indicated the approach that schools adopted, when introducing ICT and consequently 21CL. The responses also provided insights into the extent of ICT development, and ICT usage in schools. All the participants indicated that they use ICT

regularly, in both their teaching and administration duties at school. Some of the more common forms of ICT, utilised by school leaders, included wi-fi, digital projectors, laptops, cell phones and iPads/tablets, notepads, and chrome books, whilst school leaders, mostly used a combination of applications, from Google Suite and Microsoft Office, depending on the activity or duty that needed to be completed. This is evident in the responses below.

“Digital projectors, laptops, iPads, cell phones, e-books, wi-fi, some people use notepads. Internet, e-books, Idoceo, Google classroom, Google Docs, Google Forms (used by school leaders).” (P2)

“That would be a laptop and a tablet...data projector with Power Point. We use ITSI with e-books...I am sure individual teachers make use of Google Docs but certainly from talking about myself, I would mainly use Microsoft office. (DP3)

“All of them (forms of ICT used by school leaders) ...all of them as well (computer applications used by school leaders) as well as Front Office for admin.” (FG1C)

The wide range of ICT forms and platforms, used by school leaders in their administration and teaching, is further confirmed by the responses that follow.

“In the classroom, that would be mostly...mathematical software like autographs, sketchpad, a program called derive. Excel spread sheets are also powerful...Internet... Google Forms...Google Drive. I do also use One Drive...Microsoft Office 365...e-books with ITSI. In the classrooms there are also smartboards and digital projectors... In my office, I have a desktop PC, laptop and a Notepad.” (DP4)

“We use smart boards, projectors, laptops, tablets, e-books and wi-fi. I use Google Classroom and Moodle. So, we use Google packages and Microsoft packages.” (ICT 4)

“Laptops, iPads and then we also have wi-fi. The staff do have their cell phones of course... Google Docs, Google Drive...Word, Excel, Power Point. One Drive we don't actually use too much.” (FG5A)

The responses of the participants, showed that learners in private secondary schools, also used multiple forms of ICT hardware and software, from both Google and Microsoft. *School 1* promoted the use of iPads/tablets, but still allowed the use of other devices, whereas the other four schools opted for a “bring your own device” policy. The responses below substantiate this view.

“Laptops, notepads, iPads/tablets and cell phones, the whole range. And internet, Google Forms, Google Classroom, Google Docs, Word, Excel, Power Point. Yah, practically all of those (used by learners).” (P5)

“We have a bring your own device policy, either Tablets or iPads. We don’t specify, but there should be specifications that the device has to meet...or the main thing is that is able to sustain ITSI...Some of the seniors we find also like to bring laptop...They definitely use Word, Excel. Power Point...I think some of them use Google Docs.” (DP3)

The responses below, further corroborate the idea that, similarly to school leaders, learners in private secondary schools also used multiple ICT devices and platforms, from both Google and Microsoft.

“We have a bring your own device. Lots of the boys like Macbooks but some use tablets, laptops and their cell phones. They are quite happy using whatever platform...but they happy using Moodle or Google Classroom.” (ICT 4)

“I think they are exposed to all of them (hardware and software) through the year in some form or the other.” (FG1B)

Private secondary schools are independently funded, and usually have the necessary financial resources, to sufficiently equip their campuses, with up to date ICT innovations, as well as the ICT infrastructure to sustain these innovations. This was evident from the responses of the participants, when they indicated that both learners and school leaders, made use of multiple forms/types of ICT hardware. Access to adequate financial resources by private secondary schools, was also evident by school learners and school leaders, having access to Microsoft and Google software, which also requires fees for licencing and continued use. The “bring your own device’ policy of four of the schools, had the extra benefit of allowing parents and learners,

the flexibility of buying devices, that can be used for different purposes,, and thus, shared by family members.

The use of multiple forms/types, as well as platforms of ICT, increases the effectiveness of an ICT programs, because the most effective ICT hardware and software, for specific ICT tasks, can be used. There is constant competition, between Google and Microsoft, to produce new educational ICT innovations. Exposing the school community to both company's ICT innovations, also allows school leaders and learners, to be trained and skilled in the most recent ICT developments, from two different technological contexts, which again adds depth to the school's ICT program, and increases its value.

5.3.3.4 Subtheme 4: Passive versus active use of information and communication technology by staff

When questioned about the extent to which staff use the ICT, the responses of the participants revealed, that the school leaders perceived, that only a small percentage of staff were actively engaging with ICT. They mentioned that staff do use ICT, but this is more on a passive and basic level, or when it was made compulsory. Some staff were even opposed to the increased use of ICT in education. Some of their responses included.

“If I had to put it into categories, I would say ah, thirty to forty percent that are actively, actively on board with technology. Others see the benefit of it, who are not fighting against it, eh enjoying the ride....And then I would say maybe another ten to twenty percent that are neither here nor there...then there are some that are fighting it. I would say ten to fifteen percent are adamant that it's not going to work.” (P3)

“I think there is a spectrum in my school. I think we have got some people who are really hugely using technology and integrating technology and some in the middle of that spectrum and then some are using very little.” (DP4)

The responses below, further affirm that school leaders perceived, that many staff members only use ICT passively, and to a limited extent in their teaching.

*“I would say twenty percent of our staff do that, maybe even thirty (actively use ICT).”
(ICT2)*

*“They are certainly using a projector and computer to disseminate information but, yah,
from my department not much more than that.” (FG4C)*

Participants also mentioned, that the use of online assessments by staff was not common, and most staff still preferred assessments to be completed on hard copies. This substantiated the idea that most staff are not actively engaged with ICT.

*“There are very few (online assessments), it’s obviously, it’s more in the junior phase, with
the media science, those teachers do it...Yah, they, they submit online but also they are
cross-curricular.” (DP2)*

*“Some of the subjects do...but it’s definitely something that ah, is not the norm. They are
generally more informal assessments.” (DP3)*

The responses of the participants below, further substantiated the idea that the use of online assessments, was at the beginning stages in the interviewed schools, with most of them being basic and fun exercises. *School 5* had not begun using online assessments at that point.

*“Yah, definitely...I have been here for three years and I have seen an increase in that (online
assessments) ... It’s not all of it by any means. I would say it’s only like ten to fifteen percent
of what they do in fact. It’s generally like basic multiple-choice questions.” (ICT2)*

*“No...it’s not at the point where you would complete an online assessment and mark it.”
(ICT5)*

*“Yah, not really but sometimes I do ask them to submit something to me via email for
example...We also use a Geography program when we have a little down time...but not as
an assessment just kind of fun exercises.” (FG4B)*

Participant *DPI* stated that teachers were already overburdened with other responsibilities, and the lack of time to experiment with ICT, was a crucial factor that prevented teachers experimenting with ICT.

“We are eventually teaching towards an exam... we do try to go beyond that but, normally its usually in grade 8 and 9... When we have time, we will try to do the whole integrated learning program... Yah, but there are times when teachers just feel that they have so much else to do. Apart from using it as a teaching aid for e-books, they don't have enough time to do much more on it.” (DPI)

Some of the other reasons, proposed by school leaders for staff not engaging with ICT, were that some staff were resistant to change, some older teachers tended to avoid it, and some teacher's approaches to teaching were not aligned with the use of ICT.

“I would say no. One of the roadblocks that we encountered in implementing technology in the classroom, is teachers are resistant to change inherently...especially when the change involves technology.” (ICT3)

“It depends on the teacher's approach and it depends on the teacher. Some are and some are not. (ICT4)

“No, the younger teachers tend to be more technology inclined. Uh, I think the older teachers still have to learn those skills.” (ICT5)

An analysis of the participant's responses, revealed that although private secondary schools were equipped with the necessary ICT hardware, software and infrastructure, school leaders observed, that most staff members used ICT in a limited and basic capacity. School leaders furthermore noted, that some staff members did not believe in the benefits of the increased use of ICT, and were opposed to it. The limited use of online assessments, although the ICT was available at these schools, also suggested that only those teachers that were possibly ICT heads/teachers, or ICT enthusiasts, actively used ICT in their teaching. School leaders mentioned that the generation gap, resistance to change, negative view of ICT, and the lack of time to experiment with ICT, were the most likely reasons for staff members not actively engaging with ICT.

5.3.3.5 Subtheme 5: Information and communication technology training attended by school leaders

Participants *P5* and *DP3* did not attend any ICT courses. This was unusual, however, both participants indicated that they still had a substantial knowledge of ICT, and used it regularly. The other school leaders responded very positively about the ICT courses, workshops, seminars and presentations that they attended. This training was in two forms. The internal training was managed by the ICT teams present at school, and the external training was provided by educational, and ICT institutions, affiliated with the schools, such as ISASA, ITSI and Thinking Schools South Africa (TSSA). The responses of the participants indicated that the ICT training, was both random and consistent, depending on the needs of the school.

“Yes, I have been to the ISASA workshops where they speak about it...external and I have been to internal ones with (name – member of the ICT team ... more random...I think that they are effective.” (P3)

“So (Name) is coming from external through thinking schools but there are also internal ones through the company...so we have had both...With our staff you have to do a little bit of consistent and a little bit of random...” (DP2)

Since the ICT heads, usually manage the school’s ICT program and the ICT team, their training was extensive. This is supported by their responses below.

“I have attended various workshops and seminars hosted by Think Ahead as well as ITSI and on a regular basis, the Durban Tech IT Administrators meet once a quarter...mostly external and a bit of both (consistent and random) ... On the most part, they are effective.” (ICT1)

“Many, (ICT course), some have been more effective than others. Most of them were internal and some that I have engaged with have been external. The internal ones have been more consistent while the external ones more a bit more random.” (ICT3)

“Mainly external...I have attended Google ones, Microsoft ones. I have gone to iPad ones. I got (name) in here to speak about ICT...They have been effective.” (ICT4)

Few of the subject heads indicated, that they attended both external and internal ICT training, but most of them indicated that they attended only internal ICT training, conducted by the school's ICT team. The external ICT training was again offered by affiliated education and ICT organisations.

"I have attended some internal ones for now. Nothing external...From my perspective more random...I would say effective, In the sense that it often exposes you to a new form of technology that you didn't know before." (FG4C)

"We had to go every Monday and Wednesday afternoon in school. It was ICDL. They were mostly worthwhile." (FG2C)

"We did our own, internally. The staff did a mini-computer course...We did what was relevant to us that will make our work easier at our level...I have also sat at external seminars where they taught technology in the flipped classroom. (FG5B)

Some of the participants offered suggestions to increase the effectiveness of the ICT training. These suggestions included creating ICT policies to be followed, making the training more appropriate, and establishing relationships between schools that are more advanced in ICT, with schools that are less advanced, so that they can be assisted by the more developed ones.

"To enhance implementation, it's probably got to be a policy with a step wise learning program as a requirement." (P4)

"They could develop more relevant and successful professional development programs." (ICT1)

"Schools that are advanced with ICT should help develop other schools which are not." (ICT5)

Some of the other participants suggested that the training should be more incremental and practical, have continuity to practice the theory, and be conducted at times of the year, when school leaders have time to focus properly on the content.

“There has just been so much of change. Some of the training has been pure overload and ineffective. We do need more but in small steps which are practical and easy to apply.”
(FG2C)

“Maybe instead of a two-day course we could have one-hour courses over six weeks and then you got a week to implement what you learnt.” (FG3A)

“Correct timing of the courses is important and resources must be available at any time.”
(FG5B)

In examining the responses in totality, the principals, deputy principals and ICT heads were more exposed to external ICT training, than the other subject heads. A possible reason for this, would be that the external training, was directed at these specific critical staff members so that they could be exposed to the recent ICT innovations, and then they could filter the information down to the rest of the staff, as well as design implementation strategies. The other subject heads were exposed to more internal ICT training, by the ICT teams, which was more specific, delineated, and practical. This was possibly, why the subject heads viewed this training as very effective, because they could possibly use it practically, on a day to day basis, and therefore, could immediately appreciate the benefits of using it. The suggestions of participants, to increase the effectiveness of ICT training, centred around correct timing, increased practicality, and brief incremental development.

The responses of the school leaders were very informative, because they provided perspectives of ICT utilisation in schools, from different leadership perspectives, and this in turn informs about 21 CL. ICT utilisation is strongly linked, and intertwined with the interpretation and enactment of 21 CL (Hines & Lynch, 2019). An effective ICT program forms a solid basis for 21 CL (Hashim *et al.*, 2019). Some of the crucial information that emerged from the interviews, regarding ICT in private secondary schools, is that the official programs are actually curriculum based timetabled subjects, which are formalised more in the junior grades, school ICT teams are very small, and are understaffed in larger private schools, although both learners and teachers are equipped with the necessary ICT, the use of this ICT is more on a superficial, rudimentary level, and finally, that the ICT training for school leaders, was considered effective, because they could use it practically, in their daily duties.

5.3.4 Theme 2: The interpretation and enactment of twenty first century learning

One of the objectives of the study, was to investigate how ICT is utilised in schools, because it significantly influences a school's approach to 21 CL. In the previous theme, participants, therefore, offered their insights into the utilisation of ICT. Another objective of the study, was to investigate how private secondary schools, interpret and enact 21 CL. In this theme, participants were asked to share their experiences and practices of 21 CL, to provide more clarity and detailed information about 21 CL, in a South African private educational context. Figure 5.13 is a word cloud that shows the most common words, which emerged from the interviews with the participants. The crucial ideas that arose are discussed under the following sub-themes.

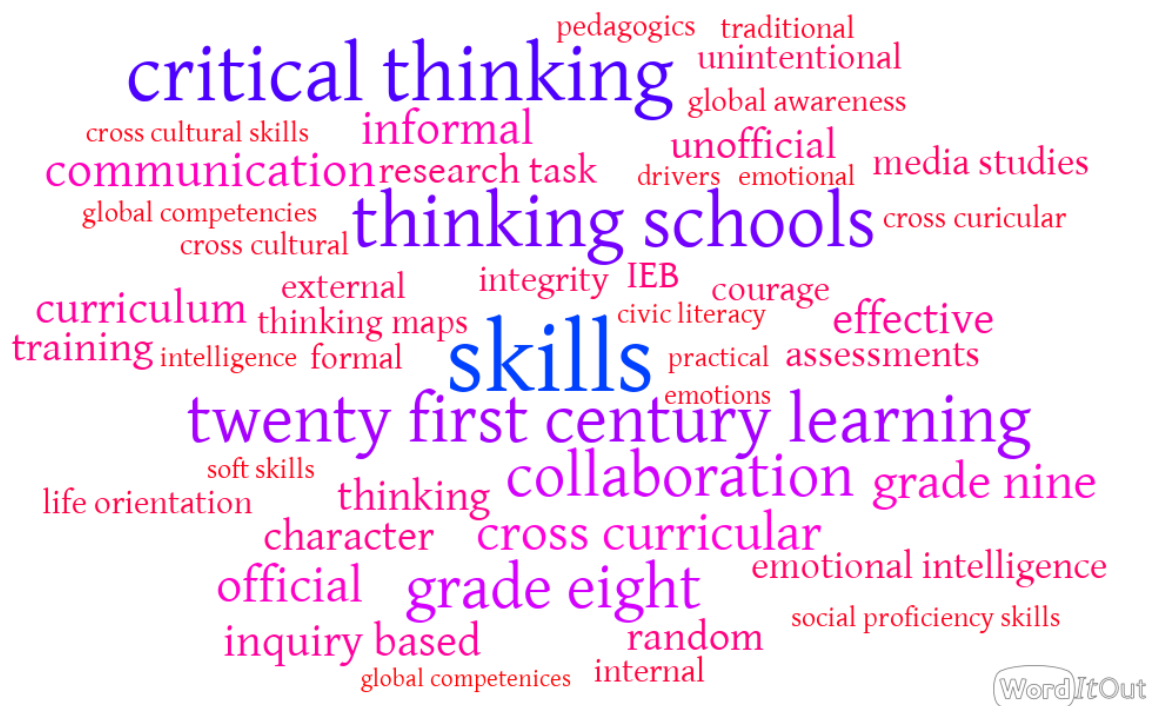


Figure 5.13: The interpretation and enactment of 21 CL

5.3.4.1 Subtheme 1: Twenty first century learning – Life skills beyond the curriculum

The responses of the school leaders, revealed a good understanding of many of the 21 CL competencies, together with some of the features of 21 CL. Some of the school leaders

mentioned that 21 CL, was a form of higher order learning, which included the learning of values and morals, social and emotional skills, as well as life skills.

“To me 21 CL has got to be more about critical thinking and soft skills...the ability of strong values, the ability to have a strong emotional intelligence over and above information and memorization.” (P5)

“So, I understand it’s preparing you for beyond the curriculum...because it forces you into those core critical skills...It’s those hidden skills that will prepare you for life after school.” (DP2)

Other school leaders also demonstrated a good understanding of 21 CL. The idea that 21 CL, better prepares learners to succeed in an ever-changing modern world, is further accentuated in the responses below.

“There are tendencies to jump to technology but...it is just one component of 21 CL. 21 CL enables young people to operate in a modern world in the best way possible that will make them significant and successful in their environment. You need skills like critical thinking, and entrepreneurial skills... We mustn’t forget the emotional and social side.” (DP4)

“Trying to prepare ourselves, and our students for what they will have to face when they leave school...and how to adapt”. (FG2B)

Other responses emphasised the skills-based approach and integrated relationship, between 21 CL and ICT.

“21 CL is skills based. There is critical thinking involved, collaboration, communication, and it’s not too much content based... There has to be a very good ability with technology... I have just been reading recently that we need soft skills, people skills as well as global skills.” (P1)

“We are moving more towards skilled based as opposed to content and knowledge because technology gives us the ability to access content quickly.” (ICT1)

“It’s supposed to be critical, more creative, out of the box kind of thinking... I think it also has a lot with giving the skills to find information and applying them, rather than giving them the actual information.” (FG1A)

The response below, not only emphasised innovation and analytical thinking, as 21st century skills that are associated with 21 CL, but also the interconnected relationship between 21 CL and ICT.

“I think we are trying to achieve very analytical thinkers...I think technology makes it (21 CL) much more successful which can allow them to be more analytical and innovative.” (FG3A)

A concrete knowledge of 21 CL, is necessary to form a strong foundation, to interpret and enact 21 CL in schools (Bedir, 2019). An examination of all the responses pertaining to this sub-theme, revealed that the majority of school leaders were knowledgeable about 21 CL competencies, but were lesser informed, about the extent to which, 21 CL has evolved over the last twenty years in other countries. One crucial concept of 21 CL, that did not appear in the responses, was that 21 CL is learner focused, where the learner takes much more control of his or her learning, and the teacher adopts more of a facilitator role (Ajmain *et al.*, 2019)

5.3.4.2 Subtheme2: School programs aligned with twenty first century learning

The responses of the school leaders, revealed that one of the schools had an official 21 CL program, whilst the others had official and unofficial programs, which were aligned with 21 CL. Cross-curricular programs, thinking schools’ programs, and research skills programs, are some of the programs that are aligned with 21 CL. The participating schools, had one or more of these programs at their schools. The responses also showed, that these programs, were either loosely structured official programs, or implicit unofficial programs. Small teams of interested staff members managed the official or unofficial programs.

“We have a small one (cross-curricular program) which happens in grade 8 and 9...Not a big team...Yes down at the bottom end (research skills program), part of media studies...No (21CL program) it’s all done within.” (P4)

“There is no official cross-curricular program but there are often cross-curricular activities... There was a large focus on research skills in terms of the official program... There is no real 21 CL team as such, but we do have champions that lead the process.” (ICT3)

“(Name) does the grade 8 (research skills program) and then it’s done per subject...The grade 8’s get that in their media studies... I don’t think there is an overall team (21CL team) that runs all aspects, technology, character education and critical thinking... I don’t think it’s official (21CL program).” (FG4D)

School 1 had an official cross-curricular program, thinking schools’ program, research skills program, and an unofficial 21 CL program.

“Yes, uhm we do mostly in grade 8 (cross-curricular program) ... Yes, we do and are proud of it (research skills program) ... So, whenever there is a program then we get those staff who are interested to come and make sure that they know what’s going on and then they filter it.” (P1)

“We normally have a driver of it who fires up certain teachers... and then those people that are interested form the team. Yah, they drive the process.” (DP1)

“We do thinking skills programs... No, it’s not all the class teachers, mainly the language teachers will be taking up to produce thinking skills...Don’t think there’s an official (21 CL program), we talk about it.” (FG1C)

School 2 had an official cross-curricular program, thinking schools’ program, and 21 CL program, and an unofficial research skills program.

“So, the cross-curricular program has been rolled out. Some subjects networked and interested teachers worked together... We don’t have an official research skills program, but we are supposed to be developing that.” (DP2)

“Grade 9, I Think (cross-curricular program) ... Whereas a group of grade 8 and 9 teachers, we would sit and take a theme and break it down to nuts and bolts, so there is now duplication.” (FG2F)

School 3 had an official thinking schools’ program, research skills program, and unofficial cross-curricular, and 21 CL programs.

“I think it happens (cross-curricular program) but I wouldn’t say it’s an official program...and again, just like technology, depends on the teachers. The teachers who embrace it.” (P3)

“I still use thinking maps with the 8’s and the 9’s (from thinking schools). We did have a small one but not anymore (thinking schools’ team). (FG3E)

School 4 had an official cross-curricular program, research skills program, unofficial thinking schools’, and 21 CL programs.

“They had a cross-curricular program but not really in the older grades. For the 8’s they did have a small team. Thinking schools program, no, but they do write the IEB critical thinking exam in grade 10...No 21 CL team but I do offer training and we do share people’s ideas on what they do in the classroom.” (ICT4)

School 5 had unofficial cross-curricular, thinking schools’, research skills, and 21 CL programs. Some of their responses follow.

“We are not affiliated with Thinking Schools’, but we have done a workshop through them...As a staff a lot of us do it...No we don’t have an official program (cross curricular). (DP5)

“It might not be so official (research skills team) but it is part of the research skills we need them to acquire in order for them to do what they are doing. As part of the leadership program they have to, within their teams, research a topic and present on it.” (FG5B)

After analysing all the responses, it emerged that 21 CL aligned programs, were more focused in the junior grades. This was similar to the compulsory ICT lessons in schools. However, unlike the ICT lessons, which were timetabled as part of the curriculum, these programs were conducted concurrently, during the teaching of other official curriculum subjects. From the responses, it is evident that both the official and unofficial programs, were loosely organised without clear aims and objectives. This is further substantiated by many of the programs, not having clearly designated teams, to lead and manage the programs. It appears that the management of 21 CL programs, and the teaching of 21st century competencies were secondary concerns, in the context, of teaching learners the content from the prescribed curriculum, so that could pass formal assessments (McGuire, 2018). Time constraints on behalf of students and staff, could be another mitigating factor in the mediocrity of these teams (Kokare & Strautins, 2018).

5.3.4.3 Subtheme 3: Inquiry-based and cross-curricular school assessments

Two of the key teaching and learning strategies of 21 CL, are inquiry-based and cross-curricular assessments (Hines & Lynch, 2019). Most of the school leaders indicated, that either one or both assessment types, formed part of the assessment program at their respective schools.

“Certain subjects are involved (inquiry-based learning assessments), especially like the sciences... With the research task that they do...instead of doing this smaller research task and that smaller research task in two, three or four different subjects, it’s one research task. That’s working cross-curricular. (P1)

“Yes, we do have that sort of thing (inquiry-based learning assessments) but that is done mostly in the orals and debates...No (cross-curricular assessments). (P5)

“Yes, I would say some of them are (inquiry-based assessments). A lot of the IEB assessment methods are inquiry-based... Some of the Life Orientation syllabus could be taught in Religious Education. Then Religious Education and Life Orientation would be assessed cross curricularly. (DP3)

Some of the other school leaders indicated, that the extent to which inquiry-based, and cross-curricular assessments were used, depended on the nature of the subject,, and the individual teaching styles of the staff. This is evidenced in the responses below.

“I am sure that inquiry-based learning strategies are part of some of these IEB tasks... Science and maths especially are using those strategies. I think they do investigations and theorems... So cross-curricular, yes, they are teaching it, but most want to still do their own assessments. A lot depends on the teacher” (DP2)

“It’s very random...Art, Drama and History obviously cross assess...but again its very random...also depends on the teacher.” (FG3E)

“Maybe slowly happening here (inquiry-based assessments), depending on the subject and certain areas of the subject.” (FG2B)

Some of the other responses demonstrated, that the actual use of inquiry-based and cross-curricular assessments, was not widespread and frequent. The inquiry-based assessments and cross-curricular assessments, only formed a small part of the assessment program at the participating schools. Some of their responses included:

“Yes, not in every subject area but subjects do use inquiry-based assessments to do their projects. It’s more on an ad hoc basis, it happens (cross-curricular assessments) but not terribly frequently. (DP4)

“There is definitely inquiry-based learning happening here. Ah, less so because it takes more time to arrive at a decision... They make puppets in art and drama and then a video, it does exist (cross-curricular assessments) but certainly a lot and not in the bigger subjects...time is an issue.” (ICT2)

“I think only a very few subjects do the research project in grade 12. Its inquiry-based. (FG4B)

After reviewing all the responses, it was evident that school leaders perceived, that although the respective schools did incorporate inquiry-based, and cross-curricular assessments, into

their assessment strategies, it was very dependent on the nature of the subjects, and the individual teaching styles of staff. In addition, the use of these type of assessments, was limited and in the beginning stages. The time to experiment with these assessment strategies, was mentioned, as one of the reasons, for their constrained use. Again, it was evident that the teaching and learning of the official content, prescribed in the curriculum, with the focus on examination preparation, was the schools' main objective. Experimentation with new innovative pedagogical approaches, appeared to be a secondary objective, which was left to the discretion of staff, if time allowed them to do experiment with them. There was no follow through, monitoring, or management processes, undertaken by school leaders that was evident from the responses.

5.3.4.4 Subtheme 4: Formal versus informal teaching of twenty first century competencies

Some countries around the world, have developed comprehensive 21 CL curriculums, which include content material, teacher guidance, and assessment strategies (Bedir, 2019). These curriculums, explicitly explain, the teaching and learning of 21st century competencies. Since the schools did not have official 21 CL programs, school leaders were asked to what extent they themselves, or their staff formally incorporate 21st century competences in their teaching. The term “formal”, in the context of the interview, was explained to school leaders, as the clear and overt inclusion of 21st century competencies, in lesson plans and work schedules by teachers. Some of their responses included:

“Informally to a higher extent but formally about ten percent. There is not a requirement that says in your lesson plans you have to include twenty percent of this...But we know it happens... to a greater or lesser extent depending on the individual.” (P4)

“A fairly large extent (incorporation of 21CL) but not always intention. They are looking at things like social skills, emotional intelligence, global awareness, cultural skills, critical thinking, innovative thinking, information skills, morals and attitudes... But we are not being intentional, we are not saying this is how we do it and this is how we know when it's happening... Actively engaged (staff), there would be a much small number.” (DP4)

It is evident from the responses that school leaders, and the staff that they manage, integrate 21st century competencies in their teaching informally, more than formally. The responses also indicated, there were no compulsory requirements regarding the inclusion of 21st century competencies, and that teachers adopted a less intentional approach to it. This is substantiated by the responses below.

“We are not formally writing up a lesson plan with all that (21 CL competencies) but if you look at our design thinking program, it’s critical thinking and problem solving all the way.” (FG2D)

“We do critical thinking, innovative thinking, communication, collaboration, information skills and civic literacy... So yes, I think it’s quite happening (incorporation of 21 CL), it’s just implicit.” (FG3C)

From the responses, it is evident that most school leaders and staff, do include 21st century competencies in their lessons, but this is done obliquely. One of the reasons that emerged from the interviews, for the limited formal inclusion of 21st century competencies by school leaders and staff, was that some staff members were resistant to change, and continued with traditional pedagogical approaches, to which they were accustomed.

“I think in the high school I would say, conservatively about seventy-five percent of the teachers do informally incorporate 21 CL in their teaching. Again, you are going to get that group of teachers who are there just to teach content, not interested in anything else.” (P3)

“They informally incorporate it (21 CL competencies). I think everybody understands that those skills are important to be taught all the time. Formally, I don’t think they (the staff) are actively engaged... they are to different degrees but not formally. There are some traditional, old fashioned teachers though who refuse to change.” (DP2)

Another participant mentioned, that staff are at different stages of development regarding 21st competencies, and as a result, not all of them formally engage with them.

“Most teachers and most subjects incorporate that (21 CL competencies) into their teaching. Some subjects are more aligned with some competencies... Formally, I would say no. But it’s definitely happening... in the informal and less recorded way... Not every staff member is actively engaged in that because not everybody is at that stage yet.” (ICT3)

Another participant pointed out that the formal inclusion of 21st century competencies, was dependant on the subject and teaching style of the individual staff member.

“Depends on the subject and educator (incorporation of 21 CL), each teacher brings their own flair ... I think the way each staff member runs their classroom is different... You definitely see 21 CL happening in an informal way. (FG5B).

The focus of traditional curriculums, is the teaching and learning of content for assessments, which are predominately memorisation-based, whereas 21 CL curriculums, use values and skills as the focal points, and use the content to teach them (Abdurrahman *et al.*, 2019). The analysis of the responses, revealed that most teachers were definitely assimilating 21st century competencies into their pedagogical approaches, but this assimilation was more informal, and not clearly described. From the responses, it emerged that schools were focused on their primary objective, which was to effectively teach the present official curriculum. If time allowed, teachers were afforded the opportunity to experiment with 21st competencies, but there were not compulsory minimum requirements proposed. Some of the reasons suggested, for the limited formal inclusion of 21st century competencies by school leaders and staff, included the resistance to change, varying stages of development pertaining to 21st competencies, and differing applicability of 21 CL to individual teachers and subjects.

5.3.4.5 Subtheme 5: Twenty first century learning aligned courses/training

The responses of the participants, showed that school leaders did not attend courses specifically referred to as 21 CL courses/training, but they did attend courses focused on 21st century competencies, cross-curricular learning, thinking schools and inquiry-based learning, all of which are facets of 21 CL, or contain aspects of 21CL. These courses were both internally conducted by the school, and externally conducted by educational institutions affiliated with the school.

“Not to that title (21 CL courses) but I have done courses online character education courses... Yes, we have (attended cross-curricular courses) ... Not formally no (attended thinking schools) ... not the whole staff (attendance of inquiry-based learning).” (P4)

“No (attendance of specific 21 CL courses) but we did do a course on education and sustainability which was very much around 21 CL. It had many projects... I am sure we did one on cross-curricular studies as well.” (FG1A)

“We have attended one (21st century competencies course) organised by school where we went to the Drakensburg... on habits of mind. There was also thinking schools and (name of presenter) on ICT in Education.” (FG2F).

School leaders were also asked, if the courses/training, that they attended, were effective. The term “effective”, in the context of the interview, was explained to school leaders, as referring to whether the content and skills, learnt at the courses was relevant and contemporary. As well as, whether this content and skills could be easily, constructively, and consistently used by themselves. The responses revealed that all the school leaders did consider the courses/training, in 21 CL related courses, as effective and useful.

“Lots of 21st competencies stuff... No cross-curricular studies...Thinking schools we do a lot here... I haven’t ever been to inquiry-based learning seminars or anything... externally organised... it’s random... they have been very effective.” (P1)

“Ok, I don’t think externally I have (attended 21 CL aligned courses/training) but you know generally we have strategy meetings once or twice a year...it’s more random... they are effective.” (ICT5)

The responses also indicated that the courses were random, not incremental, and mostly arranged, according to the needs of the school at that point in time.

“I have been to quite a few of those thinking school courses... that’s external... I have not necessarily been on a course that is labelled as 21 CL... They (thinking schools’ courses) are not necessarily very structured or ordered, so maybe random... maybe thinking schools

could communicate with schools a year in advance to say these are the courses for the year and this is why are offering them.” (DP4)

“I think the way it was put across was effective at the time... We do need updated ones. Maybe there should be more. We haven't continued with any of the courses that have been offered.” (FG3C)

“We did attend the one by (Name). He did that Kahoot with us. He spoke about pedagogies in the 21st century... both internal and external (courses/training) ... I would say random according to the school needs... It's not like level on another level... They were more effective (courses/training).” (FG4D)

Some of the participants proposed suggestions, for improving the 21 CL courses/training. Some participants mentioned that the courses, should be conducted at appropriate times of the school year and day, so there is minimum disruption, and that the courses, should focus less on theory but include more practical components, that could be easily assimilated by staff. The reduction of financial costs of courses was also recommended.

“Its costly (courses/training). Costly in terms of finances but more importantly costly in terms of time. They are missing contact time with learners to attend the course. So, the course needs to be practical and useful. Teachers need to understand quite quickly the content of the course how and how they can apply this. And I think often if a course starts of from a too theoretical of a basis the speaker loses the audience because teachers are by large practical people.” (DP3)

“We went to habits of mind and thinking maps... Initially external then we chose the thinking maps and they came to us... not very consistent (courses/training) ... More practical methods need to be included” (FG3E)

Another participant recommended that the 21 CL aligned courses, should be firmly structured on pedagogical principles.

“Thinking schools and inquiry-based learning (attended courses) ... mainly internal and external... mostly effective... In terms of designing new courses or seminars it's important

to have sound research and the foundation of good pedagogy... It is best received when there is some practical component... training on how to actually implement that effectively in the classroom.” (ICT3)

The key ideas that emerged after reviewing the responses, was that the participants considered the 21 CL courses/training, that they attended as very effective. However, they did offer some recommendations to increase the courses effectiveness. The most common occurring recommendations, for courses, were to base them on pedagogical development, increase practicality, and timeously and consistently organise them.

5.3.5 Theme 3: School leader’s experiences of leadership practices pertaining to the interpretation and enactment of twenty first century learning

The first theme of this study investigated the utilisation of ICT in schools, because it is directly linked with the second theme of the study, which investigated the interpretation, and enactment of 21 CL in secondary schools. Effective school leadership is another crucial factor when transitioning to 21 CL (Leithwood *et al.*, 2019). The last theme of this study therefore, focuses on probing the roles of school leadership in 21 CL, in order to develop a leadership model for its interpretation and enactment. In this theme, information was therefore, collected from school leaders, about their engagement with leadership in the context of 21 CL. Figure 5.14 is a word cloud that represents the recurrent words, used by participants during their interviews. The keys ideas emerging from the interviews are elaborated upon in the sub-themes that follow.



Figure 5.14: Leadership experiences and practices regarding 21 CL

5.3.5.1 Subtheme 1: Prior experience of leadership and management

Participants were asked about their academic qualifications, and leadership training to establish their theoretical exposure and experience, with leadership and management.

a) Effective teachers versus effective leaders

The responses revealed that leadership or management qualifications, or skills, were not the primary factor in promoting individuals, to school leadership positions. Rather teachers were promoted mainly based on seniority and their teaching abilities.

“Senior teachers and teachers with good results are promoted. They do not sometimes have the leadership skills...They (courses/training) therefore needs to be made regularly available to more staff.” (DP3)

“The best teachers get promoted but they might not necessarily be good managers and they have no experience.” (DP4)

“No (formal leadership/management qualifications... Some good teachers are not good administrators and leaders... It comes down to relationships and that is the most important thing... you have to understand your people and understand how to talk them. You also only follow someone you trust.” (ICT2)

b) Formal leadership/management qualifications versus in-service training

The responses revealed, that some school leaders possessed post-graduate qualifications in the subjects that they taught at school, but very few had formal qualifications in leadership or management. However, almost all of them attended some form of in-service training in these fields. The courses were organised, both internally and externally, and were mainly randomly organised, depending on the contextual needs of the school.

“No (formal leadership/management qualifications). I have attended loads (courses/training). They’ve all been internal and external. Internal being (company’s name) and external meaning other providers and they have been random.” (P2)

“Yes, I do have one of those post grad certificates. And yes, I have attended short courses... mostly random. I have conducted some myself.” (P5)

One participant mentioned that his school had a formal management course, available to prospective deputy principals and principals.

“No (formal leadership /management qualifications). Head office has got a leadership package. If you want to apply for a position for a deputy or principal. It’s called the management toolkit. I attended the whole package... It’s five different courses that you have to attend.” (FG2F)

At least one school leader, from four of the five interviewed schools, mentioned that they attended the Global Leadership Summit. This is evidenced in the response below.

“No (formal leadership/management qualifications) ... I have attended the global leadership summit...It was general but I think it was very effective.” (ICT1)

Participants were reminded that the meaning of “effective”, in the context of the interview was practical and relevant. The school leaders considered the training/courses in leadership and management that they received, as effective. This is substantiated by the responses below.

“Not formal but again I have done courses at the Wits Business School... external... I would say more random... and largely effective” (P3)

“No (formal leadership /management qualifications). The Global Leadership Summit, we have done that external one... highly effective” (FG1B)

c) Management training versus leadership training

The responses also showed, that the leadership and management training, which the school leaders received, were more orientated towards, day to day management and administration, as well as being general. There was no formal leadership training provided to school leaders, which specifically focused on 21 CL.

“Yes, my initial qualification was a B. Com degree and I specialised in Management. Yes, I have just been to the Global Leadership Summit... We also have our Catholic School Board. They fill me in on courses on ethical leadership, general leadership in the 21st century, the five main pillars of leadership... more external and random but certainly effective.” (DP1)

“I have done a few (courses/training). Our educator convention does touch on general management... Our head office was running a 3-day MBA... it gave me basic management and administrative tools.” (FG5B)

“No (formal leadership/management qualifications). They were courses, like 3-day online courses, one was supervisor and management training. I think there were at least two other general online courses I had to attend. They were very effective.” (ICT 5)

Participants did offer a few suggestions, to increase the effectiveness of the courses/training. One of the suggestions, was that there should be much more skills-based training made

available for individuals, entering a senior management position, because of the lack of experience.

“There needs to be more on the skills side because there is very little training or expertise in the role you are stepping in.” (DP4)

Some the other responses, recommended that the leadership and management courses/training be more concise and practical. Mentorship programs were also considered as important development strategies for future school leaders.

“They (courses/training) must be short and sharp... practical ... and very relevant.” (DP3)

“I feel every school should have a mentorship program.” (FG5B)

Qualifications in leadership and management are not compulsory requirements for senior school leadership positions in South Africa (Davids & Waghin, 2018; (Sepuru & Mohlakwana, 2020). Although, the United Kingdom, the United States of America, and many other countries stipulate formal leadership qualifications, and/or training, as pre-requisites, for promotion to school leadership positions (Hamilton *et al.*, 2018). This is because school leadership is a demanding position, which requires highly trained, skilled and experienced individuals (Hallinger, 2017). After examining all the responses, it became evident that most school leaders did not have any formal qualifications in leadership and management. The responses indicated, that two of the determining factors, for promotions were effective teaching abilities and seniority. These are, still two of the determining criteria, for promotions to senior school leadership positions in South Africa (Zelvys *et al.*, 2019).

Although many of the school leaders, did not have formal leadership or management qualifications, they did attend many short general courses/training. This could be, because of the lack of exposure to formal qualifications, and the lack of experience, especially, coming from only a teaching background. The training was focused more on daily management and administrative functions, which was probably to equip teachers, with the necessary skills to function in their roles as school managers. The school leaders considered the courses/training that they did receive, as effective. This training, was both internally and externally arranged, and was more random. Leadership and management training, specifically related to the

interpretation and enactment of 21 CL, was not evident. This data is significant because the selection and training of school leaders, are critical factors when designing an effective leadership model for 21 CL.

5.3.5.2 Subtheme 2: Transformational Leadership

Transformational leadership can be used, as one of the leadership strategies to successfully interpret, and enact 21 CL, and has yielded improvement in many sectors, of the school environment (Lyonga, 2019). School leaders, were therefore asked to share their experiences and knowledge of it. Their responses indicated that most of them, had a good understanding of transformational leadership, but only a few had attended courses on it.

a) A necessary part of any change toolkit

The responses indicated, that most of the school leaders understood transformational leadership involved leadership for change. They recognised the need for it, when radical changes recognised are introduced, in an ever-changing educational environment. This is substantiated by the responses below.

“I recognise it as a leadership style. If you are not a transformational leader today, you will not survive, your school will not grow and be static.... I don't think it was (transformational leadership courses) in the context of 21 CL but social and staff transformation, cultural awareness and diversity is very topical in independent schools. (P1)

“Transforming is starting from A and going to B. That's transforming in my experience... and without leadership there's no direction ... It's like swimming in the sea on a rough day. It's a rocky ride.” (P2)

“As a leader, you have to guide your school through the change, assess what's going to happen, bring everyone on board to believe in the change, plan the change and help your school move from one side to the other side... No (attendance of transformational leadership courses). Apart from possibly some minor little talks here and there but not in a sense a course.” (P3)

Although most responses showed an understanding of transformational leadership, one principal and one deputy principal, indicated that they were not very unacquainted with it.

It's limited, I'd say baseline (knowledge/experience of transformational leadership). No (did not attend transformational leadership courses), not specifically on that. (P4)

"I think my experience (transformational leadership) is limited. It would rather be on the receiving end of it and not the giving side of it." (DP5)

b) Common practice versus formal training

The responses indicated that school leaders, sometimes used transformational leadership in their leadership/management duties, and roles at school. Although some school leaders had some practical exposure and experience to transformational leadership in their daily leadership roles, few school leaders attended courses specifically on transformational leadership, and none in the context of 21 CL

"I am the transformational leader in the sense of ICT integration. It has been my responsibility to move the academic and administration staff onto the new platform of Office Suite 365... No, (attendance of transformational leadership courses)". (ICT 1)

"The whole staff were invited to be part of Mission 2020 and put forward their ideas and dreams for the future of the school ... To me it is a part of transformational leadership because we are involving all the staff in leading the school into the new future... They are very informal (transformational leadership courses). (FG1C)

"I think it (transformational leadership) is that people are invited to participate in change and contribute to ideas that will result in change ... we are involved sometimes. Not at all (attendance of transformational leadership courses)." (FG3 C)

The limited training in transformational leadership is further substantiated by the response below.

“I would say very little (knowledge/experience of transformational leadership) ... It is happening (transformational leadership) with our interim rector (name) who is sort of running things this year and into the next year. He is making it a lot more smooth. Everyone is kind of aware of what is going to happen next year. But nothing specific. No (attendance of transformational leadership courses).” (FG4B)

The limited transformational leadership courses/training, that were organised, were conducted both internally and externally, and were mostly random. Although the courses/training were limited, the responses revealed that the participants, that did attend, considered them as very effective. Some of their responses follow.

“It is leadership that drives change. My experience has really been positive and the courses random but were very effective.” (ICT3)

“Transformational leadership is when you need a special person that handles the transition period... The person knows what’s happening. It’s really important that you have a strong structure... Yes, last year we addressed transformational leadership... addressing inequality in schools ... courses were external... more random.... Very effective.” (FG5B)

None of the school leaders attended courses/training on transformational leadership, in the context of 21 CL. This is evidenced in the responses below.

It is leading your school through change and let’s face it change is constant. So, I need to know who my people are, how they deal with change on an individual basis and being able to adapt my leadership style according to what is needed...I haven’t really attended one that combined the two. I have attended ones that look at transformational leadership and then ones that look at 21st century skills... both internal and external... more random ... effective.” (DP1)

“In the South African context, one can’t ignore transformation. Transformation of your parent board, staff and learners but also trying to help people think about doing things differently... Not in that context (transformational leadership courses in the context of 21

CL) and not with that kind of link but yes.... both external and internal... very effective”
(DP3)

After scrutinizing the responses, it emerged that most of the school leaders were able to relate transformational leadership, to managing change within an institution. The responses also showed that the school leaders, sometimes used aspects of transformational leadership, practically in their daily leadership/management duties. Courses/training, specifically on transformational leadership, appeared to be limited, with most school leaders not attending any formal professional leadership development. Although, the school leaders that did attend the courses/training, viewed it as very effective. Furthermore, none of the school leaders attended any form of development, which focused on transformational leadership in the context of 21 CL. This data provides valuable information for designing a leadership model for 21 CL.

5.3.5.3 Subtheme 3: Strategic Leadership

Strategic leadership nucleuses, on the formulation of a vision, accompanied by both long-term plans and short term objectives, on how to achieve the envisioned future (Mohamad & Ismail, 2018). Strategic leadership has been used to facilitate the enactment and interpretation of 21 CL in many countries, and has increased learner and teacher performance (Prasertcharoensuk & Tang, 2017). The responses revealed that most school leaders had some knowledge of, and exposure to strategic leadership.

a) Strategizing for success

The responses indicated that school leaders, considered strategic leadership as crucial to the success of a school.

“A school will collapse if there isn’t a strategic plan from board level where you are looking at the entire school... time should be given to revisiting the strategic plan and seeing what’s happening and then possibly tweaking it. (P3)

“It’s taking the school and turning it around to where we have got profitability... Strategic leadership also recognises the needs of the community... to be successful the principal has

got to have a five or ten-year plan for the school... No (did not attend courses on strategic leadership). (P5)

The responses below, further show, that school leaders valued strategic leadership. The responses also reveal that school leaders understood, that it centred on establishing a vision, planning crucial long-term goals, and designing intensive short-term plans to achieve the vision.

“You have to put clear strategies in place as to how you are going to get to where you need to get ... It’s not just having the vision, it’s the person who can also manage the process... No (did not attend courses on strategic leadership).” (P1)

“Even our school runs on learner numbers and having a strategic plan for that is really important and again our management team has been pretty proactive in that respect. In these changing times implementation of strategies is sometimes challenging, which makes planning critical. No (did not attend courses on strategic leadership). (ICT3)

“We have already planned for the next few years... Strategic leaders can see a vision for the future and plan well for it.” (FG5A)

b) A theory for senior school leaders and not middle management

Some of the subject heads/heads of departments indicated, that they were not directly involved in the long-term strategic planning, but were more involved in the execution of these plans. The strategic planning was left more to the principal, deputy principal and board members.

“I think it’s more done at board level than at management level. We have been invited to put our suggestions as HOD’s, but we are quite informally involved... we are more in charge of the implementation... No (did not attend courses on strategic leadership).” (FG3C)

“It always happens at senior management meetings without us. Then we as staff follow through on those strategies and manage them... No (did not attend courses on strategic leadership).” (FG1D)

Leading on from these responses, one participant mentioned that the strategic plans formulated at senior management meetings, were not always effectively relayed to staff at the ground level.

I know (school's name) has a strategic plan. They have this roll out plan that is far reaching... a five-year plan, a group plan, a ten-year-plan and a fifteen-year plan... but unfortunately, it doesn't filter down." (FG2F)

c) Regular use beckons more training

Similarly, to transformational leadership, the responses indicated, that although many school leaders used strategic leadership in their daily responsibilities, as leaders and managers, many of them did not attend courses/training specifically on strategic leadership. School leaders considered further training in strategic leadership as beneficial. This is corroborated by the responses below.

"I am on the school board. I am also on management and we do strategic planning. Once you have done the planning you also have to lead the process. Strategic leadership, not so easy to get courses on that... Leadership courses sometimes do touch on strategy but specific ones would be useful. There also hasn't been courses that held the two together (strategic leadership and 21 CL)." (DP1)

"I can't say specifically that I have been exposed to a course on strategic leadership but in my role I have to deal with the bigger picture of the school from a strategic perspective quite often...I have to work with the board who are primarily responsible for the strategic direction of the school... courses, yes would be nice" (DP4)

"I think our school has initiated strategic leadership in goal setting for our school's vision for the next five years... No (did not attend courses on strategic leadership), but I would like to learn more." (ICT1)

The school leaders that attended courses/training on strategic leadership, indicated that they were effective and relevant. Like transformational leadership, these courses were both externally and internally organised, and were mostly random.

“You don’t just think small operational, you got to think strategically and big... The vision has to be shared from the top... Yes, I did attend courses on it (strategic leadership) ... they were external... more random...yes, effective.” (DP2)

“We have attended programs on strategic leadership. We had workshops to discuss how you can improve it... internal... random... fairly effective... but there is not always good, effective feedback” (FG4D).

There was one school leader who attended courses, which linked 21 CL and strategic leadership. The individual found out about these courses, through his own network of friends, and not through the school’s environment.

“It is having a strategy and trying to lead people towards it... yes I have attended a few courses which overlap with these things (strategic leadership and 21 CL) externally through networking with people... more random... definitely effective.” (ICT2)

After probing all the responses, it materialised that most school leaders understood strategic leadership, as involving long term planning. Some of the subject heads/head of department, did feel that they were not part of the strategic planning process, and were not always clearly informed of the vision. Other school leaders acknowledged using it more often in their leadership duties. The responses also showed that courses/training in strategic leadership, was limited, but those that were available were effective. These courses can become more beneficial if there was more constructive feedback. Courses which focused jointly on strategic leadership and 21 CL, seem to be available, but were not part of the school’s program of development, and had to be personally and privately co-ordinated. This data is very useful and relevant when constructing a leadership model to interpret and enact 21 CL.

5.3.5.4 Subtheme 4: System Leadership

System leadership involves different organisations, such as schools, working together, for the improvement of all schools within the system (Simkins *et al.*, 2018). Like transformational leadership and strategic leadership, system leadership can also be instrumental in the interpretation and enactment of 21 CL, and result in positive development, within the school (Harris & Jones, 2017). Many of the school leaders did not have much experience or knowledge of system leadership, but few were using it informally.

a) Limited, indirect and informal exposure

Many of the school leaders' responses, indicated that their knowledge and exposure to system leadership were limited. This was especially true, when comparing their exposure to transformational and strategic leadership. This is reflected in the responses below.

“No, I don't have much (knowledge/experience of system leadership). No (did not attend courses on system leadership).” (P4)

“Well I don't think I have had exposure to other schools in terms of this type of leadership... but we do have regional IT subject meetings where we share content and get feedback... No (did not attend courses on system leadership). (ICT5)

None (experience/knowledge of system leadership). No (did not attend courses on system leadership).” (FG3B)

Some school leaders indicated that their experience of system leadership was indirectly, through nationally and regionally system development structures, established by the IEB, where exchange of subject specific material occurs.

“In the IEB subject clusters you meet and share resources ... and on a national level you email and get information... you also have the annual national IEB subject conferences with presentations. Specifically, no (system leadership courses in the context of 21 CL), I think cluster meetings and conferences covers some of the sharing of resources”. (FG4D)

A few school leaders from schools, with the same brand and schools in the same area, indicated that they also sometimes met, informally and unofficially, to share information. This is substantiated by the responses below.

“Well, we all do it now and then as the five (school’s name) colleges. Then of course we are linked to other schools in the company. So, I do have conversations with other principals but very informally. No (did not attend courses on system leadership).” (P2)

“A lot of our schools are opting to do Cambridge. We are connecting with each other on that level. I went to a school in Gauteng for two days to learn from them... apart from that we communicate via emails and share information.” (FG5B)

“I think it is happening because you have so many schools in the same area dealing with the same issues... Yes, they come together informally and learn from each other’s mistakes. No (did not attend courses on system leadership). (FG2B)

b) Hindrances to system leadership

Some of the school leaders suggested that the possible reasons, for a lack of system leadership, was that individual schools, still wanted to maintain their own individuality, and that competition between private schools was high.

“I don’t have much experience with system leadership... It has not been effective in the (school’s name) system because each of the five schools has their own culture and character.” (DP2)

“My experience with that (system leadership) has been quite limited. We have been implementing technology in the classroom on a daily basis and although there is a big need for schools to do it together, there is a tendency for them to do it separately and learn on their own, because of competition ... very little collaboration even though they could benefit from it. No, no courses.” (ICT3)

c) The value of working together

School leaders recognised the need for system leadership, and the merit of it. This is reflected by the response below.

“I have no experience with that. Although, because of the threat of non-profit to independent schools, we have realised that we really need to work together and to pool our resources to survive... I haven't attended any courses, but our chairman of our board assists companies to strategize ... his expertise has assisted us with our visions for 2014 and 2022.” (P1)

School leaders were therefore willing to arrange more meetings where sharing of information, system development, and system leadership could be discussed.

“I don't have knowledge on that, but it sounds particularly interesting. Challenging as well because I would imagine in order to do it successfully, schools have to set aside their competition with each other if everyone is working towards a common change. That would be particularly useful... I think in (city name), schools are still pretty competitive.” (DP3)

“My personal goal is to connect with the local ICT heads around Durban, perhaps meeting with them on a quarterly basis to discuss experiences and developments within the schools. No (did not attend courses on system leadership).” (ICT 1)

In reviewing the responses of school leaders, is it evident that most of them had minimum exposure to system leadership. The exposure, that some of them did have, was not purposely organised by the school, but rather occurred indirectly through established IEB structures, where the primary focus, was subject specific content sharing. Few school leaders from private schools did meet on an ad hoc and unofficial basis. None of the school leaders, indicated that they had attended course/training on system leadership, on its own or in the context of 21 CL. The data is very valuable in designing a leadership model for 21 CL, because it shows us that system leadership, can play a much bigger role in its facilitation in a South African context.

5.3.5.5 Subtheme 5: Ecological Leadership

Ecological leadership is another leadership theory that can facilitate the interpretation and enact of 21 CL, and result in improved educational practices (Koh & Hung, 2018; Manns, 2019). The responses of many school leaders showed that the term “ecological leadership” was the newest, and most foreign of the leadership paradigms.

a) Theoretical constructs hides change practice

Many of the responses indicated, that although school leaders were unfamiliar with the term “ecological leadership”, they perceived that many of the features involved in it, where being executed within their schools, especially when changes were introduced.

“Here again it’s happening, I mean if you wanted to introduce something like digital technology and we did. You consider what is the impact at the classroom, at the school and the bigger society. At all levels, but its implicit” (P1)

“I don’t have any clue of what the term ecological leadership is... That means nothing to me... this is perhaps semantics ... But I am sure it is happening with any change... Without the terminology though... No (did not attend courses on ecological leadership”. (P5)

“Definitely not formally (involvement with ecological leadership). When working in a school the ideal thing when making a decision is to consider the bigger picture... You have to do be doing that all the time... I am saying informally, yes... No (did not attend courses on ecological leadership”. (DP3)

The idea that school leaders using facets of ecological leadership, without the label or terminology, is further substantiated by the responses below.

“I haven’t come across the term ecological leadership, but I understand the broad outline of it... It is the focus of our school not to stay in our mesosystem and be part of the larger community... integration into other Holy Family schools, the broader community and

nationally... Yes, a few leadership courses have covered change in different levels but not under that label.” (ICT3)

“I would imagine that, with ecological leadership, you want to achieve success at all levels by effectively communicating the change at different points... We address the changes informally in our staff meetings and what to do even with other stakeholders... but not under a heading.” (FG5B)

One of the school leaders, went on further to explain that ecological leadership was not fully assimilated into his school, with the different ecological systems, not being effectively inter-connected.

No, I don't think it (ecological leadership) has been integrated into the junior and the high school... In the microsystem in high school there is a bit of integration with the big broader world of the macrosystem... but it's piecemeal.” (FG1D)

Whilst another school leader mentioned that, there was a more of an autocratic approach to change in her school, rather than an ecological one, with all stakeholders not being always considered.

“I don't think there is such a thing. It's just a top-down approach at school. That's it, we are changing over, and you just have to do it. I don't think all stakeholders are taken into account sometimes. No (did not attend courses on ecological leadership). (FG2D)

b) School life integration training, mirrors ecological leadership principles

The responses revealed that school leaders, did not attend training specifically under the banner of ecological leadership, but they did attend training, which focused on the integration of different school contexts, and the links between them.

“When we think about change, we do think about those levels, but in an informal way. It would be interesting to actually know more about that... We are doing it, but possibly need

more focus, each of those levels needs a bit more focus... No (did not attend courses on ecological leadership)". (P3)

"I haven't been involved in anything where you have those terminologies. We just look at our different phases and see them as they are... conscious of the close connections between them. No (did not attend courses on ecological leadership)". (DP5)

"I don't know it and I don't fully understand it... Probably we have done it informally when learning about the different parts of a school... No (did not attend courses on ecological leadership)". (ICT4)

The responses below further show that school leaders attended courses/training, that focused on introducing change, across different levels of the school environment. These courses, were both internally organised by the school, and externally organised, by affiliated educational organisations. The courses/training were randomly organised. The school leaders that did attend the courses, considered them effective.

"It's the first time I've heard of ecological leadership... but as a concept it is quite ingrained in our leadership at the executive level where we make decisions and consider the effects on all the levels. I haven't attended any course specifically on it but there were elements of it in a number of seminars that I have attended. They were effective" (DP4)

I think it is happening informally (ecological leadership) and its happening across... So digital transformation, we did it within our departments, between departments and then as a general school... There were some workshops without the terms micro, meso... more internal... I would say effective... They are not consistent." (FG4D)

After analysing all the responses, it emerged, that although, most of the school leaders were not formally exposed to specifically ecological leadership, they utilised many of its tenets, when introducing significant changes into their schools. School leaders also did not attend courses/training, specifically on ecological leadership, but some of them attended training, on how to introduce change into, and across the different school levels. The responses showed that none of the school leaders attended courses/training on ecological leadership, in the context of

21 CL. This data, is again very relevant, because it provides useful insights, into how a leadership model, can be constructed for the interpretation and enactment of 21 CL

5.4 Conclusion

In this chapter the quantitative and qualitative results were presented. These results elucidated the views and opinions of school leaders. In line with the objectives of the study, the three central themes of ICT utilisation, the enactment and interpretation of 21 CL, and roles of leadership in this process, was investigated and analysed. The results showed that the participating schools, were using a variety of ICT devices and platforms. The results also indicated, that 21 CL in these schools were in its infant stages. Finally, the results revealed that leadership development for 21 CL, was limited. In the next chapter, the results are discussed in relation to the literature reviews, conducted on ICT utilisation, 21 CL, and the leadership theories in the previous chapters.

CHAPTER SIX

DISCUSSION

6.1 Introduction

The previous chapter presented the quantitative and qualitative findings from the online questionnaire. It also presented the qualitative findings of the individual semi-structured interviews, and the focus group interviews. This chapter analyses and discusses these findings from the data collection methods. These findings will be triangulated with information from chapter two and chapter three, which are the literature chapters. The central themes of ICT utilisation, 21 CL interpretation and enactment, and the roles of school leadership in these processes, are aligned with the objectives of the study. The discussion of the research findings is structured under these themes. This chapter briefly discusses the response rates and demographic profiles before examining the research findings.

6.2 Response rates and demographic profiles

The response rate for the online questionnaire was 45%, and the response rate for the interviews was 100%. The response rates are high, and this increases the validity and trustworthiness of the findings. One hundred school leaders from twenty-five private secondary schools in KwaZulu-Natal answered the questionnaire. Fifteen school leaders participated in the individual interviews, and twenty-one school leaders in the focus group interviews. Seventy-seven percent of the respondents in the online questionnaire, 66,67 % of the participants in the individual interviews, and 47,62 % of the participants in the focus group interviews had more than twenty years of experience in the teaching profession.

The use of years of experience as one of the deciding factors in school leadership promotions, was discussed in chapter two. Zelvys *et al.* (2019), as well as Sepuru and Mohlakwana (2020) affirm that seniority, in terms of years of experience, is still one of the criteria used for school leadership promotions, in many countries including South Africa. School leaders therefore,

might not possess formal qualifications in leadership and management. This, then links to the need for formal leadership and management qualifications for principals, becoming a prerequisite for school leadership promotions, because these qualifications can equip them with the skills and knowledge to be more effective (Mestry, 2017; Volmink & van der Elst, 2017). This subtheme will be discussed further, later in the chapter.

6.3 The implementation and use of information and communication technology in schools

One of the main objectives of the study was to investigate the implementation, and use of ICT in private secondary schools in KwaZulu-Natal. This topic was therefore researched and discussed extensively in the literature chapter two. It is important to revise a few important aspects of ICT, as an introduction, before engaging in a discussion of the research findings. Rapid ICT innovations have changed the way we play, work, shop, communicate and learn (Varghese *et al.*, 2019; Mhlanga & Moloji, 2020). These innovations have especially revolutionised the educational sphere (Nouri *et al.*, 2019; Shanmugam & Balakrishnan, 2019). The more extensive use of ICT in education, has led to greater learner participation, higher assessment scores and pedagogical research which has led to improvements in education. (Adarkwah, 2020; Lawrence & Fakuade, 2021).

It has also streamlined many aspects of the teaching and learning process and facilitated the access to education by many more learners (Osakwe *et al.*, 2017; Wang, 2017). Effective ICT strategies within schools, have also proven to be critical in the successful interpretation and enactment of 21 CL (Hashim *et al.*, 2019; Nouri *et al.*, 2019). The different strategies and facets of ICT implementation, and their use, were investigated in this study, to provide more detailed information about effective South African private secondary school practices, in relation to global trends. The aim is to then add these factors to the development of a leadership model for 21 CL.

6.3.1 Information and communication technology teams and programs

ICT teams and programs were investigated to provide greater insights into the implementation and use of ICT in schools. The quantitative data revealed that 82% of the participating schools, had an ICT program, and 96,3% of those schools had an ICT team to manage it. All the participants in the individual interviews, and the focus group interviews indicated that their schools had ICT programs. The participant responses in the interviews, further revealed that these programs formed part of the school curriculum, in the form of computer, media science, CAT, ICT, IT, or technology lessons. This is substantiated by the response below.

“IT and CAT are optional subjects that are taught in the FET for us, but in terms of a curriculum that is followed in grade 8 and 9, its through media science.” (DP2)

It is difficult to manage an additional, stand alone, ICT program concurrently with the normal academic program of a school. This is because of time and staffing constraints within the school. It is easier to structure and formalise an ICT program as part of the academic program and school timetable. This is why most schools, including the participating schools, adopt a combined strategy of implementation. The qualitative data from the interviews provided further in-depth information regarding the ICT programs. The responses in the individual interviews, and the focus group interviews, revealed that the ICT programs were offered and formalised more in the junior grades as timetabled subjects. The reason for this is to teach the junior grades the necessary ICT skills needed in the higher grades. The only ICT lessons evident for grades ten to twelve, was the optional subjects of CAT and IT.

“I suppose it starts in grade 8 and 9 where they have to take technology as a subject...To learn basic skills... From that point forward, there isn't a formal program in the school.” (DP4)

Varghese *et al.* (2019) together with Lawrence and Fakuade (2021) explain that, in light of the rapid ICT developments, many countries have initiated ICT programs at their schools and have formed ICT teams to manage them. The private schools in KwaZulu-Natal have followed global trends, and have also initiated ICT programs, with ICT teams to manage them, as evidenced from the data. However, these ICT programs were focused more in the junior grades as introductory lessons, to provide the learners with basic ICT theory and skills. Contrary to

this approach, Varghese *et al.* (2019) and Obonnaya *et al.* (2020) explain that the successful implementation of ICT, has been through a holistic system wide approach. This includes developing structured ICT lessons, for all the grades in the school and not just focusing on specific ones, like the junior grades.

Ajmain *et al.* (2019), as well as Shanmugam and Balakrishnan (2019) affirm, that one of the factors that determine the successful implementation and utilisation of ICT in schools, is a holistic system wide approach. This holistic approach not only focuses on the teaching of basic ICT knowledge and skills, but on the all aspects of the change process, necessary to successfully infuse ICT into education for pedagogical improvement (Wang, 2017; Bai & Song, 2018). These aspects include planning, infrastructure, training, evaluation and feedback on the implementation process (Toh *et al.*, 2014; Cheng, 2017). The research findings did not reveal any organisation, planning or monitoring of the ICT implementation and utilisation process, beyond the allocation of ICT lessons within the school timetable. The successful formalisation of ICT lessons, is characterised by a much more planned, extensive and focused approach, which extends beyond the ICT approaches adopted by the participating schools.

The qualitative data supported the quantitative findings, in that private secondary schools in KwaZulu-Natal administered ICT programs, and had ICT teams to manage them. The qualitative research methods were able to probe more deeply, and revealed that the teams who managed the ICT programs were small, and extra manpower was needed to effectively manage the ICT teams, in larger private schools. Only one, out of the five interviewed schools, had an ICT team, with more than three members, but this proved to be a loosely arranged group of interested teachers. Two of the schools only had two members making up the team. An ICT technician was usually a member of the team, to assist with resolution of the day to day ICT problems, and the ICT head/teacher, because they had the theoretical and practical knowledge, to share with the rest of the school. The responses below substantiate these views.

“I think the responsibilities of the team are really many... Possibly our team could be bigger... this is one area where we need to grow at least another staff member.” (P3)

“Essentially, we do have technical support with (Name) and (Name) as the ICT integrator but, we definitely are short staffed, in that sphere.” (DP2)

Hulten and Larsson (2018), together with Maphosa (2021) assert, that the training and development of teachers and ICT teams is crucial in the effective implementation of ICT. Ogbonnaya *et al.* (2020) add that an ICT team must be made up of a sufficient number of skilled and trained individuals, to manage the needs of the respective schools. However, it is important to note, that both private and public schools operate within budgets, and sometimes ICT teams and ICT training are downsized (Nouri *et al.*, 2019; Pather & Booi, 2020).

The literature review in chapter two revealed a few additional and important aspects of ICT programs, which were not evident in the research findings. Moyo and Hadebe (2018), as well as Nouri *et al.* (2019) mention, that the effectiveness of ICT lessons can be increased across the grades if they go beyond being just introductory lessons, and include the teaching of the subject Computer Science. This is because Computer Science, encompasses all the relevant ICT theory and skills which learners require. Garcia-Penaluo and Mendes (2018), as well as Mayfield & Hester (2018) further advocate, that other essential components of ICT lessons across the grades include programing, coding and computational thinking. Although ethical concerns were not raised in the research findings, it has been cited in literature. With the rise of ICT used by teenagers, in and out of school, cyber bullying and the use of explicit sexual material has come to the forefront (Crawford, 2017; Elstad & Christophersen, 2017). Schools have been quick to respond by developing stringent school ICT policies, and have embarked on digital literacy programmes, which focus on the ethical and legal use of ICT (Crawford, 2017; Claro *et al.*, 2018). Crawford (2017) and Oakley *et al.* (2017) therefore, propose that in addition to learners being taught basic ICT skills, digital literacy should form a core component of the ICT curriculum.

6.3.2 The different forms and platforms of information and communication technology used by school leaders and learners

The quantitative data revealed that a significant 94% of school leaders used ICT regularly and actively. It also revealed, that many school leaders used a wide variety of ICT hardware which included wi-fi devices, laptops, digital projectors, cell phones and iPads/tablets. The qualitative data also revealed, that many school leaders used a wide range of software, which included Google drive and Google classroom. The hardware and software that school leaders used, were

mostly from the Google and Microsoft companies. When triangulated, the data sets supported each other. This is evidenced in the participant responses below.

“Digital projectors, laptops, iPads, cell phones, e-books, wi-fi, some people use notepads. Internet, e-books, Idoceo, Google classroom, Google Docs, Google Forms (used by school leaders).” (P2)

“We use smart boards, projectors, laptops, tablets, e-books and wi-fi. I use Google Classroom and Moodle. So, we use Google packages and Microsoft packages.” (ICT 4)

The quantitative data also revealed, that most learners, used a variety of ICT hardware and software from Google and Microsoft. Some of the ICT hardware included wi-fi devices, iPads/tablets, laptops and cell phones. Some of the ICT software included Google classroom, Google drive, Word, Power Point and Excel. The qualitative data again supported the qualitative data. The interviewee responses also revealed that learners used a wide variety of ICT hardware and software. The following responses validate this trend.

“Laptops, notepads, iPads/tablets and cell phones, the whole range. And internet, Google Forms, Google Classroom, Google Docs, Word, Excel, Power Point. Yah, practically all of those (used by learners).” (P5)

“I think they are exposed to all of them (hardware and software) through the year in some form or the other.” (FG1B)

The wide range of ICT's use by school leaders and learners in private schools, is because private schools usually have sufficient financial resources. Parents of learners at these schools are usually, also wealthy and have access to funds, for equipment and training. The data is important, because it indicates that the private secondary schools in KwaZulu-Natal are actively implementing and using ICT. Varghese *et al.* (2019) and Ogbonnaya *et al.* (2020) confirm that school leaders and teachers are changing their mind-sets towards ICT and social media, and are using ICT more often in their teaching. Hines and Lynch (2019) as well as Shanmugam and Balakrishnan (2019) affirm that school leaders and teachers have become more confident in their use of ICT. Marlatt (2018) and Ajmain *et al.* (2019) further assert that

learners, are using ICT more in their everyday lives than ever before and as a result they are engaging more in learning digitally. Johns *et al.* (2017) and McGuire (2018) agree and mention that the Google Suite and Microsoft Office 365, are being used much more often in classrooms, as these digital platforms become more adapted for classroom use.

Although the quantitative and qualitative results, both indicated the wide use of ICT hardware and software, the participant responses in the individual and focus group interviews, did not indicate a strategic ICT plan designed for pedagogical improvement. The wide range of ICT devices, applications and platforms used by individual schools, is evidence of the lack of holistic and long-term planning. The lack of proper planning for ICT implementation is substantiated by the responses below.

“I am sure individual teachers make use of Google Docs but certainly from talking about myself, I would mainly use Microsoft office.” (DP3)

“They are quite happy using whatever platform...but they happy using Moodle or Google Classroom.” (ICT 4)

Ajmain *et al.* (2019) and Patrick *et al.* (2021) indicate that ICT can be successfully implemented in education, if it is based on empirical research for pedagogical advancement, and not on just one or two ICT innovations. The responses also suggest a lack of communication between stakeholders regarding ICT utilisation.

6.3.3 Passive versus active use of information and communication technology by staff

The active use of ICT, refers to teachers using a variety of ICT devices and applications during their lesson preparation, teaching and assessments, with the aim of developing higher order learning. The quantitative data revealed that the participating school leaders, perceived sixty to eighty percent of teachers, at their respective schools, who actively engage with ICT. The qualitative data revealed that even fewer teachers were actively engaged with ICT. This is verified by the participant responses below.

“If I had to put it into categories, I would say ah, thirty to forty percent that are actively, actively on board with technology... I would say ten to fifteen percent are adamant that it’s not going to work.” (P3)

“I would say twenty percent of our staff do that, maybe even thirty (actively use ICT).” (ICT2)

“They are certainly using a projector and computer to disseminate information but, yah, from my department not much more than that.” (FG4C)

Mathew (2018) and Varghese *et al* (2019) mention that ICT should not be underutilised, as just an information source but should be extensively incorporated into pedagogy, especially 21 CL. Agormedah *et al.* (2020) and Obonnaya *et al.* (2020) affirm, that the delivery of digital content, in many countries including South Africa, has proven to very ineffective, unless it was properly integrated into the pedagogical practice. ICT has the capacity to revolutionise the teaching and learning process, by creating classroom contexts in which learners, can take ownership of their learning, and higher order cognitive, and affective learning can take place (Johns *et al.*, 2017; McGuire, 2018).

The quantitative data also showed that 51% of the respondents used online assessments. The qualitative analysis, revealed few school leaders and teachers used online assessments within their respective schools.

There are very few (online assessments), it’s obviously, it’s more in the junior phase, with the media science, those teachers do it.” (DP2)

“Some of the subjects do...but it’s definitely something that ah, is not the norm. They are generally more informal assessments.” (DP3)

The responses below, also revealed that online assessments were commonly used for easy revision exercises or fun exercises.

It’s not all of it by any means. I would say it’s only like ten to fifteen percent of what they do in fact. It’s generally like basic multiple-choice questions.” (ICT2)

“We also use a Geography program when we have a little down time...but not as an assessment just kind of fun exercises.” (FG4B)

Ajmain *et al.* (2019) and Agormedah *et al.* (2020) suggest, that one of the possible reasons for the limited use of online assessments, is that school leaders and teachers are still compelled to use traditional, written and content-based assessments for reporting and promotion purposes. Another possible reason, is that school leaders and teachers are overburdened with their teaching responsibilities, and do not have the additional time to experiment with innovative ICT pedagogies (Al-Awidi & Aldhafeeri, 2017; Kokare & Strautins, 2018). This was also evident in the interview response below.

“Yah, but there are times when teachers just feel that they have so much else to do. Apart from using it as a teaching aid for e-books, they don’t have enough time to do much more on it.” (DPI)

Another response indicated that some school leaders and teachers are opposed to any sort of change and are unwilling to experiment with new form of assessments.

“One of the roadblocks that we encountered in implementing technology in the classroom, is teachers are resistant to change inherently...especially when the change involves technology.” (ICT3)

McGuire (2018) together with Moyo and Hadebe (2018) support this idea in that some educational studies have found that school leaders and teachers are sometimes used to their routine, and resistant to any change of their known contexts. Petko *et al.* (2017) and Mathew (2018) further suggest, that research into the positive outcomes of ICT in education is relatively recent and limited, when compared to research on more traditional educational practices. This has resulted in school leaders and teachers being very cautious and less amenable to experiment with it (Hines & Lynch, 2019; Maphosa, 2021).

6.3.4 Information and communication technology training attended by school leaders

The quantitative data revealed that 88% of respondents attended some sort of ICT development and 58,6% of these respondents rated this training as “good”. “Good”, in the context of this study, refers to whether the training was relevant and practical to the school leaders. To make the training and development more effective, respondents indicated that the sessions be more regular, specific, and interactive. The qualitative data yielded similar results, with many of the school leaders attending ICT training. Principals, deputy principals and ICT heads attended, external and internal training and development sessions, whilst the subject heads attended training that was mostly internally organised by the school. The ICT heads were exposed to the most extensive training. These views are substantiated by the responses below.

“Yes, I have been to the ISASA workshops where they speak about it...external and I have been to internal ones with (name – member of the ICT team ... more random...I think that they are effective.” (P3)

“Many, (ICT course), some have been more effective than others. Most of them were internal and some that I have engaged with have been external.” (ICT3)

“I have attended some internal ones for now. Nothing external...From my perspective more random...I would say effective.” (FG4C)

Some of the suggestions to make the ICT training and development more effective, included creating school policies, which outline the ICT needs, objectives and implementation strategies. A further suggestion was to make the training more appropriate, by increasing the relevancy and practicality, to the roles of school leaders.

Maphosa (2021), as well as Ndlovu and Spangenberg (2021) affirm that the effective ICT training and development for school leaders and teachers, is a crucial component in ICT utilisation in schools. Moyo and Hadebe (2018), as well as Ogbonnaya *et al.* (2020) confirm that effective and sustainable ICT utilisation, in schools is not possible, without well trained school leaders and teachers. A three-stage ICT development programme used in Singapore proved very successful (Toh *et al.*, 2014). The first stage involved the teaching of basic ICT

skills to all school leaders and staff, the second stage was department and subject specific, and the third stage was more intensive ICT learning, for those staff who wanted to reach an advanced level (Toh *et al.*, 2014). The first two stages were compulsory, and the third stage was optional. Many countries have adopted a centralised-decentralised approach to ICT implementation, whereby schools are given greater control over the ICT utilisation process, but the central government still regulates the change, through national compulsory mandates and funding (Cheng, 2017; Hines & Lynch, 2019).

ICT training and development for school leaders, is a pivotal component in successful ICT implementation, and there has been much research on the topic. Some of this research indicates that the focus of ICT training for teachers, must shift from only focusing on technical expertise, to the development of digital literacy of teachers (Kokare & Strautins, 2018; Moyo & Hadebe, 2018). It should include aspects of 21st century ICT teacher development models such as the TPACK and the SAMR models (Marlatt, 2018; Subekti, 2020). Research also indicates that many countries have designed technology proficiency tests for teachers, to assess their digital expertise (Mayfield & Hester, 2018). Other countries have even legislated, through policy, ICT training and development for teachers, as a requirement for teacher qualifications (Al-Awidi & Aldhafeeri, 2017; Mayfield & Hester (2019).

Some of the other issues prevalent in literature are equal access to ICT, spreading of ICT to the wider community, storage and security of information, the sharing of ICT expertise, and keeping abreast of rapid ICT developments (Clarke *et al.*, 2014; Cheng, 2017). Schools have again, quickly responded, by establishing school policies, regarding these issues and developing opportunities for communication and collaboration (Clarke *et al.*, 2014; Cheng, 2017). Another pertinent concern, evident in literature is the lack of personal interaction due to the use of ICT in education, and its potential negative impact the social skills of learners (Ramli *et al.*, 2020; Literat, 2021). Many teachers have opted for the blended learning approach, such as the flipped classroom methodology (Mahaye, 2020; Bordoloi *et al.*, 2021). In this teaching practice, learners are provided with the benefits of ICT, as well as human interaction (Wang, 2017; Hulten & Larsson, 2018).

When triangulated, the qualitative data supported and verified most of the quantitative results regarding ICT utilisation, and allowed for a deeper analysis of the results. The triangulation of both data sets with information from the literature review chapters, provided more rich

discussions. This led to many important aspects being identified as potential components of the leadership model for the interpretation and enactment of 21 CL.

6.4 The interpretation and enactment of twenty first century learning

The investigation of the interpretation and enactment of 21 CL, in private secondary schools in KwaZulu-Natal, was another crucial objective of the study. This topic was therefore, also extensively discussed in the literature chapter two, but it is important to review the key ideas, before discussing the research findings. Generation Z and generation A learners, have grown up in an ICT driven world, which is completely different from previous generations. Generation Y and X individuals, have also been exposed to the rapid ICT developments of the fourth industrial revolution. This revolution has changed most aspects of our human existence (Bedir, 2019; Hashim *et al.*, 2019). This includes the way we learn. Traditional educational practices were designed to produce a working force, necessary for the second and third industrial revolution. These teaching methods have become outdated, because the global landscape and employment opportunities are changing (Lay & Osman, 2018; Howard *et al.*, 2019). In order to remain viable, many countries including South Africa, have begun to change their educational systems (Varghese *et al.*, 2019; Ogbonnaya *et al.*, 2020). The pedagogical approach of 21 CL, is considered as the next feasible option (Ajmain *et al.*, 2019; Maphosa *et al.*, 2020).

This is because it has the capacity to empower learners, with the necessary 21st century competencies to make them effective global citizens (Abdurrahman *et al.*, 2019; Maphosa, 2021). It has also led to improved learner performance, greater higher order learning, and more learner participation (Bai & Song, 2018; Hashim *et al.*, 2019). It has also led to greater teacher enthusiasm and productivity (Ajmain *et al.*, 2019; Hines & Lynch, 2019). The second objective of this study was to investigate the interpretation and enactment of 21 CL, in private schools in KwaZulu-Natal, to provide more information about their context, related to experience and practice. This information will then be added to the leadership model which guides the change process.

6.4.1 Twenty first century learning – Life skills beyond the curriculum

The quantitative data revealed that 52% of the respondents indicated that their knowledge of 21 CL was “good”, and 34% indicated that their knowledge was “fair”. When triangulated, the qualitative data supported the quantitative results. Some participant responses, indicated a moderate knowledge of the competencies involved in 21 CL, whilst others demonstrated a good understanding of them. Some of the school leaders mentioned that 21 CL involved higher order learning, and the application of knowledge, and also emotional intelligence, ethics, and life skills. This is substantiated by the responses below.

“So, I understand it’s preparing you for beyond the curriculum...because it forces you into those core critical skills...It’s those hidden skills that will prepare you for life after school.”
(DP2)

“There are tendencies to jump to technology but...it is just one component of 21 CL. 21 CL enables young people to operate in a modern world in the best way possible. You need skills like critical thinking, and entrepreneurial skills... We mustn’t forget the emotional and social side.” (DP4)

“It’s supposed to be critical, more creative, out of the box kind of thinking... I think it also has a lot with giving the skills to find information and applying them, rather than giving them the actual information.” (FG1A)

The research findings regarding the understanding of 21 CL competencies, by school leaders, share many similarities with those described in literature. These include that 21 CL goes beyond only ICT skills to include necessary life skills, which have sometimes been neglected by traditional teaching methods (Nappi, 2017; Barrot, 2018). 21 CL also shifts the emphasis from memorisation of content, to the application of knowledge, to different real world situations, using credible data (Barrot, 2018; McGuire, 2018). Literature also describes 21 CL as focusing on competencies, from both the cognitive and affective domains (Barrot, 2018; Hines & Lynch, 2019). Some of these competencies include critical thinking, emotional intelligence, global citizenship, self-management, lifelong learning, ethics, communication, collaboration, and information skills (Bai & Song, 2018; Hashim *et al.*, 2019; Maphosa, 2021).

A significant component of 21 CL is that it is learner-centred with the learner being an active contributor to the entire learning process (McGuire, 2018; Ajmain *et al.*, 2019). This aspect of 21 CL did not feature in the research findings. Another component of 21 CL, which was not evident in the research findings, was that of the scientific method. The scientific method which involves experimentation, investigation, analysis, evaluation, and review, is used extensively in 21 CL (Botha, 2016; Barrot, 2018). A further aspect of 21 CL that did not appear in the research findings was that of experiential learning. Many of the 21 CL competencies can only be learned through experience, through extra-curricular activities outside the classroom (Cheng, 2017; Ajmain *et al.*, 2019). The research findings reveal that the understanding of 21CL, by school leaders, was good in terms of understanding the competencies involved, but was also largely limited to this extent.

The participant responses were limited to explaining 21 CL, in terms of some of the competencies involved. There were no references to its foundational principles, development or structure. The research findings therefore, did not reveal a deeper understanding of 21 CL by school leaders, because none of the following important information regarding 21 CL was mentioned. Over the last twenty-five years, the understanding of 21 CL has evolved and deepened (Tong & Raznaik, 2017; Ajmain *et al.*, 2019). 21 CL is seen, not to be based on behaviourism, but rather cognitivism, constructivism and constructionism (Ajmain *et al.*, 2019; Maphosa, 2021). 21 CL is aligned with OECD and the UNESCO's Four Pillars for learning, which entail, equipping learners with skills and knowledge to be effective, responsible global citizens (Volmink & van der Elst, 2017; Hines & Lynch, 2019). 21 CL competencies can also be grouped into four main categories, namely ways of cogitating, interacting with others, tools for interacting with others and skills for surviving in the modern world (Hakkinen *et al.*, 2017; Siddiq *et al.*, 2017). McGuire (2018) explains that the 21st century competencies from the four categories can be arranged in three incremental levels of competence. These are the cognitive, the intrapersonal and the interpersonal domains. Furthermore, Lay and Osman (2018) propose an instructional strategy for 21 CL, which is broken down into five phases namely inquiry, discover, produce, communicate and review.

The research findings from the school leaders, also did not reveal any urgency, or need to change, from traditional educational practices to 21 CL. Yet, there have been rapid ICT developments in the fourth industrial revolution, especially due to COVID-19, which have necessitated exigent changes in educational practices (Bedir, 2019; Subekti, 2020; Chirinda *et*

al., 2021). In addition, some of the leading countries, started to introduce 21 CL into their schools in the late 1990's (Cheng, 2017; Mayfield & Hester, 2018). Teaching methods, assessment strategies, and the structure of content, have been developed to the extent of some countries, completely revolutionising their educational systems to 21 CL (Siddiq *et al.*, 2017; McGuire, 2018). The data that emerged from the research findings, also did not reveal that school leaders, were aware of the extent of this development of 21 CL. Although school leaders were aware of the 21 CL competencies, there was still much more theoretical and practical content that was not evident.

6.4.2 School programs aligned with twenty first century learning

During the interviews, participants were asked to elaborate on their experiences of 21 CL, in terms of their school programs. From the responses, only one of the schools had an official 21 CL programs, whilst the other schools had programs, which were aligned with 21 CL. These programs included thinking schools, cross-curricular and research skills programs. These programs were loosely formed official programs, or implicit unofficial programs. The term loosely formed refers to official programs which were not well organised or structured.

Table 6.1: Different 21 CL aligned programs in schools

School	Official Programs	Unofficial programs
1	cross-curricular, thinking schools' and research skills	21 CL
2	cross-curricular program, thinking schools' and 21 CL	research skills
3	thinking schools' and research skills	cross-curricular and 21 CL
4	cross-curricular and research skills	thinking schools' and 21 CL
5		cross-curricular, thinking schools', research skills and 21 CL

The different 21 CL aligned programs that the five different interviewed schools managed, are shown in Table 6.1 above. All of these programs were more focused in the junior grades. These programs were also not taught in separate lessons but as part of other lessons. These ideas are evidenced in the responses below.

“We have a small one (cross-curricular program) which happens in grade 8 and 9...Not a big team...Yes down at the bottom end (research skills program), part of media studies...No (21CL program) it’s all done within.” (P4)

“I think it happens (cross-curricular program) but I wouldn’t say it’s an official program...and again, just like technology, depends on the teachers. The teachers who embrace it.” (P3)

Small teams of interested staff managed the official and unofficial programs.

“There is no real 21 CL team as such, but we do have champions that lead the process.” (ICT3)

“We normally have a driver of it who fires up certain teachers... and then those people that are interested form the team. Yah, they drive the process.” (DP1)

The existence of implicit unofficial, and loosely structured formal 21 CL programs, revealed that the participating schools have begun their journey to 21 CL, but were still in the early stages of the transformation. This again is evident, by these programs, being focused more in the junior grades, not being timetabled, as separate lessons, but being taught concurrently with other subjects, and managed by small groups of interested teachers, rather than designated, trained teams. McDonald (2017) and McGuire (2018) mention that some countries, who began experimenting with 21 CL in the late 1990’s, have already completely changed their entire educational systems to 21 CL.

CAPS and the IEB educational systems within South Africa, as well as many other educational systems globally, are still assessment and examination driven (Lay & Osman, 2018; Moyo & Hadebe, 2018). Teachers therefore, tend to remain with the traditional teaching methods like content-based, repetition learning which have yielded good results previously. (Lay & Osman, 2018; McGuire, 2018). This is evidenced in the research findings, which showed that 21 CL aligned programs occurred mostly in the junior grades, and was a second priority, to teaching learners the content from the prescribed curriculum. Teachers are also wary to experiment with 21 CL, since it is a new educational paradigm, and has relatively limited evidence of its

effectiveness (McGuire, 2018; Mbandlwa, 2021). The implicit unofficial and official loosely structured 21 CL aligned programs, with non-designated teams, could also be the product of teachers being over-worked, and not having sufficient time to engage with innovative teaching methods (Clarke *et al.*, 2014; Claro *et al.*, 2018).

It is evident from the data that the participating schools have enacted 21 CL as secondary, compartmentalised programs, within the larger academic program. Contrary to this approach, Clarke *et al.* (2014), assert that schools which have been successful in changing to 21 CL, have adopted different strategies, to that adopted by the participating schools. These successful schools have not used a compartmentalised approach to 21 CL, in disconnected learning programmes, and have opted for a comprehensive and holistic adoption of the paradigm (Siddiq *et al.*, 2017; McGuire, 2018; Ajmain *et al.*, 2019). These countries have thus, changed their lesson/course structure, syllabus content, teaching and learning strategies, and their assessments. Countries that have successfully adopted 21 CL, have also adopted it, with the intention of changing their core educational aims, from purely economic development, to peace, humanity and sustainability (Cheng, 2017; Ajmain *et al.*, 2019). Furthermore, countries that have success, with the interpretation and enactment of 21 CL in schools, have invested time and resources to train their teachers (Tong & Raznaik, 2017; Bai & Song, 2018; Nouri, Zhang, Mannila & Noren, 2019).

6.4.3 Inquiry-based and cross-curricular school assessments

A significant 82% of school leaders, indicated that there were inquiry-based learning assessments and a significant 67%, said there were assessments that were cross-curricular. The qualitative data revealed that, although inquiry-based and cross-curricular assessments existed, at the participating schools, they were not widely used and were in their beginning stages. Their use depended largely on the teacher and subject. This is evidenced in the responses below.

“Yes, not in every subject area but subjects do use inquiry-based assessments to do their projects. Its more on an ad hoc basis, it happens (cross-curricular assessments) but not terribly frequently. (DP4)

“There is definitely inquiry-based learning happening here. Ah, less so because it takes more time to arrive at a decision... it does exist (cross-curricular assessments) but certainly not a lot and not in the bigger subjects...time is an issue.” (ICT2)

“Maybe slowly happening here (inquiry-based assessments), depending on the subject and certain areas of the subject.” (FG2B)

21 CL is characterised by inquiry-based project work, which is cross curricular in nature, and involves the analysis of authentic data from around the world (Hakkinen *et al.*, 2017; Hines & Lynch, 2019). The research findings revealed a limited involvement with these teaching and learning strategies. Experimentation with new innovative pedagogical approaches appeared to be a secondary objective, which was left to the discretion of staff, if time allowed for experimentation. There was no follow through, monitoring or management processes undertaken by school leaders that was evident from the responses. This lack of engagement, was another indication, that the participating schools were beginning their journey of transformation to 21 CL. Limited time by school leaders and teachers to experiment with 21 CL, was also evidenced in the findings. McGuire (2018) and Cheng (2017) affirm that limited time for experimentation does reduce teacher involvement with 21 CL.

6.4.4 Formal versus informal teaching of twenty first century competencies

The quantitative data revealed that a significant 73% of school leaders indicated that they, or other teachers formally incorporate 21st century competencies into their teaching. A significant number of respondents indicated that they use critical thinking, global awareness collaboration, communication, innovative thinking, social proficiency, cross cultural skills, and information skills. The quantitative data also revealed, that a significant number of respondents, incorporate 21st century competencies, in grade eight and grade twelve. Finally, the quantitative data revealed that 23% of school leaders, were unsure about the percentage of staff that actively use 21 CL competencies, in their teaching, and a significant 44% indicated that the percentage of staff who actively use 21 CL in their teaching practice, is more than 40% but less than 100%.

The qualitative data from the online questionnaires, showed that those teachers that did incorporate 21 CL competencies in their teaching, did so, by emphasising 21st century

competencies in the teaching of subject matter (34%), and by using different classroom/teaching activities (32%).

The participant responses, in the individual and focus group interviews, revealed that most school leaders and teachers, taught 21 CL competencies informally, which was in contrast to the quantitative results. Possible explanations for this incongruity, is that participants were more willing to be honest in a face-to-face setting, or that the participants better understood the questions, after interacting with the researcher. The participant responses in the interviews also revealed, that the teaching of 21 CL competencies was done passively, rather than actively. The responses showed that, school leaders and teachers did not include 21 CL competencies overtly in their lesson plans, work schedules or teaching methods. There were also no compulsory directives from the school, to include 21 CL competencies in the teacher's planning. The 21 CL competencies, which featured prominently in the quantitative data, were also mentioned in the responses. This is evidenced in the responses below.

“Informally to a higher extent but formally about ten percent. There is not a requirement that says in your lesson plans you have to include say twenty percent of this...But we know it happens... to a greater or lesser extent depending on the individual.” (P4)

“We do critical thinking, innovative thinking, communication, collaboration, information skills and civic literacy... So yes, I think it's quite happening (incorporation of 21 CL competencies), it's just implicit.” (FG3C)

One of the reasons for the poor formal use of 21 CL competencies ,by school leaders and staff, was that some staff members were resistant to change.

“They informally incorporate it (21 CL competencies) ... Formally, I don't think they (the staff) are actively engaged...There are some traditional, old fashioned teachers though who refuse to change.” (DP2)

Another teacher mentioned that the inclusion of 21 CL competencies into teaching, was dependent on the subject and teacher.

“Depends on the subject and educator (incorporation of 21 CL), each teacher brings their own flair ... I think the way each staff member runs their classroom is different. (FG5B).

The qualitative results indicated the informal, passive, and unstructured use of 21 CL competencies in the participating schools. These results were similar to the results, encountered in the components of ICT utilisation, as well as the 21 CL aligned programs. In reviewing all of the research findings, it becomes evident, that the private secondary schools in KwaZulu-Natal are beginning their journey of transformation to 21 CL. They have initiated 21 CL practices and platforms, but there is still no structure, co-ordination and effective management of these endeavours. Reasons and explanations for the low and passive use of 21 CL competencies, were again similar to the other research findings.

Cheng (2017) and Tong *et al.* (2017) avow, that there is extensive information about interpreting and enacting 21 CL in schools, as many countries have embarked on this transformation, decades ago. The research findings indicate that the participating schools, are either, not aware of this research, or have chosen not to use it. Yet, one of the key elements in the successful transformation process, to 21 CL has been the development of strong partnerships, between professional teaching practice and informative research, where one mutually informs the other, and the findings are constantly shared for continuous improvement (Clarke *et al.*, 2014; Bai & Song, 2018). Heinrich and Kupers (2018), as well as McGuire (2018) also assert that 21 CL, can be facilitated by well-developed policies and plans. These were not evident in the approaches of the participating schools to 21 CL.

6.4.5 Twenty first century learning aligned courses/training

The quantitative data revealed that 49% of school leaders attended thinking schools’, 43% 21 CL, 24% inquiry-based learning, and 23% cross-curricular courses. Inferential statistics revealed that none of these courses were attended by a significant number of the sample. The quantitative results of a chi-square, showed that a significant 74,4% of these courses were arranged externally only, or both externally and internally. The qualitative data affirmed the quantitative results. The responses of the participants showed that school leaders did not attend courses, specifically referred to as 21 CL courses/training, but they did attend courses focused on 21st century competencies, cross-curricular learning, thinking schools, and inquiry-based

learning. These courses were, both internally conducted by the school, and externally conducted by educational institutions, affiliated with the school. The similar qualitative results are affirmed by the responses below.

“Not to that title (21 CL courses) but I have done courses online character education courses... Yes, we have (attended cross-curricular courses) ... Not formally no (attended thinking schools) ... not the whole staff (attendance of inquiry-based learning).” (P4)

“No (attendance of specific 21 CL courses) but we did do a course on education and sustainability which was very much around 21 CL. It had many projects... I am sure we did one on cross-curricular studies as well.” (FG1A)

The quantitative results also showed a significant 61,3% of the 21 CL aligned courses, were randomly arranged, and a significant 66,7% were rated as ‘good’. The interview responses also indicated that most of the courses were randomly organised, and were effective. This is evidenced by the response below.

“Lots of 21st competencies stuff... No cross-curricular studies...Thinking schools we do a lot here... I haven’t ever been to inquiry-based learning seminars or anything... externally organised... it’s random... they have been very effective.” (P1)

The qualitative data from the online questionnaire revealed that there should be refresher or follow up courses (20%), that courses should be more regular (16%), that the courses should be more affordable (14%), and that the courses should provide more assistance in the aspects pertaining to implementation and practicality (12%). The interview responses also showed similar recommendations.

“I think the way it was put across was effective at the time... We do need updated ones. Maybe there should be more. We haven’t continued with any of the courses that have been offered.” (FG3C)

“We went to habits of mind and thinking maps... Initially external then we chose the thinking maps and they came to us... not very consistent (courses/training) ... More practical methods need to be included.” (FG3E)

The research findings regarding 21 CL aligned courses and training, are similar to the other research findings regarding 21 CL. These findings indicate that the participating schools have initiated training and development of 21 CL, for school leaders, but this training was still in the beginning stages, insufficient, random and not incremental. The school leaders regarded the training that they did receive, as effective. However, this could be because it provided them with the basic knowledge of 21 CL, which increased their confidence.

Mabaso (2017) and Patrick *et al.* (2021) indicate that teacher training it is a necessary component of 21 CL. Countries and schools that have successfully changed to 21 CL and sustained it, have invested time and resources in upskilling their school leaders and teachers (Nouri *et al.*, 2019; Maphosa, 2021). This training and development should be practical, appropriate, well-structured, consistent, and effective (Bai & Song, 2018; Landa *et al.*, 2021). Hakkinen *et al.* (2017) and van Laar *et al.* (2017) emphasise the inclusion of problem solving and collaboration, and have even developed a model, for the training and development of school leaders and teachers, in 21 CL. Use of the latest ICT devices and DGBL, have also come to the forefront of teacher, and school leader training and development (McDonald, 2017; Lay & Osman, 2018).

The research findings regarding 21 CL have shown some similarities and some differences, when triangulated with information from the literature review chapters. The research findings did not reveal some important information regarding 21 CL. One aspect being that that the scientific method is used extensively in the pedagogy of 21 CL and involves experimentation, investigation, analysis, evaluation, and review (Botha, 2016; Barrot, 2018). Nappi (2017) and Tong *et al.* (2017) stress the use of layered and structured higher order questions in the 21 CL to promote critical thinking. Another important aspect of 21 CL learning is the investment of time and resources, in the development of the reading, writing, numeracy, literacy, and mathematical skills of learners (Tong & Raznaik, 2017; McGuire, 2018). 21 CL, also should begin, as early as possible, in the learner's schooling career, so that they become accustomed to its requirements and processes (Botha, 2016; Bedir 2019). Finally, another key facet of 21 CL is the professional development of the school's leadership team (Koh & Hung, 2018; Ninkovic & Floric, 2018). The research findings and the literature review of 21 CL, has revealed important information which will be assimilated into the development of a leadership model.

6.5 School leader's experiences of leadership practices pertaining to the interpretation and enactment of twenty first century learning

The third objective of the study was to determine the roles of school leadership, in the interpretation and enactment of 21 CL, in private secondary schools in KwaZulu-Natal. School leadership was therefore, also extensively discussed in the literature chapter two. It is important to review the crucial aspects of school leadership, before discussing the research findings. School leadership directly influences all individuals, structures and processes of a school (Gilber & Mohlakwana, 2020; Shava & Heystek, 2021). It is one of the critical factors in determining a school's success (Leithwood *et al.*, 2019; 2019; Shava, 2021). The transformation to 21 CL also impacts all areas of school life (Siddiq *et al.*, 2017; McGuire, 2018). Due to the extensive range of influence of school leadership, it is a key component, in ensuring the successful transformation, of the entire school to 21 CL (Boylan, 2018; Leithwood *et al.*, 2019). The training and development of an effective school leadership team, therefore, also becomes a priority in the interpretation and enactment process (Mowat, 2018; Ajmain *et al.*, 2019). In addition, effective school leadership, has been positively correlated with improved curriculum development, learner performance and teacher effectiveness (Carroll & Gillies, 2017; Elizondo-Garcia *et al.*, 2019).

Many countries, like Canada, Singapore, and Scotland, have therefore, invested time and resources, to comprehensively train and develop their leadership teams, especially in leadership practices related 21 CL (Romanowski *et al.*, 2019; Pan & Chen, 2020). Ecological leadership, system leadership, transformational leadership, and strategic leadership are leadership theories that have been adopted by many countries, when interpreting and enacting 21 CL (Boylan, 2018; Koh & Hung, 2018; Mohamad & Ismail, 2018; Ninkovic & Floric, 2018). The information gathered from the investigation, of school leadership roles in the interpretation and enactment of 21 CL, will then be added to the development of leadership model which guides the change process.

6.5.1 Prior experience of leadership and management

The quantitative data revealed that a significant 75% of school leaders, did not have a certificate, diploma, or degree, in management or leadership studies, and a significant 66% attended courses on leadership and management. These results also revealed a significant 90%

of the respondents indicated that these courses were organised either externally, or both internally and externally, and a significant 56,3% rated the course(s) as 'good'. The qualitative results affirmed the quantitative results. This is evidenced by the response below.

“No (formal leadership/management qualifications). I have attended loads (courses/training). They’ve all been internal and external. Internal being (company’s name) and external meaning other providers and they have been random.” (P2)

The interview responses also provided more in depth information regarding the school leader’s prior knowledge, and experience of leadership and management. The responses firstly revealed that seniority and teaching abilities, were the main criteria for leadership promotions and not leadership skills or qualifications.

“Senior teachers and teachers with good results are promoted. They do not sometimes have the leadership skills...They (courses/training) therefore needs to be made regularly available to more staff.” (DP3)

The interview responses also revealed, that the leadership training was more focused on daily managerial and administrative tasks, rather than focusing on only leadership. There was no indication of leadership training, designed for the interpretation and enactment of 21 CL.

“I have done a few (courses/training). Our educator convention does touch on general management... Our head office was running a 3-day MBA... it gave me basic management and administrative tools.” (FG5B)

Twenty-three percent of the qualitative responses, in the online questionnaire indicated that the leadership courses should be more consistent, 19% that the content of the courses should be more relevant, 19% that the courses should be more structured and continuous with follow-up strategies, and 16% that the courses should provide more assistance, in the aspects pertaining to implementation and practicality. The qualitative responses indicated similar suggestions of improvement for leadership courses for school leaders.

“They (courses/training) must be short and sharp... practical ... and very relevant.” (DP3)

“I feel every school should have a mentorship program.” (FG5B)

When the qualitative and quantitative research findings were triangulated, with information from the literature review chapters, some common ideas emerged. As evidenced in the research findings, Munby (2020) together with Sepuru and Mohlakwana (2020) affirm that in South Africa, and many other countries, teachers' years of service, and their learner pass rates, are the crucial criteria for leadership promotions, and not leadership skills and qualifications. As a result, many principals and other school leaders, are unable to perform functions like staffing, mediating staff relations, performance management, strategic planning, communication with school groups, curriculum development, financial management, and the enactment of educational reforms, such as 21 CL (du Plessis *et al.*, 2017; Hallinger, 2017; Mestry, 2017). Many countries have made leadership qualifications pre-requisites for promotions (Hamilton *et al.*, 2018; Zelvys *et al.*, 2019). However, South Africa has only outlined the leadership duties, and skills necessary for principles, in the SASP, and but it is still in the process of making leadership qualifications, compulsory for promotions (Davids & Waghin, 2018; Mvenene, 2020).

The research findings show that most school leaders, do not have any formal qualifications in leadership or management, and none of them have completed the ACE or ADE programs. The research findings also show that a significant number of school leaders, attended some sort of in-service leadership and management training. The training was predominantly administrative and managerial. This could be because most school leaders are promoted on seniority, and teaching abilities, and further development, in daily managerial tasks, is required. Clarke and O'Donoghue (2017) and Munby (2020) agree, that especially principals, need further training and development in leadership and management, in order to be successful as the heads of their institutions. However, Truong *et al.* (2017) Mestry (2017) argue that only in-service training, may not be sufficient for to properly equip school leaders, to meet the demands of the modern school environment. These authors argue, that formal leadership and management qualifications, are a necessary requirement, to effectively develop school leaders to meet the challenges of the 21st century school. Hamilton *et al.*, (2018) and Zelvys *et al.* (2019) concur, and add, that leadership and management training, should form part of teacher qualifications, especially, for those that have ambitions of becoming school leaders.

Analogous to the research findings, Tingle *et al.* (2017) and Mvenene (2020) affirm, that the leadership training and development provided to school leaders, mostly involves basic

administrative and managerial content, is theoretical and lacks practical applications, and is inconsistent and sometimes irrelevant. Ndamani (2016) and Mestry (2017) propose that workshops, training and development, of school leaders should, include aspects of change management, be practically orientated, offer support and mentorship structures, and focus on the actual needs of school leaders, in the 21st century, such as administrative tasks, school financial management, managerial expertise, emotional intelligence, and most importantly leadership skills and knowledge.

When improving and transforming education systems, the training and development of effective leadership teams, has become a priority (Mestry, 2017; Truong *et al.*, 2017). Some countries have even formed separate leadership centres to develop their school leaders (Hamilton *et al.*, 2018; Munby, 2020). The information from the research findings and literature review, provided pertinent information, which will be incorporated into a leadership model for the interpretation and enactment of 21 CL.

6.5.2 Transformational leadership

Transformational leadership was discussed in chapter three. Importantly, Lee and Kuo (2019) together with Zengin and Akan (2019) affirm, that the use of transformational leadership can lead to improvement, in all areas of school life. Ismail and Mydin (2019) as well as Ndiritu *et al.* (2019) add, that transformational leadership has the potential, to successfully facilitate the change to 21 CL.

The quantitative data revealed that a significant 67% of respondents indicated that their knowledge/experience of transformational leadership was 'fair' or 'good', and a significant 30% of respondents attended courses on transformational leadership, in the context of 21 CL. The results also revealed that a significant 93,3% of the respondents indicated, that these courses were organised either externally, or both internally and externally, and a significant 70% rated the course(s) as 'good'. Twenty-five percent of the respondents mentioned that the leadership courses should be more consistent, and 17% stated that there should be more courses on offer. The qualitative results also showed that the participants understood transformation leadership as a leadership theory, used to implement change. The qualitative results also provided greater insights.

“As a leader, you have to guide your school through the change, assess what’s going to happen, bring everyone on board to believe in the change, plan the change and help your school move from one side to the other side... No (attendance of transformational leadership courses). Apart from possibly some minor little talks here and there but not in a sense a course.” (P3)

Although most responses showed an understanding of transformational leadership, one principal and one deputy principal, indicated that they were not very unacquainted with it. The interview responses, showed that although some school leaders did not attend formal training in transformational leadership, they acknowledged using it sometimes in their leadership roles.

“I am the transformational leader in the sense of ICT integration. It has been my responsibility to move the academic and administration staff onto the new platform of Office Suite 365... No, (attendance of transformational leadership courses)”. (ICT 1)

There was no evidence of transformational leadership courses, designed specifically for 21 CL in the interview responses.

“... I haven’t really attended one that combined the two. I have attended ones that look at transformational leadership and then ones that look at 21st century skills... both internal and external... more random ... effective.” (DP1)

The research findings show that school leaders recognised the need for transformational leadership, and were able to appreciate transformational leadership, as a necessary tool to successfully effect change. Ninkovic and Floric (2018), together with Starks (2018) affirm, that transformational leadership is effective in transforming individuals and organisations. The findings however, did not reveal any greater theoretical knowledge of transformational leadership, or how it could be constructively used for 21 CL. This is affirmed by the quantitative data, showing a low attendance of school leaders for courses on transformational leadership, in the context of 21 CL, and the qualitative data revealing no attendance. This is in contrast to research, which shows the training of school leaders in transformational leadership has facilitated the interpretation and enactment of 21 CL, and has resulted in improved learner performance and teacher productivity (Lyonga, 2019; Rahman *et al.*, 2020).

There are many more aspects of transformational leadership that are elaborated on in research that was not evidenced by the research findings. Starks (2018) and Cansoy (2020) explain that transformational leaders are competent curriculum managers, learned individuals, charismatic people, and effective communicators. Transformational leaders are also emotionally intelligent, and adopt a more democratic approach to leadership (Hasija *et al.*, 2020; Hermans, 2020). Furthermore, transformational leaders are ethical and can motivate their followers to belief in, and enact the change (Munir & Aboidullah, 2018; Lyonga, 2019). Zengin and Akan (2019), and Prasetia *et al.* (2020) explain, that the five core abilities of transformational leaders include, stimulating a collective vision, leading and directing the way forward, contesting present activities, facilitating participation by others, and attending to the emotional aspects of followers. Some of the key characteristics of transformational leadership are summarised below.

- Characterised by change and reform of all organisational principles, ideologies, components, physical and social structures and practices.
- Challenges present systems and motivate followers to pursue a different more productive and beneficial vision.
- Reassure, inspire and galvanise followers,
- Mesmerise and charm individuals.
- Develop self-confidence, self-respect, dignity and pride of followers.
- Do not micromanage followers but allow enough independence for growth and development.
- Experiment with innovative changes and encourage follows to do so as well.
- Establish safe and progressive working environments which facilitate change.
- Encourage others to become leader as well.

The combination of information from the research findings, together with information from the literature review, are very relevant in the construction of a leadership model for 21 CL.

6.5.3 Strategic Leadership

Strategic leadership was discussed extensively in chapter three. The use of it, has been strongly linked to effective and productive schools (Cobbinah & Agyemang, 2019; Dogru, 2019). Strategic leadership is another powerful leadership theory, which can be used to change traditional educational systems to 21 CL (Afey, 2019; Kunalan & Ali, 2020).

The quantitative results showed that a significant 66% of respondents indicated that their knowledge/experience of strategic leadership was 'fair' or 'good', and a significant 79% of respondents did not attend courses on strategic leadership, in the context of 21 CL. The results also revealed that a significant 70% of the respondents, that attended courses on strategic leadership, rated the course(s) as 'good'. Overall, only 21% attended courses/seminars/programs on strategic leadership in the context of 21 CL. The respondents' suggestions, on how to improve strategic leadership courses, included consistency (50%), having more continuity, whereby courses flow and lead into each other, and feedback strategies, (25%) and keeping abreast of recent changes (25%). The qualitative results were similar to the quantitative results. The interview responses showed that school leaders recognised the importance of strategic leadership, understood that strategic leadership involved long-term planning, and the establishment of a vision. Very few school leaders indicated attendance of strategic leadership courses.

“You have to put clear strategies in place as to how you are going to get to where you need to get ... It's not just having the vision, it's the person who can also manage the process... No (did not attend courses on strategic leadership).” (P1)

The qualitative responses showed that some subject heads/heads of department considered strategic leadership as being reserved for only senior school leaders.

“It always happens at senior management meetings without us. Then we as staff follow through on those strategies and manage them... No (did not attend courses on strategic leadership).” (FG1D)

Another participant indicated that, this could be because, strategic plans are not allows communicated effectively to staff. Other responses indicated that strategic leadership was used regularly by school leaders and consequently, there should be much more training and development available.

“I can’t say specifically that I have been exposed to a course on strategic leadership but in my role I have to deal with the bigger picture of the school from a strategic perspective quite often...I have to work with the board who are primarily responsible for the strategic direction of the school... courses, yes would be nice” (DP4)

Prasertcharoensuk and Tang (2017), as well as Cobbinah and Agyemang (2019) agree with the research findings, in that strategic leadership involves long term planning, and that it is a key element, in determining the success of schools. Dogru (2019) and Alayoubi *et al.* (2020) delve further into strategic leadership, and show that some of the other characteristics of strategic leaders include productive managers, effective communicators, learned professionals, principled individuals, emotionally intelligent, ambitious and decisive. Strategic leaders also have thinking, affective psychomotor, collaborative, reflective, persuasive, and practical abilities (Schutte & Barkhuizen, 2016; Dogru, 2019). Some of the crucial aspects of strategic leadership are listed below.

- The focus is on the formulation of a realistic but competitive vision for an organisation that involves all role players and is accompanied by strategic plans as well as effective change management.
- Development of a sense of purpose.
- Comprehensive short-term and long-term plans with the vision as the central goal.
- Meticulous execution of planned strategies.
- Stabilisation of volatile or uncertain working environments.
- Expert knowledge of global trends in leadership and management theories and practices.
- The ability to think ahead and foresee potential problems, and design proactive mechanisms to facilitate the attainment of the common vision.
- The balancing of personal commitments with work commitments to maximise effectiveness.

Only one school leader attended a course on strategic leadership, in the context of 21 CL. This was organised through his own network of colleagues, and not through the school. The limited number of general strategic leadership courses, are important considerations when developing

a leadership model for the enactment of 21 CL, especially considering, the huge capacity it has in facilitating the process. All the research findings, together with information from the literature review, are important when developing a leadership model.

6.4.4 System Leadership

System leadership, like the other leadership theories, was described at length in chapter three. System leadership is another powerful leadership theory, which can be used to interpret and enact changes, such as 21 CL (Brown & Weli, 2019; Harris, 2020). The use of it has been correlated with improved learner, and teacher performance (Harris & Jones, 2017; Simkins *et al.*, 2018).

The quantitative results of system leadership revealed that 53% of respondents indicated that their knowledge/experience of system leadership was ‘good’, or that they were ‘unsure’ of it, and a significant 90% of respondents did not attend courses on system leadership, in the context of 21 CL. Only 10% of school leaders attended courses on system leadership in the context of 21 CL. These school leaders indicated that the courses can be improved by increasing their continuity, whereby courses are more developmentally structured (67%), and the inclusion of formal studies (33%). The qualitative data corroborated the quantitative findings, and provided more insight. The interview responses showed that school leaders’ knowledge and exposure to system leadership, was very limited, especially when comparing it to transformational and strategic leadership. The exposure to system leadership was mostly through indirect mechanisms such as the IEB regional meetings and cluster meetings.

“Well I don’t think I have had exposure to other schools in terms of this type of leadership... but we do have regional IT subject meetings where we share content and get feedback... No (did not attend courses on system leadership). (ICT5)

A very small number of school leaders, indicated that met informally with school leaders from other schools. The main reasons for this lack of collaboration, was that private schools endeavour to keep their uniqueness, and that competition for learners, between the schools, was a reality

“I don’t have much experience with system leadership... It has not been effective in the (school’s name) system because each of the five schools has their own culture and character.” (DP2)

“There is a tendency for them to do it separately and learn on their own, because of competition ... very little collaboration even though they could benefit from it. No, no courses.” (ICT3)

Although school leaders had limited exposure to system leadership, they reflected that it could be very useful in bringing about change.

“I don’t have knowledge on that, but it sounds particularly interesting. Challenging as well because I would imagine in order to do it successfully, schools have to set aside their competition with each other if everyone is working towards a common change. That would be particularly useful... I think in (city name), schools are still pretty competitive.” (DP3)

School leaders were not aware of much of the deeper insights of system leadership that were present in the literature review chapter. Toh *et al.* (2014) and Simkins *et al.* (2018) show that the goal of system leadership, is the development of all school within the system, and it is based on mutual trust and collaboration. System leaders are characterised by being experienced workers, lifelong learners committed, competent, ethical, emotionally intelligent, and reflective (Simkins *et al.*, 2018; Starr, 2021). Some of the tools that system leaders utilise are system mapping, peer shadowing, and harnessing the combined acumen (Senge *et al.*, 2015). The abilities of system leaders, include facilitating structural alignment, communicating effectively, strengthening collaboration, developing a research mind-set, successful mediation, fostering proactive behaviours, and increasing the understanding of change in a broader context. Some of the fundamental aspects of system leadership are listed below.

- Focuses on the development of each organisation within the system,
- Efficient inter-related functioning of different system components.
- Facilitates rapid organisational and system development.
- Self-improving systems are developed through professional development, partner competence and collaborative capital.

- Begins with acceptance of the change and followed by strategies of alignment.
- Organisations are guided by central authorities but manage their own micro-needs.
- Self-referentiality – each system is united under common principles with other systems but can still maintain its uniqueness.
- System mapping and peer shadowing.
- Non - prescriptive – allows for contextualisation of the organisation within the common vision of the system.
- Capable of producing new and different innovations.

Brown and Weli (2019), as well as Harris (2020) affirm, that system leadership can substantially facilitate the change to 21 CL. The research findings together with the information from the literature review, are very pertinent in constructing a leadership model.

6.4.5 Ecological Leadership

Ecological leadership was also discussed in detail in chapter three. The use of ecological leadership, has resulted in improved curriculum delivery, learner results, and teacher's efficiency (Koh & Hung, 2018; Manns, 2019). It has the potential to significantly influence educational change, such as the interpretation and enactment of 21 CL (Howard *et al.*, 2019; Hung *et al.*, 2020).

The quantitative results for ecological leadership revealed, that a significant 73% of respondents indicated that their knowledge/experience of ecological leadership was 'none' or 'poor', or that they were 'unsure' of it, and a significant 95% of respondents did not attend courses on ecological leadership, in the context of 21 CL. Only 5% of respondents attended courses on ecological leadership, in the context of 21 CL. Their suggestions in the online questionnaire, to improve these courses included continuity, where one course leads onto another (50%), and more formal studies (50%). The qualitative results supported the quantitative results, and provided greater insights. Although school leaders were not familiar with ecological leadership, as a theory, together with its terminology, they admitted to using it regularly when enacting change at their schools.

“I don’t have any clue of what the term ecological leadership is... That means nothing to me... this is perhaps semantics ... But I am sure it is happening with any change... Without the terminology though... No (did not attend courses on ecological leadership)”. (P5)

“Here again it’s happening, I mean, if you wanted to introduce something like digital technology and we did. You consider what is the impact at the classroom, at the school and the bigger society? At all levels, but its implicit” (P1)

The interview responses also indicated that ecological leadership is sometimes not practiced, due to the adoption of an autocratic approach to leadership. This results in the ecological systems not being harmonious.

“I don’t think there is such a thing. It’s just a top-down approach at school. That’s it, we are changing over, and you just have to do it. I don’t think all stakeholders are taken into account sometimes. No (did not attend courses on ecological leadership). (FG2D)

The responses from the interviews, also revealed that although school leaders did not attend courses specifically labelled ecological leadership, they did attend courses on implementing change, across the different levels of the school.

“I haven’t attended any course specifically on it but there were elements of it in a number of seminars that I have attended. They were effective” (DP4)

In reviewing the research findings, it became evident that school leaders, had an informal knowledge and experience of ecological leadership. Courses on it were minimal, but school leaders did show an interest in having more of them.

Knowledge of the crucial aspects of ecological leadership was not evidenced in the research findings. Huijser *et al.* (2019) and Manns (2019) explain, that ecological leadership focuses on planning and executing change, across the different ecological systems of a school. The characteristics of ecological leaders incorporate, selflessness, dedication, highly skilled, experienced, democratic, collaborative, vivacious, influential, and critical thinking (Koh & Hung, 2018; Ho & Tay, 2020)). Ecological leaders have the ability to promote communal and shared learning, mediate between centralised directives and contextual factors, resolve

differences and conflict, effectively manage resources and intellectual capital, and allow for the development of new abilities (Toh *et al.*, 2014; Manns, 2019). They also have the ability to increase involvement, entrench research thinking, mediate between ecological systems and communicate effectively (Palaiologou & Male, 2017; Koh & Hung, 2018). Some the key features of ecological leadership are listed below.

- Describes the different relationships within a social system such as an organisation or school: microsystem, mesosystem, macrosystem, exosystem and chronosystem.
- Introduce, compare and contrast changes across ecological levels.
- Establish links between the different ecological layers.
- Manage intra-connected and inter- connected factors between ecological levels.
- Manage inter-relationships between human factors and material resources.
- Can be instrumental in resolving learner violence in South African schools.
- Balance the dynamics between centralisation versus decentralisation, collaboration versus competition, and individualism versus communalism

Ecological leadership has a huge relevance, to the interpretation and enactment of 21 CL (Howard *et al.*, 2019; Hung *et al.*, 2020). Therefore, the research findings together with the information from the literature review, are very germane in the structuring of a leadership model.

6.4.6 Common leadership characteristics and abilities

Each of the four leadership theories have their unique aspects which facilitate the interpretation and enactment of 21 CL. However, when these leadership theories have been used, some common characteristics and abilities emerge. The common characteristics are listed on the next page.

- Selflessness.
- Believing in a common, shared, broad but well-defined vision.
- Understanding that leadership is a shared process; leaders and followers co-construct leadership; is multifaceted, innovative and purposeful interaction.
- Democratic form of leadership rather than autocratic – participative and collective.
- Adaptive and innovative – agents of change; ease with change; people of action; assist others with change.

- Varied work experience/different ranks within organisations – different knowledge and skill sets.
- Intelligent, knowledgeable, skilled critical thinkers.
- Collaborative and co-operative.
- Vibrant and persuasive individuals.
- Dedicated and committed.
- Determined and strongminded – balance context and common vision.
- Efficient multidimensional problem solvers and life-long learners.
- Take pride in their work and make the extra effort.
- Understand the importance of diversity.
- Introspective, reflective, and flexible thinkers who can re-strategize and modify plans.
- Humble, accommodating, effective listeners and appreciate the ideas of others.
- Good morals and high ethical standards.
- Focus on establishing environments which facilitate change.
- Powerful mediators.
- Effective managers of the instructional program.
- Alluring, charismatic and captivating individuals.
- People centred and less task centred.
- Emotionally intelligent individuals, well-developed social skills – caring and empathetic.
- Lifelong learners who keep abreast of global reforms and changes.

Some of the common abilities that emerged are listed below.

- Influence all aspects and structures in an organisation.
- Contemplate and understand an organisation in its entirety.
- Involve all stakeholders in every step of the process; from start to finish which gains approval and respect of followers.
- Utilise expertise of everyone, harness the combined acumen.
- Able to balance present realities with future visionary plans.
- Partner with research institutions – professional learning communities.
- Develop self-improving, research-based organisations.

- Mediate between macro-policies with micro-contextual factors.
- Build relationships on openness, mutual respect and trust.
- Establish open institutions – communal learning.
- Communicate and collaborate effectively – varied forms and direction of communication across all organisational components.
- Cause followers to believe in the value of their work especially in terms of the common vision.
- Work hard and are examples for others.
- Foster teamwork and partnerships.
- Develop a collective moral purpose.
- Prepared to make personal sacrifices and effort.
- Able to resolve conflict.
- Able to share resources and facilities.
- Involve external partners.
- Show sincere and genuine concern for followers.
- Delegate effectively.
- Highlight success and reinforce positive behaviour with reward and recognition.
- Professionally develop followers.
- Inspire and persuade followers.
- Combine practical expertise with theoretical knowledge.
- Understand political, social and economic changes which effect the organisation.
- Analyse and evaluate information.
- Increase community involvement.
- Provide consistent feedback

These common characteristics and abilities are vitally important when constructing the leadership model, for the interpretation and enactment of 21 CL.

6.5 Conclusion

This chapter discussed the research finding, in conjunction with information from the previous literature review chapters. The triangulation of the quantitative data, qualitative data, and

information from the literature review chapters, allowed for a more in-depth discussion of the results. The triangulation of data, also revealed very pertinent information, which was required to answer the research questions of the study. The analysis and discussion, of the results and research findings, provided vital information, about the context of private secondary schools in KwaZulu-Natal. This context, regarding 21 CL, aligned ICT utilisation, and the roles of school leadership in 21 CL, furnished the necessary information, for the construction of a 21 CL leadership model, which is relevant to the participating schools, and other schools in the same location. The next chapter will discuss the conclusions and recommendations of the study.

CHAPTER 7

CONCLUSIONS AND RECOMMENDATIONS

7.1 Introduction

The results of the study were discussed in the previous chapter. Information from the literature review chapters, was used to analyse and interpret the results. This chapter will provide the summary of the chapters, key findings, responses to the research questions, proposed leadership model, recommendations of the study, and a final conclusion at the end. The aim of this study was to develop a leadership model for the interpretation and enactment of 21 CL in private secondary schools in KwaZulu-Natal. The research questions of the study focused on investigating, how private secondary schools used ICT to facilitate 21 CL, interpreted and enacted 21 CL, and the roles of school leadership in this process. The investigation of the use of ICT, formed part of the study, because it is a vital component of 21 CL.

The study has found that the private secondary schools in KwaZulu-Natal are equipped with ICT resources, but make limited use of them in teaching and learning. The study also found the schools, were only beginning to enact 21 CL, and that school leadership development to facilitate this change in pedagogy, was very limited. The study did reveal crucial common characteristics and abilities that can be developed in school leaders, to facilitate 21 CL. It also showed specific features of transformational leadership, strategic leadership, system leadership, and ecological leadership, which could also be inculcated into school leaders, to assist them in managing 21 CL. The study therefore, proposes that the change to 21 CL in private secondary schools in KwaZulu-Natal, can be expedited with the use of a congruent leadership model.

7.2 Summary of chapters

Chapter one introduced the study, and provided the background, and motivation for the study. It also presented the focus and problem statement. The aims, objective and research questions were also furnished in this chapter. In addition the chapter, provided the significance of the

study and the research methodology. The limitations of the study were also explained. The chapter also provided a brief summary of all the other chapters.

Chapter two focused on the literature review of 21 CL, ICT and school leadership. 21 CL was explained, in detail, together with the need to change to this new pedagogy. The interpretation and enactment of 21 CL, which is crucial to the study, was then investigated and analysed. The positive outcomes and concerns, regarding 21 CL, were also reviewed in this chapter. ICT is a critical component of 21 CL. In a similar manner, as 21 CL, Chapter two concentrated on the need for ICT in education and 21 CL, and the factors that facilitate ICT implementation. The positive outcomes of ICT, and the challenges to ICT, were also reviewed. Finally, Chapter two reviewed school leadership, and defined school leadership in the context of the study. The aim of the study, was to develop a leadership model for the interpretation and enactment of 21CL in private secondary schools, in KwaZulu-Natal. The review of school leadership was critical in achieving this aim. The need for effective development and training of school leaders, was investigated, as well as the types and effectiveness of existing school leadership development programmes.

Chapter three is also a literature review chapter. The four prominent leadership theories, which have been used to facilitate 21 CL in schools, are transformation leadership, strategic leadership, system leadership, and ecological leadership. The review of these leadership theories, in the context of 21 CL, was crucial, because it enabled the development of a leadership model. Each of the four leadership theories was introduced, and the specific characteristics and abilities of each one, was reviewed.

Chapter four focused on the research methodology, used to develop a leadership model for the interpretation and enactment of 21 CL. The positivist and interpretivist paradigms, which underpin the study, were explained. Since the study used the mixed method research approach, the quantitative, qualitative, and mixed method research approaches were discussed. The case study research strategy and purposeful sampling was employed in this study. The data collection methods included an online questionnaire, semi-structured individual interviews, and focus group interviews. The SPSS computer package was used for the quantitative analysis, whilst thematic analysis was used for the qualitative analysis. Chapter four also discussed how reliability, validity and trustworthiness was preserved. Ethical issues and limitations pertaining to the research was also discussed.

Chapter five presented the results from the online questionnaire, and the semi-structured individual, and focus group interviews. The quantitative results, from the descriptive and inferential statistics, were presented in the form of tables and graphs, which were then explained. The qualitative results were presented in the form of themes and sub-themes using verbatim quotations.

Chapter six analyses and discusses the results. The central themes and subthemes of ICT use, the interpretation and enactment of 21 CL, and the roles of school leadership in these processes, are discoursed. The qualitative and quantitative results are triangulated to provide, more in-depth understandings, of the emerging findings. Both sets of results, are analysed and discussed in conjunction with information reviewed in the literature chapters.

Chapter seven summarizes the key findings, provides conclusions and makes recommendations. A leadership model is proposed for the interpretation and enactment of 21 CL, in private secondary schools in KwaZulu-Natal. The findings of the research show that, although effective school leadership is critical to the successful change to 21 CL by schools, it has largely been ignored, by the private secondary school, which have engaged with 21 CL. This chapter aims at making the change to 21 CL, more uncomplicated and feasible, by addressing the crucial roles that school leadership can play in the change process.

7.3 Key findings

The following are key findings arising from the analysis and discussion of the quantitative and qualitative data sets, as well as the juxtaposition of these findings, with information from the literature review chapters.

7.3.1 The implementation and use of information and communication technology in schools

The findings of the research show that the participating schools were in the early stages of experimenting with ICT implementation.

7.3.1.1 Information and communication technology teams and programs

Most of the participating private secondary schools in KwaZulu-Natal, had ICT programs which formed part of the academic curriculum, together with ICT teams to manage them. This was significant because it revealed that the participating schools were engaged with ICT implementation. These ICT programs were more formalised as timetabled subjects, in the junior grades, with only official elective ICT subjects, being available for the senior grades. This was in contrast to ICT approaches adopted by schools in other countries, which had already successfully implemented ICT. These schools, which have already changed to 21 CL, allocated ICT lessons within the school time table, holistically to all grades (Hines & Lynch, 2019; Varghese *et al.*, 2019). The formalisation of ICT lessons only in the junior grades was an indication that the participating schools were in the early stages of ICT implementation, as there should have been similar grade wide ICT lessons allocated for grades ten, eleven and twelve. The teaching of the subject Computer Science, has also featured prominently in successful ICT implementation approaches, because of its relevant, theoretical and practical ICT components (Mayfield & Hester, 2018). Programing, coding, computational thinking, and digital literacy, are also considered as essential components of ICT lessons (Nouri *et al.*, 2019).

The participating schools only demonstrated organisation of ICT implementation and use, up to the point of allocating subjects in the school timetable for ICT lessons. There was no evidence of further planning or organisation. This was again an, indication that these schools were only in the beginning stages of ICT implementation. Other countries, which were more advanced in ICT implementation, adopted a holistic approach to ICT. This approach involved, a much more focused, and planned approach, to ICT integration for pedagogical improvement (Agormedah *et al.*, 2020).

The ICT teams at the participating schools were small, comprising mostly of an ICT technician, ICT teacher/head and one or more interested teachers. This served as another indication of early experimentation with ICT implementation. Leading schools in other countries invested resources, heavily, into the ICT training and development, for a sufficient number of school leaders and teachers, in order to establish effective teams (Chirinda *et al.*, 2021).

7.3.1.2 The different forms and platforms of information and communication technology used by school leaders and learners

The school leaders, teachers and learners from the participating schools used a wide range of ICT hardware and software, from both Google Suite and Microsoft Office 365. Whilst this was a good indication of ICT usage, it indicates a lack of communication and collaboration by school leaders, teachers and learners. It also reveals a lack of effective and strategic planning, evident in ICT implementation approaches, adopted by other countries, further ahead in ICT integration. These countries have designed, focused and comprehensive ICT approaches, based on empirical evidence for pedagogical improvement (Cheng, 2017). These approaches included auditing of all digital resources and potential requirements, the selection of similar ICT devices used by learners and school leaders, a uniform digital platform for the entire school, systematic and explicit curriculum preparation, to include ICT integration into pedagogy, trustworthy digital assessment methods, and finally monitoring and feedback structures to all stakeholders within the school.

7.3.1.3 Passive versus active use of information and communication technology by school leaders

School leaders and teachers in the participating schools tended to use ICT more passively than actively. They used it more for the distribution of information, rather than for enhancing teaching and learning strategies, which promote the stimulation of higher cognitive thinking and learner involvement. Online assessments were also not commonly used by school leaders, and, were more often used for revision and fun exercises, rather than for reporting purposes. Some of the reasons for school leaders and teachers not engaging with ICT, more meaningfully, included the lack of time to experiment with new educational innovations, the resistance to change from routine practices, and the limitation of only being allowed to use written, content-based assessments for reporting purposes. The passive use of ICT in the participating schools, is another indication of these schools being in the beginning of their implementation process. Schools in other counties, who have engaged with ICT implementation for longer, have been successful because they have utilised ICT actively, meaningfully and systematically in all aspects of teaching and learning (Mathew, 2018).

7.3.1.4 Information and communication technology training attended by school leaders

Most of the school leaders attended some form of ICT training. This is significant because it reveals, that the participating schools did use some resources, to develop their school leaders. The participants considered the training as effective. This was primarily because the training was introductory, and taught them, the basic use the different hardware and software, utilised within the school. A more detailed analysis of the data revealed that the training was not always well planned, incremental or practical. There was no strategic ICT training afforded to specifically ICT team members. Neither was there ICT training, which was part of a more comprehensive ICT implementation plan of action. Since the schools used a variety of ICT hardware and software, the focus of the training was on the short-term resolution of the problem, which, was the use of these items. The training did not have a long-term basis, which focused on ICT integration for pedagogical improvement.

Schools in countries, which are further ahead in their digital educational journey, have invested substantial resources, to plan and execute training, which is more strategic (McGuire, 2018). This includes, the three-stage model of ICT training and development for school leaders, and staff. These countries have also shifted the focus, from the technical development of teachers, to the digital literacy of teachers, and how they use ICT to enhance their pedagogy. ICT school leader and staff development models, such as the TPACK and SAMR models, have been developed, to assess these areas of teacher development (Christensen & Knezek, 2017).

ICT is a crucial component of 21 CL. One of the objectives of this research, was therefore, to investigate how schools use and implement ICT. The above conclusions provide a summary of the key findings. A further objective of the study, was to use these findings to construct part of a leadership model, for the interpretation and enactment of 21 CL. In order to do this, the findings were assimilated with information from the literature reviews.

7.3.2 The interpretation and enactment of twenty first century learning

The findings of the study revealed, that the participating schools were also beginning to experiment with 21 CL. The content, programs, and practices that they were using, were more introductory, when compared to schools in other countries, which were ahead in their journey

of transformation to 21 CL. In comparison, the participating schools, were further ahead in successful implementation and use of ICT, then the interpretation and enactment of 21 CL.

7.3.2.1 Twenty first century learning – Life skills beyond the curriculum

School leaders were well informed about many of the 21 CL competencies, and understood that they originated from both the cognitive and affective domains. They also understood that 21 CL was very practical, and involved a high degree of application. However, all of the competencies and characteristics of 21 CL were not mentioned by school leaders. In addition, many countries began their journey of transformation in the late 1990's. As a result, 21 CL has evolved into a form of pedagogy that is very different from traditional teaching and learning methodologies. Some countries have changed their entire educational systems to 21 CL (Ajmain *et al.*, 2019). Consequently, their curriculums, assessments and teaching practices have changed. The findings revealed, that the school leaders, were not fully aware of the educational theories, that underpin 21 CL, nor the extent of its development and present evolved structure.

In light, of the changes brought about in the fourth industrial revolution, many countries have placed educational reform high on their agenda, with schools engaging with innovative 21 CL aligned educational practices (Hashim *et al.*, 2019). The research findings did not reveal the same urgency from the participants, to transform education practices. One of the reasons for this, was that, both the IEB and CAPS, curriculums and examinations, are still predominantly content based. The focus in secondary schools, is on preparing learners to write the grade twelve exit examination. Since these examinations are not 21 CL aligned, school management, teachers and learners, tend to only experiment with 21 CL, if time and resources allow for it. In addition, the South African's schools' environment, is still based on traditional teaching and learning methods. This includes lesson times, classroom set up and teaching practices. The findings revealed that engaging with 21 CL, was a secondary, voluntary and loosely monitored practice in the participating schools.

7.3.2.2 School programs aligned with twenty first century learning

One of the participating schools had an official 21 CL program, and the others had combinations of official and unofficial 21 CL programs, or 21 CL aligned programs. These 21 CL aligned programs included cross-curricular, research skills and thinking school's programs. These programs were loosely formed official programs or implicit unofficial programs, more focused in the junior grades, managed by small teams of interested staff, and also not taught in separate lessons but as part of other lessons. The lack of well organised and structured 21 CL aligned programs, revealed that the schools were, again, in the early stages of experimentation with 21 CL. Some of the reasons, for the participating schools still being in the beginning stages of experimentation, include South African curriculums which are still content and assessment driven, apprehension about change, and lack of sufficient time. Countries that have successfully changed their education systems to 21 CL, have completely changed all components (McGuire, 2018). They have also invested substantial resources in the training of their school leaders and teachers, and subsequently formed well-organised, competent and efficient teams to manage the change process (Hines & Lynch, 2019).

7.3.2.3 Inquiry-based and cross-curricular school assessments

Inquiry-based and cross-curricular type assessments, are aligned with 21 CL. The findings revealed that these types of assessments were used in the participating schools. However, the use of the assessments was in the introductory stages, was not widespread, and the process was not properly organised or monitored. Time constraints was one of the reasons, for the limited use of inquiry-based and cross curricular assessments. The limited used of inquiry-based assessments and extracurricular assessments, was another indication of the participating schools starting to experiment with 21 CL.

7.3.2.4 Formal versus informal teaching of twenty first century competencies

21 CL competencies were taught informally, passively and without compulsory directives from school management. Some, but not all, of the 21 CL competencies were taught. The teaching of 21 CL competencies was taking place at the participating schools, but the process of interpretation and enactment was unstructured, unorganised, not monitored, and lacked proper

planning. This was contrary to research, which indicates that detailed policies and planning facilitate the successful transformation to 21 CL (Kokare & Strautins, 2018). Another key element in the interpretation and enactment of 21 CL, which emerges from literature, is the formation of strong partnerships, between schools and tertiary institutions, involved in 21 CL research (Bai & Song, 2018). This forms a link between practice and theory, whereby one informs the other. The participating schools did not have this relationship between 21 CL education research institutions. The informal teaching of 21 CL competencies was again, an indication that the participating schools beginning to experiment with 21 CL.

7.3.2.5 Twenty first century learning aligned courses/training

The participants did not attend courses, specifically on 21 CL, but a few of them did attend courses related to 21 CL such as 21st century competencies, cross-curricular learning, thinking schools and inquiry-based learning. These courses were not common, adequate, consistent or incremental. These courses also were focused, more on the theoretical content, than practical applications. The school leaders who attended courses/training, considered the training as effective. The limited amount of courses/training, available to school leaders and teachers, was contrary to research. Countries that have successfully transformed to 21 CL, have invested heavily in the comprehensive professional development of their staff, regarding 21 CL (Bedir, 2019). This was another indication that 21 CL was in its infancy at the participating schools.

The second objective of this study was to investigate how private secondary schools in KwaZulu-Natal interpret and enact 21 CL. The key findings and conclusions of the study are described in the above paragraphs. This information together with information from the literature review chapters, will now be used to construct a leadership model.

7.3.3 School leader's experiences of leadership practices pertaining to the interpretation and enactment of twenty first century learning

The four most commonly used leadership theories, used when interpreting and enacting 21 CL that emerged from literature, were transformational leadership, strategic leadership, system leadership, and ecological leadership. The findings revealed that school leaders received very limited, or no formal leadership training, in these leadership theories. School leaders, did use

some of the tenets of these theories, in their everyday leadership roles, and in the interpretation and enactment of 21 CL. Most of the leadership training provided to school leaders was general, administrative, managerial, and directly linked to the completion of their professional duties.

7.3.3.1 Prior experience of leadership and management

Most of the school leaders did not have any formal leadership qualifications, but did attend courses/training in leadership and management. Training in specifically leadership related to 21 CL, was very limited. School leaders indicated that the received training was effective, but could be more consistent, relevant, structured, continuous, and more practical. The training was organised internally by the school, and externally, by affiliated bodies. Research shows that countries that have successfully changed to 21 CL, have invested time and resources, in developing the leadership knowledge and skills, of their school leadership teams (Romanowski *et al.*, 2019). Research shows that some countries have made leadership qualifications a pre-requisite for leadership promotions, whilst others have even developed leadership centres, which focus on the development of school leaders (Zelvys *et al.*, 2019; Munby, 2020). The research findings also show that the main criteria for leadership promotions, was seniority and teaching abilities, not leadership skills or qualifications (Sepuru & Mohlakwana, 2020).

7.3.3.2 Transformational leadership

The participants did have some prior knowledge and experience of transformational leadership. They were able to relate transformational leadership to the management of change. They also used some of the aspects of transformational leadership, in the execution of their leadership duties. Few of them attended courses on transformational leadership on its own, or in the context of 21 CL, and these school leaders considered the training as being effective. The findings reveal, that the participants did not have a deeper understanding of the principals, characteristics and abilities of transformational leaders. Although many countries have trained their school leadership teams, in aspects of transformational leadership, when interpreting and enacting 21 CL, this approach was not adopted by the participating schools.

7.3.3.3 Strategic leadership

School leaders did have some exposure to strategic leadership, and were acquainted with some features of it. They appreciated the importance of this leadership theory, and understood that one of the key elements, involved long term planning according to an established vision. Some principals and deputy principals, acknowledged using it in some of their leadership duties. Whilst, some of the subject heads, indicated a minimal involvement with strategic planning, because of a lack of communication, between senior school leaders and the rest of the school. Many of the crucial aspects and principles of strategic leadership, did not emerge from the findings. Very few school leaders attended training on strategic leadership on its own, or in the context of 21 CL. The school leaders that attended strategic leadership training, considered it as effective.

7.3.3.4 System leadership

School leaders had limited knowledge, experience and training in system leadership. Competition between schools, featured prominently as one of the reasons for the lack of system leadership. Those school leaders that did have some exposure to system leadership, recognised the usefulness of this leadership theory, in enacting change such as 21 CL. Many countries that have successfully enacted 21 CL, have simultaneously developed their school leadership teams in system leadership (du Plessis, 2020).

7.3.3.4 Ecological leadership

School leaders were formally exposed to this leadership theory to a very limited extent. Although, many of them admitted to informally using aspects of this leadership theory, as well as attending courses on related fields. Ecological leadership has been successfully used by many schools in other countries when interpreting and enacting 21 CL (Hung *et al.*, 2020).

7.4 Recommendations

This study proposes that there are limitations and weaknesses in the change process to 21 CL, embarked upon by private secondary schools in KwaZulu-Natal, especially regarding school

leadership. This could negatively impact the time taken to undergo the change, as well as the extent of its success. The recommendations below are made to address these shortcomings. They are based on the research findings, and information reviewed, in the literature chapters.

7.4.1 Strategies to improve the use and effectiveness of information and communication technology, to facilitate twenty first century learning

The research findings show that ICT lessons were more formalised in the junior grades, and lacked in the senior grades. A more holistic approach, has improved the rate at which ICT is adopted, and how effectively learners use ICT. To enhance their ICT programs, schools should adopt this holistic approach, by providing ICT lessons to all learners, in all grades. The research findings indicate, that the private secondary schools were not using subjects, such as computer science, programming, coding, computational thinking, and digital literacy, to facilitate the implementation and use of ICT. These subjects have proven to be effective in developing learners' theoretical and practical knowledge of ICT. It is therefore, recommended that schools use these subjects in their ICT programmes.

The research findings also indicated that the planning of ICT programmes by private secondary schools in KwaZulu-Natal, stopped, at allocating timetabled lessons for ICT. This was evident by schools, using a variety of disconnected computer hardware and software, the lack of a detailed ICT curriculum, and the absence of assessment strategies, and feedback mechanisms. Yet, a more planned approach, which focuses on pedagogical advancement, has yielded better adoption, and sustainable results in ICT programmes. Schools should therefore engage in the planning of more intricate ICT long-term goals which are aligned under a vision.

The study also revealed that the ICT teams of schools were understaffed, and not adequately trained. The effective training of sufficient ICT teams is deemed as a critical factor in ICT implementation and adoption. Private secondary schools in KwaZulu-Natal, should invest heavily in the training and development, of their ICT teams to ensure sustainable success in their ICT programmes. The training that was provided to school ICT teams was introductory, not well planned, lacked practical components, and was not developmental or strategic. Schools could use the three-stage model of ICT development for pedagogical enhancement, which has

been successfully used by other countries. Schools can also adopt, or adapt, the TPACK or SAMR models, for ICT development and assessment of school leaders.

The research findings also showed that school leaders were not actively using ICT. Time constraints for experimentation, resistance to change, and the use of written and content based assessments, were some of the reasons provided to explain the passive use of ICT. Private secondary school should therefore, provide a more conducive change climate. This can be achieved, by allowing more time for school leaders, to experiment with innovations during the school day, providing more information/discussion sessions to relieve the stress of change, and embarking on more digital assessments, which can be used for reporting purposes.

Finally, it is recommended that private secondary schools in KwaZulu-Natal incorporate the different components of ICT, represented in figure 2.2 (p 63), into their ICT programmes, to ensure maximum implementation and sustainable success rates.

7.4.2 Methods to improve the interpretation and enactment of twenty first century learning

The research findings revealed that school leaders from private secondary schools in KwaZulu-Natal, were aware of most of the 21st century competencies, associated with 21 CL. However, they were not aware of all of them, neither, were they fully aware of the how 21 CL has evolved over the last thirty years, into a completely different approach to pedagogy. To ensure the successful adoption of 21 CL, by all stakeholders within the school, private secondary schools in KwaZulu-Natal, should professionally develop their school leaders and other stakeholders, in 21 CL. This can be achieved by hosting training sessions, in which the theory of 21 CL is explained, as well as expanding on the differing curriculums, teaching practices and assessments, that are used. The research findings show that, the 21 CL training, that was provided was not adequate, consistent and too theoretical. The training that is provided by schools, should be planned according to a vision, be incremental and be practical.

Many countries have placed the transformation of their educational systems to 21 CL, high on their agendas, because of the changes brought about by the fourth industrial revolution. The research findings revealed, that the private secondary schools did not display the urgency to do

the same. The findings revealed, that the change to 21 CL was considered as a secondary goal, to the teaching and learning of the primary IEB or CAPS syllabi. The main reason for this was that the grade twelve exit examination is, for the most part, not based on 21 CL. The continued use of content-based assessments and traditional teaching methods, are other reasons provided for the lack of urgency. To facilitate the transformation to 21 CL, private secondary schools in KwaZulu-Natal, should adopt a more long-term, sustainable view of education, and create a better balance between present realities and future necessities. Schools can engage in more teaching practice, assessments and curriculums that are 21 CL aligned, whilst still engaging with the present curriculum. These must be strategically planned, with well-defined outcomes.

The study also revealed that all of the 21 CL aligned programmes in the private secondary schools in KwaZulu-Natal, were not well organised or managed. These programmes included cross-curricular, research skills and thinking school's programs. Yet, the effective organisation and management of these programmes, are pivotal to the success of 21 CL. Schools should therefore, timetable official lessons for 21 CL aligned programmes across all the grades, and have well defined teams to manage them. These teams should be professionally developed in leading 21 CL aligned programmes. To endure the success of these programmes, schools should again provide for the following: sufficient time to experiment with innovations, engage in more inquiry-based and cross-curricular assessments, and have more touch-base sessions, to relieve any apprehensions about the change.

The study also showed that 21st century competencies were taught informally, without proper planning, supervision or monitoring mechanisms in place. The planned teaching of 21st century competencies is pivotal to the success of 21 CL. After allocating timetabled 21 CL lessons, the private secondary schools in KwaZulu-Natal, should utilise an official 21 CL curriculum, which can be taught concurrently with existing curricular. School leaders should request teachers to officially develop content, lesson plans and work schedules which reflect 21 CL. Assessment methods and monitoring mechanisms, should be incorporated in the execution of the plans. The research findings, also did not show that the schools, had developed partnerships with tertiary educational institutions. Relationships between schools and tertiary institutions, where there is exchange of theoretical and practical information, have facilitated 21 CL. Private secondary schools in KwaZulu-Natal, should approach tertiary educational institutions in order to establish partnerships with them. In this way, schools can become research centres where 21

CL can be practiced, and the practice can then inform the theory, developed by tertiary institutions.

Finally, it is recommended that private secondary schools in KwaZulu-Natal incorporate the different components of 21 CL, represented in figure 2.1 (p 63), into their 21 CL programmes, to ensure maximum implementation and sustainable success rates.

7.4.3 Developing effective school leadership to facilitate twenty first century learning

The research findings show, that very few of the school leaders, had qualifications in leadership or management. This can be attributed to seniority, being the deciding factor in appointing school leaders, rather than leadership or management qualifications. However, the findings also showed that many school leaders attended in-service training. This training was more administrative and managerial, to equip school leaders to perform their daily responsibilities. The professional development related to 21 CL, was very limited. The training was also not consistent, structured according to a plan, or practical. Countries that have successfully interpreted and enacted 21 CL, have concurrently, invested heavily in the leadership development of their school leaders. School leadership development was placed as a priority, because it influences all areas of school life. Some countries have made leadership qualifications a prerequisite, for the appointment of school leaders. Other countries have developed entire research centres for the development of school leaders. Private secondary schools in KwaZulu-Natal, should encourage school leaders to engage with leadership qualifications. They should also provide professional development, in leadership theory and practice, which will assist them to better lead and manage, the change to 21 CL. This could be in the form of leadership conferences, or in-service leadership training sessions. The developmental sessions should be relevant to 21 CL, consistent and progressive, as well as practical.

Four of the prominent leadership theories that have been frequently used to facilitate the change to 21 CL are, transformational leadership, strategic leadership, system leadership and ecological leadership. The research findings showed that school leaders, did have some knowledge and experience of transformational leadership and strategic leadership. Their knowledge and experience of system leadership and ecological leadership was very limited.

None of the school leaders had an in-depth knowledge or experience, of any of the four leadership paradigms. Few school leaders attended courses on transformational leadership in the context of 21 CL. Training in the other three leadership theories was very limited. School leaders' exposure to the leadership paradigms in the context of 21 CL was lacking. Private secondary schools in KwaZulu-Natal, should therefore, embark on leadership developmental programmes, in the context of 21 CL, for their school leaders. These programmes should focus on equipping school leaders with the characteristics and abilities, which will allow them to facilitate the change to 21 CL, throughout all areas of school life. Some of the common leadership characteristics and abilities, which have emerged from this research, and that can be developed in school leaders, to equip them to effectively interpret and enact 21 CL, are listed in the previous chapter (p 234, p 235).

Schools should also incorporate, specific features of the four prominent leadership theories into their 21 CL aligned, leadership development programmes for school leaders. The unique features, of each leadership theory, is summarised in the previous chapter (p 226, p 229, p 231, p 233).

Finally, it is recommended that private secondary schools in KwaZulu-Natal incorporate the different components of school leadership, represented in figure 2.3 (p 64), into their school leadership professional development programmes, to maximise success.

7.5 The study's response to the research objectives

In Chapter one, four key research objectives were identified, to provide more information about how private secondary schools in KwaZulu-Natal interpret and enact 21 CL, and the roles of school leadership in the change process. The aim was to use this information, to suggest a leadership model to facilitate the change.

- **Research objective 1: To determine how ICT is utilised to facilitate 21 CL in private secondary schools in the province of KwaZulu-Natal.**

The research findings showed that private secondary schools in KwaZulu-Natal, were well resources with ICT hardware and software; ICT was taught as timetabled subjects more

formally in the junior grades; ICT teams were understaffed and undertrained; a wide range of ICT devices and platforms were used; ICT usage was still in the beginning stages and school leaders tended to use ICT passively; and ICT training for school leaders was inadequate. The study provided the required clarity on ICT usage.

- **Research objective 2: To assess how 21 CL is interpreted and enacted in private secondary schools in KwaZulu-Natal.**

The research finding revealed that private secondary schools were only beginning to engage with 21 CL; school leaders did have some knowledge and experience of 21st century competencies but lacked an in-depth knowledge of 21 CL; 21 CL aligned programmes were focused more in the junior grades, and not well organised or managed effectively; the use of inquiry-based or cross-curricular assessments was limited; 21 CL was considered more of a secondary concern in relation to the primary official curricular; assessments were still content-based and teaching practices were traditional; and 21 CL was not taught in separate timetabled lessons but concurrently in other lessons. The research finding provided the required lucidity regarding the interpretation and enactment of 21 CL.

- **Research objective 3: To determine the roles of school leadership in the interpretation and enactment of 21 CL in private secondary schools in KwaZulu-Natal.**

The research findings indicated that most school leaders, did not possess formal leadership or management qualifications; seniority rather than leadership qualifications was the deciding factor for promotions in leadership; school leaders did attend in-service training but this not 21 CL aligned, practical or consistent; in-service training was more administrative; school leaders were inexperienced in 21 CL but had to lead the change process; leadership training for specifically 21 CL was lacking; there are common leadership characteristics and abilities that can be inculcated in school leaders, that will facilitate 21 CL; and there are useful features of transformational leadership, strategic leadership, system leadership, and ecological leadership, which can also assist in the change to 21 CL. The research findings revealed the leadership landscape of the private secondary schools in KwaZulu-Natal, in the context of 21 CL.

- **Research objective 4: To develop a model for leadership in private secondary schools in KwaZulu-Natal to effectively interpret and enact 21 CL.**

The research findings were used to develop a leadership model for the interpretation and enactment of 21 CL, in private secondary schools in KwaZulu-Natal. The model is explained in the following section. The critical areas of the model involve ICT use, 21 CL interpretation and enactment, and most importantly effective school leadership development.

7.6 A proposed leadership model to facilitate twenty first century learning in private secondary schools in KwaZulu-Natal

The main aim of this study, was to develop a leadership model, for the interpretation and enactment of 21st CL in private secondary schools in Kwazulu-Natal. A school's leadership influences all aspects of the school. Consequently, the roles of the school leadership are crucial in determining the success of 21 CL. Private secondary schools were specifically chosen for the study because these schools, have more academic freedom to experiment with new educational approaches, whilst still preparing their students, for the grade twelve exit examination. In addition, they also have more financial resources at their disposal than government schools. This was validated by the findings of the study, which showed that the participating schools were in the early stages of experimentation with 21 CL.

School leaders, may not always be aware, of the latest trends and changes in pedagogical approaches, or how to enact these changes. Relationships should therefore be established between tertiary educational research institutions and schools. Tertiary educational institutions, should invite school leaders, to seminars or training workshops, which focus on the content and theories of 21 CL. In return, schools should invite tertiary educational institutions, to practice their theoretical understandings of 21 CL, at their schools, in a real life, practical context.

The following leadership model for the interpretation and enactment of 21 CL was developed, using the key findings and recommendations of the research study, as well as information from the literature review. The leadership model is divided into eight steps as illustrated in Figure 7.1 on the next page.

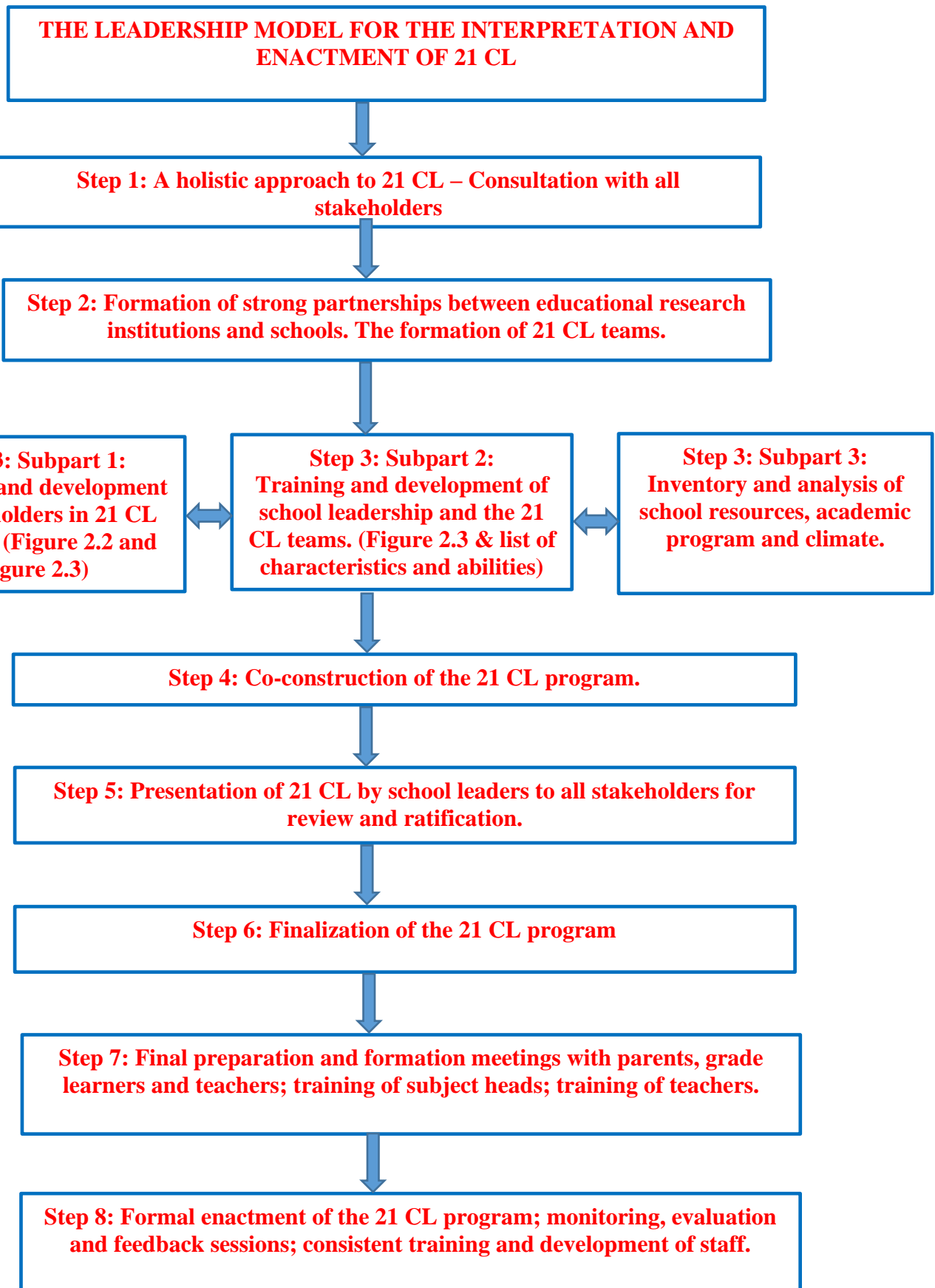


Figure 7.1: A leadership model for the interpretation and enactment of 21 CL

The actual initiation of the 21 CL program should begin at the start of a new academic year. It should be holistic, and include 21 CL, timetabled lessons for all grades. The 21 CL program should be designed, so that it is more intensive in grade eight. However, this higher degree of intensity in grade eight, should then be initiated in each higher grade, at the beginning of each subsequent year, whilst still continuing in grade eight. School leadership should ensure that the first step of the leadership model, occurs at the beginning of the year preceding the formal enactment, of the 21 CL program. The subsequent six initial steps, of the leadership model, should be undertaken, before the end of the same year. This time for preparation is necessary to ensure the success of the 21 CL program.

The first step of the leadership model, for the interpretation and enactment of 21 CL, should adopt a holistic approach. All stakeholders within the school should be involved, by providing means of representation, for their input. The representatives of all stakeholders, within the school should be informed about the proposed decision, to engage with 21 CL, and given the opportunity to ask questions, and provide input. School leaders should take the initiative. They can arrange for a brief meeting, at the beginning of the year, preceding the formal enactment of the 21 CL program, where this can be done. Representatives at this meeting should include, school leaders, teachers, parents, learners, and representatives from possible outside partners. There should also be parent and learner representation, of prospective grade eight learners for the following year, as the initial trial of the 21 CL program, will commence with this cohort as well. Educational specialists in 21 CL and curriculum development, from tertiary research institutions, should be called in to these meetings, to introduce and inform the stakeholders of 21 CL.

Consensus must be reached by all school representatives, and an informed decision to interpret and enact 21 CL, must be taken. School leaders should inform representatives, that there is no obligation from the school to enact 21 CL, but rather that it is a journey for positive change, with the school having the option to opt out, at any time. The principal and school leadership, must then inform all stakeholders of their intention to engage the school with 21 CL. This can be done online, and through hard copies of letters containing the relevant information.

The consultation and informing of all stakeholders, should ideally take place in February or March of the preceding year, of formal enactment of the 21 CL. The school leadership must also let all the stakeholders know, that the preparation process would begin in the same year,

in preparation for the beginning of the formal program, at the start of the following year. They should also let stakeholders know, that they would be approaching tertiary educational research institutions, to lead and guide them, along their journey, research would take place at the school, and that a small team of researchers would have access to the school. Stakeholders should also be informed, that the small team of researchers will combine with a larger 21 CL committee, comprising of representatives from all stakeholders, to form one unified 21 CL team. The representatives in the 21 CL team, will serve as the voice of the different stakeholders and also filter information to them.

The second step in the leadership model, is that strong relationships must be developed, between research institutions, such as universities/colleges, and the participating schools, especially the school's leadership teams. This is so that theory can inform practice, and practice can also inform theory (Bai & Song, 2018). The participating schools can benefit from the researcher's expertise, whilst also becoming an organisation, where research can take place. If a school intends to experiment with 21 CL, then the school leadership must approach the closest universities or colleges, who specialise in school education, for assistance. The research specialists, must be able to physically visit the schools without difficulty, as well as the school leadership, having easy access to the research institutions. Establishing relationships with tertiary educational institutions, which are situated far away from the schools, will also work, but this would not be an ideal situation, as the close proximity, encourages more effective communication and collaboration.

Ideally, specialists from the research institutions should include experts in 21 CL and curriculum development, ICT and leadership. The recommendation is that there be six research specialists, with two individuals from each content area. This small group of six research specialists will reduce any intrusion, and reduce any impact on the daily schooling activities. At the same time a 21 CL committee should be formed, with representation from all stakeholders. The recommendation is that this team comprise of the principal, deputy principal/s in charge of academics, ICT head, at least additional 2 subject heads, one teacher, two parents, and two learners from the student representative body. This committee of school representatives, together with the research specialists, should then form one unified 21 CL team. If possible, a room/office should be designated for meetings regarding the interpretation and enactment of 21 CL. It is recommended that the establishment of strong partnerships with

educational research institutions, and the formation of the 21 CL team, take place in April of the same year.

The third step in the leadership model involves three sub-parts that should be done simultaneously. The first subpart in this step, involves the 21 CL team engaging all stakeholders about what 21 CL exactly means and entails, the need to make the change, and the concerns associated with the change. The 21 CL team should also educate stakeholders about the, challenges and facilitating factors, of 21 CL. Issues related to ICT in education, should be discussed in a similar manner, by school leaders with stakeholders. The key components in ICT and 21 CL are illustrated in Figure 2.1 (p 63) and Figure 2.2 (p 63). At this point, the recommendations of the study, regarding ICT use and the interpretation and enactment of 21 CL, for the private secondary schools in KwaZulu-Natal, should also be followed. This is crucial, because these recommendations, serve to fill in the identified gaps, in the transformation process, present in these schools.

Although input and presentations can be given by all members of the 21 CL team, the introductory information sessions should still be led by the school leadership. This serves to reassure and unify stakeholders, by demonstrating to them that the school leadership, is in control of the change process. These discussions and training sessions, should take place separately for staff, parents and learners, as the context of the discussions, will be slightly different for each group of stakeholders. The sessions should be planned well in advance, limited in number, and brief. Each school has its own educational climate, and the sessions can be slotted in, to meet the needs of the school, whilst not interrupting the academic program. However, these introductory training sessions should be ideally concluded in May and June, of the preceding year of formal enactment.

The second concurrent subpart in this step involves the leadership research specialists professionally developing the school leadership, in general administrative skills and expertise, which they may require to complete their leadership duties. In the context of this model, the school leadership refers to the principals, deputy principals and the subject heads/head of departments. Discussions should take place between the school leadership, and the leadership research specialists regarding the content required. These training sessions, can also take the form of workshops or seminars, where these skills and knowledge areas are revised, practiced and reinforced. The leadership research specialists should also provide school leaders with

specific leadership training, relevant to 21 CL. The crucial components of school leadership are illustrated in Figure 2.3 (p 64). At this point, the recommendations of the study, regarding leadership development, should also be followed, to fill in the identified gaps in the change process, and ensure the success of the program. The research team should equip school leaders, with the common characteristics and abilities (p 234, p 235), which they can use to effectively manage 21 CL. They should also educate school leaders about the unique tenets of transformational leadership, strategic leadership, system leadership and ecological leadership (p 226, p 229, p 231, p 233), and how these tenets can then be used to facilitate the interpretation and enactment of 21 CL. The professional leadership development of school leaders is critical in the 21 CL programme.

The leadership research specialists, should also design training sessions for the entire 21 CL team. These sessions should be aligned with the leadership training sessions, for the school leaders, but should be less intensive. However, the sessions should still focus on how transformational leadership, strategic leadership, system leadership and ecological leadership, together with the common leadership characteristics and abilities, which can be used to successfully change to 21 CL. These leadership training sessions for the 21 CL team, should again be planned well in advance, be limited in number and brief, and should not disrupt the schooling activities. The leadership training sessions should also be conducted during May and June.

The third simultaneous subpart of this step involves the 21 CL team conducting an inventory of all the school's ICT, and other physical resources, and an examination and analysis of the academic program, school climate and culture of the school. This is a vital step because the research team, will then use this information to design a 21 CL program for the school. This third subcomponent of step three should also be conducted in May and June.

The fourth step in the leadership model is the co-construction of the 21 CL program, whilst considering all related factors. It is important to note that private secondary schools in South Africa, follow either the CAPS or IEB curriculums, with the grade twelve exit examination as the final task. It is also important to note that many countries have started experimenting with 21 CL, in the late 1990's and some of them have presently, completely changed their entire educational systems to 21 CL (Mayfield & Hester, 2018). Resources about 21 CL curriculum structure, specific subject content, teaching methods, and assessment strategies, are available

online, with even some more developed schools in 21 CL, being open to creating partnerships with South African schools. The entire 21 CL team should be involved in the development of a contextualised 21 CL programme for the school. The research specialists, within the 21 CL team, will play a key role in this step.

The formal enactment of the 21 CL program should begin with learners in the following year. Once the inventory and analysis of the school is complete, there needs to be intense discussions, between members of the 21 CL team. The research specialists in ICT, 21 CL, curriculum, and leadership need to inform the team of current developments in their respective fields. At the same time, the representatives of the school need to inform the research specialists about the context of the school, regarding learner numbers and class sizes, subject distributions and requirements, lesson times, and time-table distribution, human resources, ICT resources, as well as, assessment requirements and strategies. The 21 CL teams need to design a 21 CL program that will be suitable for the individual school. Although the private secondary schools might all be located in KwaZulu-Natal, and might sometimes even be close to each other, the school context of each school will be unique.

The specific 21 CL program for the school needs to be aligned, with the requirements of the CAPS or IEB syllabus, be viable within the context of the school, and incorporate the principles and procedures of 21 CL. In reviewing, the available 21 CL resources from other countries, further along their journey of pedagogical change, the researcher believes that it is very possible to develop a 21 CL program, which is feasible in the South African private school context. The 21 CL program should be a comprehensive program, which outlines the principles, needs and positive outcomes of 21 CL. The program must also include the complete ICT strategy, which will support the program. The 21 CL program, should also include the school's leadership plan and responsibilities in the change process, as well as the roles and duties of the other members of the 21 CL team. In addition, the program must be a yearly one, with clearly demarcated times of completion, which are aligned with the academic school calendar. Furthermore, the program should include all 21 CL content, subject specific content, teaching methods, and assessment strategies. All of the academic aspects of the program must be organised in a systemised structure, which can be easily understood by staff, parents and learners. The construction of the 21 CL program for learners, by the 21 CL team, should take place in July and August.

The fifth step in the leadership model, is for the school leaders of the 21 CL team to present the planned 21 CL program, to all stakeholders, for input and ratification. This should be done in September. This can be done by having a joint meeting of parents, staff and entire student representative body. The meeting should be brief, with the first part of the meeting allocated to the discussion of the actual details of the program and the second part of the meeting for feedback.

The sixth step in the leadership model involves the 21 CL team finalising the program. The team, should take the feedback of the stakeholders into consideration, and adjust the program, so that all concerns are addressed. This final 21 CL program should be ready by the end of October.

The seventh step in the leadership model, is for the school leadership to conduct a meeting with parents, learners and academic staff. This meeting should take place, after examinations and reporting procedures of the current year, are complete. This meeting, should ideally take place in the second or last week of school. In this meeting, the school leadership should again address stakeholders about the need, content and positive outcomes of 21 CL, the preparation that was already completed, the expected changes in the new year, and the leadership roles and responsibilities in the change process. It is recommended, that this meeting, be an hour in duration. Hard copies and online copies of the entire 21 CL program, should also be provided to the staff and prospective parents and grade eight learners.

Two other meetings should take place before the end of the school year. These meetings will be more intensive and should be two hours in duration, to allow for questions and practical activities. The first meeting should be with the academic staff members of the 21 CL team, and all the other subject heads. In this meeting, the respective members of the 21 CL team, should explain to the subject heads the requirements needed from the teachers, in their specific subject areas, for the 21 CL program in the following year. These requirements should include details related to 21 CL lesson plans, work schedules, teaching, and classroom activities, and assessment strategies. The members of the 21 CL team, should provide practical examples and activities for the subject heads. The second meeting should be, between the subject heads and the teachers, which fall in their subject areas. School leaders should also attend this meeting, but the subject heads should lead them. In these meetings, the subject heads should then relay, and explain to the teachers, which they lead and manage, the exact requirements of the 21 CL

program, for learners in the following year. Again, this meeting should include practical activities and examples, which the teachers can use in their preparation. These subsequent meetings will allow subject heads and teachers to adequately prepare over the holidays.

The eighth and final step of the leadership model, is the actual enactment of the 21 CL program, for the learners, at the beginning of the following year. This must be followed, with clearly outlined monitoring procedures of the program, by the 21 CL team, together with feedback sessions for stakeholders, conducted by the principal and school leaders. It is recommended that the principal, deputy principal, subject heads and ICT head, who are part of the 21 CL team, manage the monitoring process, as well as the subject head of each department. The monitoring process should include the continued evaluation, inventory and reporting on resources, especially the ICT elements. The monitoring process, should also include the review and evaluation, of new teaching and learning material by teachers, together with planned classroom visits.

Assistance and resources should be made readily available to all teachers, by the 21 CL team. It is recommended that the school leadership allocate lessons, in the academic timetable where teachers can meet with the 21 CL team, and seek advice or assistance. This can be done by allocating teachers, one lesson in the time-table cycle of the school. This will allow groups of teachers, to be available, at the same time, to attend training sessions, with the 21 CL team. Allocation must also be well planned, for academic members of the 21 CL team, so that they are available to meet, with teachers, and their teaching loads are equitably balanced. It is also recommended, that feedback be provided to stakeholders at the end of every term, and stakeholders are allowed to provide further input during these sessions. It is important that the school leadership, inform all academic staff that the 21 CL is not static. Any aspect of the 21 CL program that is not working, can be evaluated, revised, and changed at any point. Recent developments, which the research specialists might think are beneficial, can also be discussed and possibly infused into the program.

The school leadership, plays the lead role in each step of the leadership model. It is important, that they use the expertise and skills that they learnt about leadership, during each step of the change process. The leadership research specialists should constantly remind, reinforce and guide school leaders, in how to use their leadership knowledge and skills in these steps. This should not only be general advice, but also involve specifics in the change process.

7.7 Recommendations for future research

The research in this study focused on private secondary schools in KwaZulu-Natal. Further research could be conducted into how school leadership influences the interpretation and enactment of 21 CL, in South African private primary schools. It is also recommended that research be conducted into how the school leadership, in other provinces, influences the interpretation and enactment of 21 CL in their schools. Research could also be conducted into how school leadership at public schools, can positively influence the viability of 21 CL programs, especially ex-model C schools, since they have been historically better resourced than other public type schools. This model does have the potential to be adapted to primary school contexts, as well as public school contexts, but context specifics need to be identified. This research was conducted in 2018, prior to the onset of COVID-19. Another interesting area of future research, would be to investigate, and probe the impact of COVID-19, on both public and private schools, as they have been forced more into the online, and 21 CL learning space. As well as how the leadership of these schools, have managed and influenced these changes, and their plans to keep their schools sustainable in the future.

7.8 Conclusion

The key findings and recommendations of this study, facilitate the interpretation and enactment of 21 CL in private secondary schools in KwaZulu-Natal. The study brought key issues in private South African secondary schools, related to the implementation and impact of ICT on 21 CL, the interpretation and enactment of 21 CL, and the influence of school leadership on 21 CL. The developed leadership model, puts the school leadership at the forefront of the transformation process of schools to 21 CL. This is because the leadership of the school influences all aspects of school life, and therefore can align all stakeholders and resources to 21 CL. The change to 21 CL is a significant pedagogical change and should be managed and led by the leaders of the school, to ensure its success and sustainability. COVID-19 has forced schools to think about teaching and learning differently, as they have been forced to use more 21 CL aligned methods of instruction. It is anticipated that this study will make a positive contribution towards transforming South African schools, into viable education institutions of the 21st century, which are able to effectively equip learners with the necessary skills and knowledge to be successful global citizens.

REFERENCES

- Abdo, S. S. S., & Edgar, D. (2019). The role of leadership competencies in supporting the Al Nahda University for becoming a learning organization: a new qualitative framework of the DLOQ. *International Journal of Business Administration*, 10(2), 43-62.
- Abdullah, A. G. K., Ling, Y.-L., & Ping, C. S. (2017). Workplace happiness, transformational leadership and affective commitment. *Advanced Science Letters*, 23(4), 2872-2875.
- Abdurrahman, A., Nurulsari, N., Maulina, H., & Ariyani, F. (2019). Design and validation of inquiry-based STEM learning strategy as a powerful alternative solution to facilitate gift students facing 21st century challenging. *Journal for the Education of Gifted Young Scientists*, 7(1), 33-56.
- Adams, D., Kutty, G. R., & Zabidi, Z. M. (2017). Educational leadership for the 21st century. *International online Journal of educational leadership*, 1(1), 1-4.
- Adedoyin, O. B., & Soykan, E. (2020). Covid-19 pandemic and online learning: the challenges and opportunities. *Interactive Learning Environments*, ahead-of-print (ahead-of-print), 1 - 13.
- Adnan, M., & Anwar, K. (2020). *Online Learning amid the COVID-19 Pandemic: Students' Perspectives*.
- Adukaite, A., Van Zyl, I., Er, Ş., & Cantoni, L. (2017). Teacher perceptions on the use of digital gamified learning in tourism education: The case of South African secondary schools. *Computers & Education*, 111, 172-190.
- Afey, A. A. (2019). Issues That Influence Implementation Of Strategic Plans In Public Secondary Schools—A Case Of Garissa County, Kenya. *European Journal of Education Studies*, 6(3), 364-383.
- Africa, M. (2016). *Innovation in Education: A Technical Report*. Retrieved from <https://mietafrica.org/>:
- Agormedah, E. K., Henaku, E. A., Ayite, D. M. K., & Ansah, E. A. (2020). Online learning in higher education during COVID-19 pandemic: A case of Ghana. *Journal of Educational Technology and Online Learning*, 3(3), 183-210.
- Aguilera-Hermida, A. P. (2020). College students' use and acceptance of emergency online learning due to COVID-19. *International Journal of Educational Research Open*, 1, 100011.

- Ah-Nam, L., & Osman, K. (2017). Developing 21st century skills through a constructivist-constructionist learning environment. *K-12 STEM Education*, 3(2), 205-216.
- Ajmain, M. T., Hehsan, A., & Mohamad, A. M. (2019). Learning and Facilitation (PdPc) Islamic Education in Industrial Revolution 4.0. *Journal of Research in Psychology*, 1(3), 13-17.
- Al-Awidi, H., & Aldhafeeri, F. (2017). Teachers' Readiness to Implement Digital Curriculum in Kuwaiti Schools. *Journal of Information Technology Education: Research*, 16, 105-126.
- Alayoubi, M. M., Al Shobaki, M. J., & Abu-Naser, S. S. (2020). Strategic leadership practices and their relationship to improving the quality of educational service in Palestinian Universities. *International Journal of Business Marketing and Management (IJBMM)*, 5(3), 11-26.
- Albusaidi, S. (2019). Critiquing a Qualitative Study Using Tracy's Big-tent Criteria. *Research in Social Sciences and Technology*, 4(1), 105-122.
- Ali, A. Y. S., & Dahie, A. M. (2015). Leadership style and teacher job satisfaction: Empirical survey from secondary schools in Somalia. *Leadership*, 5(8), 33-29.
- Aliyyah, R. R., Rachmadtullah, R., Samsudin, A., Syaodih, E., Nurtanto, M., & Tambunan, A. R. S. (2020). The perceptions of primary school teachers of online learning during the COVID-19 pandemic period: A case study in Indonesia. *Journal of Ethnic and Cultural Studies*, 7(2), 90-109.
- Allen, N., Grigsby, B., & Peters, M. L. (2015). Does leadership matter. *Examining the*.
- Allo, M. D. G. (2020). Is the online learning good in the midst of Covid-19 Pandemic? The case of EFL learners. *Jurnal Sinestesia*, 10(1), 1-10.
- Al-Rawi, A. P. S. K. (2020). The Impact of Training Needs on the Success of Strategic Leadership. *Journal of Xi'an University of Architecture & Technology*, 12, 377-388.
- Alresheed, S., Leask, M., & Raiker, A. (2015). Integrating Computer-Assisted Language Learning in Saudi Schools: A Change Model. *Turkish Online Journal of Educational Technology - TOJET*, 14(4), 69-77.

- Anazia, I. U. (2021). Closing the school attendance gap in rural communities in Nigeria: School leadership and multi-actor approach in community engagement. *International Modern Perspectives in Academia and Community Today*, (1).
- Anderson, M. (2017). Transformational leadership in education: A review of existing literature. *International Social Science Review*, 93(1), 4-13.
- Angelo, T., Kinung'hi, S. M., Buza, J., Mwanga, J. R., Kariuki, H. C., & Wilson, S. (2019). Community knowledge, perceptions and water contact practices associated with transmission of urinary schistosomiasis in an endemic region: a qualitative cross-sectional study. *BMC public health*, 19(1), 1-10.
- Anthony, F.-V., & Hermans, C. A. (2020). Spiritual determinants and situational contingencies of transformational leadership. *Acta Theologica*, 40, 60-85.
- Ardington, C., Wills, G., & Kotze, J. (2021). COVID-19 Learning Losses: Early grade reading in South Africa. *International Journal of Educational Development*, 86, 102480.
- Aspers, P., & Corte, U. (2019). What is qualitative in qualitative research? *Qualitative sociology*, 42(2), 139-160.
- Aththibby, A., Lubis, S., & Ardiyanti, Y. (2019). *TPACK as innovation of learning science laboratory of Indonesia*. Paper presented at the 6th International Conference on Educational Research and Innovation (ICERI 2018). Atlantis Press.
- Babaci-Wilhite, Z., & Geo-JaJa, M. A. (2018). A critique and rethink of modern education in Africa's development in the 21st century. *Papers in education and development*, (30).
- Bai, B., & Song, H. (2018). 21st century skills development through inquiry-based learning from theory to practice. In: Taylor & Francis.
- Baltes, S., & Ralph, P. (2020). *Sampling in Software Engineering Research: A Critical Review and Guidelines*. Retrieved from WorldCat.org database.
- Bantwini, B. D., & Moorosi, P. (2018). School district support to schools: voices and perspectives of school principals in a province in South Africa. *International Journal of Leadership in Education*, 21(6), 757-770.

- Barrot, J. S. (2019). English curriculum reform in the Philippines: Issues and challenges from a 21st century learning perspective. *Journal of Language, Identity & Education*, 18(3), 145-160.
- Bayeni, S. D., & Bhengu, T. T. (2018). Complexities and Contradictions in Policy Implementation: Lived Experiences of Three School Principals in South Africa. *SAGE Open*, 8(3), 1-12. doi:10.1177/2158244018792037
- Bedir, H. (2019). Pre-service ELT teachers' beliefs and perceptions on 21st century learning and innovation skills (4Cs). *Journal of Language and Linguistic Studies*, 15(1), 231-246.
- Bennett, D., Barrett, A., & Helmich, E. (2019). How to... analyse qualitative data in different ways. *The clinical teacher*, 16(1), 7-12.
- Berkovich, I. (2018). Will it sink or will it float: Putting three common conceptions about principals' transformational leadership to the test. *Educational Management Administration & Leadership*, 46(6), 888-907.
- Berkovich, I., & Eyal, O. (2017). The mediating role of principals' transformational leadership behaviors in promoting teachers' emotional wellness at work: A study in Israeli primary schools. *Educational Management Administration & Leadership*, 45(2), 316-335.
- Berkovich, I., & Eyal, O. (2020). Ethics education in leadership development: Adopting multiple ethical paradigms. *Educational Management Administration & Leadership*, 48(2), 270-285.
- Berryman, M., Egan, M., & Ford, T. (2017). Examining the potential of critical and Kaupapa Māori approaches to leading education reform in New Zealand's English-medium secondary schools. *International Journal of Leadership in Education*, 20(5), 525-538.
- Beverborg, A. O. G., Slegers, P. J., Endedijk, M. D., & Van Veen, K. (2017). Towards sustaining levels of reflective learning: How do transformational leadership, task interdependence, and self-efficacy shape teacher learning in schools? In *How school leaders contribute to student success* (pp. 93-129): Springer.
- Bialobrzeska, M., & Cohen, S. (2005). *Managing ICTs in South African schools: A guide for school principals*. (Management of Education Systems & Organisations). Open Educational Resources (DOER), South African Institute for Distance Education.

Blair, G., Cooper, J., Coppock, A., & Humphreys, M. (2019). Declaring and diagnosing research designs. *American Political Science Review*, 113(3), 838-859.

Blau, I., & Shamir-Inbal, T. (2017). Digital competences and long-term ICT integration in school culture: The perspective of elementary school leaders. *Education and Information Technologies: The Official Journal of the IFIP Technical Committee on Education*, 22(3), 769-787. doi:10.1007/s10639-015-9456-7

Bordoloi, R., Das, P., & Das, K. (2021). Perception towards online/blended learning at the time of Covid-19 pandemic: an academic analytics in the Indian context. *Asian Association of Open Universities Journal*, 16(1), 1-20.

Botha, W. (2016). English and international students in China today: A sociolinguistic study of English-medium degree programs at a major Chinese university. *English Today*, 32(1), 41-47.

Boylan, M. (2018). Enabling adaptive system leadership: Teachers leading professional development. *Educational Management Administration & Leadership*, 46(1), 86-106.

Bowen, P. W. (2022). "Words can hurt": The role of leadership in the passionate workplace of the twenty first century. A discussion about individual sensitivity and pathocratic influence in the academic (university) environment. *International Journal of Academic management Science Research*, 6(2), 26-45.

Braun, V., & Clarke, V. (2012). Thematic analysis. In *APA handbook of research methods in psychology, Vol 2: Research designs: Quantitative, qualitative, neuropsychological, and biological*. (pp. 57-71). Washington, DC, US: American Psychological Association.

Brion, C., & Cordeiro, P. A. (2018). Learning Transfer: The Missing Link to Learning among School Leaders in Burkina Faso and Ghana. *Frontiers in Education*, 2(69), 1-12. Retrieved from <https://www.frontiersin.org/article/10.3389/educ.2017.00069>

Brown, B., & Weli, S. (2019). Influence of Principals' Leadership Styles on Students' Academic Performance in Public Senior Secondary Schools in Rivers State. *International Journal of Education and Evaluation*, 5(3), 95-103.

Brown, C., & Greany, T. (2018). The evidence-informed school system in England: Where should school leaders be focusing their efforts? *Leadership and Policy in Schools*, 17(1), 115-137.

- Brown, M. E., & Dueñas, A. N. (2020). A medical science Educator's guide to selecting a research paradigm: building a basis for better research. *Medical Science Educator*, 30(1), 545-553.
- Bryant, D. A. (2019). Conditions that support middle leaders' work in organisational and system leadership: Hong Kong case studies. *School Leadership & Management*, 39(5), 415-433.
- Bush, T., & Glover, D. (2016). School leadership and management in South Africa: Findings from a systematic literature review. *International journal of educational management*.
- Bush, T., Kiggundu, E., & Mooros, P. (2011). Preparing new principals in South Africa: the ACE: school leadership Programme1. *South African Journal of Education*, 31(1), 31-43.
- Butola, L. K. (2021). E-learning-A New Trend of Learning in 21st Century During Covid-19 Pandemic. *Indian Journal of Forensic Medicine & Toxicology*, 15(1), 422-246.
- Camilleri, A. C., & Camilleri, M. A. (2019). *Mobile learning via educational apps: an interpretative study*. Paper presented at the Proceedings of the 2019 5th International Conference on Education and Training Technologies.
- Caniëls, M. C., Semeijn, J. H., & Renders, I. H. (2018). Mind the mindset! The interaction of proactive personality, transformational leadership and growth mindset for engagement at work. *Career Development International*, 23 (1), 48-66.
- Cansoy, R. (2020). Transformational school leadership: Predictor of collective teacher efficacy. *Sakarya University Journal of Education*, 10(1), 90-103.
- Carpenter, J. P., & Green, T. D. (2017). Mobile instant messaging for professional learning: Educators' perspectives on and uses of Voxer. *Teaching and Teacher Education*, 68, 53-67.
- Casey, A., Goodyear, V. A., & Armour, K. M. (2017). Rethinking the relationship between pedagogy, technology and learning in health and physical education. *Sport, education and society*, 22(2), 288-304.
- Chai, C. S., & Kong, S.-C. (2017). Professional learning for 21st century education. *Journal of Computers in Education*, 4(1), 1-4.

- Chai, C. S., Tan, L., Deng, F., & Koh, J. H. L. (2017). Examining pre-service teachers' design capacities for web-based 21st century new culture of learning. *Australasian Journal of Educational Technology*, 33(2).
- Chan, C. W. (2018). Leading today's kindergartens: Practices of strategic leadership in Hong Kong's early childhood education. *Educational Management Administration & Leadership*, 46(4), 679-691.
- Chatchawaphun, P., Julsuwan, S., & Srisa-ard, B. (2016). Development of Program to Enhance Strategic Leadership of Secondary School Administrators. *International education studies*, 9(10), 34-46.
- Cheng, K.-m. (2017). Advancing 21st century competencies in East Asian education systems. *Center for Global Education. Asia Society*, 2, 26.
- Cheng, Y.-h., & Weng, C.-w. (2017). Factors influence the digital media teaching of primary school teachers in a flipped class: A Taiwan case study. *South African Journal of Education*, 37(1), 1-12.
- Chirinda, B., Ndlovu, M., & Spangenberg, E. (2021). Teaching Mathematics during the COVID-19 Lockdown in a Context of Historical Disadvantage. *Education Sciences*, 11(4), 177.
- Chisango, G., & Maronge, N. (2021). The digital divide at three disadvantaged secondary schools in Gauteng, South Africa. *Journal of Education*, (82), 149-165.
- Chiu, T. K. F. (2017). Introducing Electronic Textbooks as Daily-Use Technology in Schools: A Top-Down Adoption Process. *British Journal of Educational Technology*, 48(2), 524-537.
- Christensen, R., & Knezek, G. (2017). Validating the technology proficiency self-assessment questionnaire for 21st century learning (TPSA C-21). *Journal of Digital Learning in Teacher Education*, 33(1), 20-31.
- Christie, P., Sullivan, P., Duku, N., & Gallie, M. (2010). Researching the need: School leadership and quality of education in South Africa. *Report prepared for Bridge, South Africa and Ark, UK*.
- Clarke, G., Gill, K., Sim, C., Patry, L., & Ginsler, Y. (2014). Engaging school districts in evaluative thinking and research-based inquiry to advance 21st century teaching and learning.

In annual meeting of the American Educational Research Association, Philadelphia, PA. Available at http://www.edugains.ca/resources21CL/Research/PapertoAERA_2014.pdf.

Clarke, S., & O'Donoghue, T. (2017). Educational leadership and context: A rendering of an inseparable relationship. *British Journal of Educational Studies*, 65(2), 167-182.

Claro, M., Salinas, Á., Cabello-Hutt, T., San Martín, E., Preiss, D. D., Valenzuela, S., & Jara, I. (2018). Teaching in a Digital Environment (TIDE): Defining and measuring teachers' capacity to develop students' digital information and communication skills. *Computers & Education*, 121, 162-174.

Cletzer, D. A., & Kaufman, E. K. (2020). Eco-Leadership Among County 4-H Organizations: Relationship to Programmatic Success and Best Practices for Eco-Leaders You are here. *Journal of Leadership Education*, 19(4).

Cloete, A. L. (2017). Technology and education: Challenges and opportunities. *HTS: Theological Studies*, 73(3), 1-7.

Coban, O., Ozdemir, S., & Pisapia, J. (2019). Top managers' organizational change management capacity and their strategic leadership levels at Ministry of National Education (MoNE). *Eurasian Journal of Educational Research*, 19(81), 129-146.

Cobbinah, J. E. (2020). Barriers to Strategic Leadership in Education. In *Strategic Leadership in PK-12 Settings* (pp. 82-93): IGI Global.

Cobbinah, J. E., & Agyemang, S. (2019). Types of Leadership. In *Handbook of Research on Social Inequality and Education* (pp. 431-447): IGI Global.

Corry, M., Porter, S., & McKenna, H. (2019). The redundancy of positivism as a paradigm for nursing research. *Nursing Philosophy*, 20(1), e12230.

Courtney, S. J., & McGinity, R. (2020). System leadership as depoliticisation: Reconceptualising educational leadership in a new multi-academy trust. *Educational Management Administration & Leadership*, 20(10), 1-18.

Crawford, R. (2017). Rethinking teaching and learning pedagogy for education in the twenty-first century: blended learning in music education. *Music Education Research*, 19(2), 195-213.

Crompton, H., Burke, D., & Gregory, K. H. (2017). The use of mobile learning in PK-12 education: A systematic review. *Computers & Education*, 110, 51-63.

- Csapó, B., & Funke, J. (2017). *The nature of problem solving*: OECD.
- Darby, J. L., Fugate, B. S., & Murray, J. B. (2019). Interpretive research: A complementary approach to seeking knowledge in supply chain management. *The International Journal of Logistics Management*.
- Davids, N. (2018). When identity and leadership intersect: The experiences of six female principals in South Africa. *Africa Education Review*, 15(1), 157-174.
- Davids, N., & Waghid, Y. (2019). Educational leadership reconsidered: re-invoking authority in schools. *Africa Education Review*, 16(2), 36-49.
- Schrum, L., Davis, N. E., Jacobsen, M., Lund, A., Ferhan Odabasi, H., Voogt, J., & Way, J. (2015). A Global Perspective: Current Trends and Issues in ICT for 21st Century Education.
- De Block, D., & Vis, B. (2019). Addressing the challenges related to transforming qualitative into quantitative data in qualitative comparative analysis. *Journal of mixed methods research*, 13(4), 503-535.
- de Bruin, L. R., & Harris, A. (2017). Fostering creative ecologies in Australasian secondary schools. *Australian Journal of Teacher Education*, 42(9), 23-43.
- De Carvalho, E., & Skipper, Y. (2019). “We’re not just sat at home in our pyjamas!”: a thematic analysis of the social lives of home educated adolescents in the UK. *European Journal of Psychology of Education*, 34(3), 501-516.
- De Villiers, C., Dumay, J., & Maroun, W. (2019). Qualitative accounting research: dispelling myths and developing a new research agenda. *Accounting & Finance*, 59(3), 1459-1487.
- Dean, B. A. (2018). The interpretivist and the learner. *International Journal of Doctoral Studies*, 13(1), 1-8.
- Department of Education. (2008). *Language in leadership and management*. Tshwane, South Africa: Department of Higher Education Retrieved from https://www.oerafrica.org/system/files/8322/languageinleadershipandmanagement_0.pdf?file=1&type=node&id=8322&force=1
- Department of Education. (2008). *Lead and Manage a Subject, Learning Area or Phase*. Tshwane, South Africa: DoE Retrieved from <https://www.oerafrica.org/resource/lead-and-manage-subject-learning-area-or-phase-ace-school-management-and-leadership-pdf>

Department of Education. (2008). *Lead and Manage Organisational Systems, Physical and Financial Resources*. Tshwane, South Africa: DoE Retrieved from https://www.oerafrica.org/system/files/8345/lead-and-manage-organisational-systems-physical-and-financial-resources_0.pdf?file=1&type=node&id=8345&force=1

Department of Education. (2008). *Lead and manage people*. Tshwane, South Africa: DoHE Retrieved from https://www.oerafrica.org/FTPFolder/Teachered/ACE/Lead_and_Manage_people.pdf

department of Education. (2008). *Manage law, policy, planning, school development and governance*. Tshwane, South Africa Retrieved from https://www.oerafrica.org/FTPFolder/Teachered/ACE/Lead_and_Manage_people.pdf

Department of Education. (2008). *Managing Teaching and Learning*. Tshwane, South Africa: DoE Retrieved from https://www.oerafrica.org/FTPFolder/Teachered/ACE/Managing_teaching_and_learning.pdf

Department of Education. (2008). *Mentor school managers & manage mentoring programmes in schools*. Tshwane, South Africa: DoE Retrieved from https://oerafrica.org/sites/default/files/resources/8865/mentor-school-managers-and-manage-mentoring-programmes-schools_0.pdf

Department of Education. (2008). *Moderate assessment*. Tshwane, South Africa: Department of Education Website Retrieved from https://www.oerafrica.org/FTPFolder/Moderate_Assessment.pdf

Department of Education. (2008). *Plan and conduct assessment*. Tshwane, South Africa: DoE Retrieved from <https://www.education.gov.za/Portals/0/Plan%20and%20conduct%20assessment.pdf?ver=2009-10-14-124958-510>

Department of Education. (2008). *A Portfolio to Demonstrate School Leadership and Management Competence*. Tshwane, South Africa: DoHE Retrieved from <http://uilis.unsyiah.ac.id/oer/files/original/18048c221242329f29c7a4b662974cf7.pdf>

Dhawan, S. (2020). Online learning: A panacea in the time of COVID-19 crisis. *Journal of Educational Technology Systems*, 49(1), 5-22.

- Dias, M. d. O., & Aylmer, R. (2019). Behavioral Event Interview: Sound Method For In-depth Interviews. *Arabian Journal of Business and Management Review (Oman Chapter)*, 8(1), 1-6.
- DOĞRU, Ç. The Interactions Among Strategic Leadership, Innovative Climate and Identification with Leader. *Avrasya Sosyal ve Ekonomi Araştırmaları Dergisi*, 6(3), 187-198.
- Drake, S. M., & Reid, J. L. (2018). Integrated curriculum as an effective way to teach 21st century capabilities. *Asia Pacific Journal of Educational Research*, 1(1), 31-50.
- du Plessis, A. (2021). Complexity Theory as Paradigm when Researching Education Reform: The South African Case. *New Challenges to Education: Lessons from Around the World*, 19(6), 282-288.
- Du Plessis, A. E., Carroll, A., & Gillies, R. M. (2017). The meaning of out-of-field teaching for educational leadership. *International Journal of Leadership in Education*, 20(1), 87-112.
- Du Preez, P., & Le Grange, L. (2020). The COVID-19 pandemic, online teaching/learning, the digital divide and epistemological access. *Unpublished paper*, 1, 90-106.
- Du Plooy-Ciliers, F., Davis, D., Bezuidenhout, R. (2016). *Research Matters*. Cape Town: Juta & Company Ltd.
- Dyer, G., & Dyer, M. (2017). Strategic leadership for sustainability by higher education: the American College & University Presidents' Climate Commitment. *Journal of Cleaner Production*, 140(1), 111-116.
- Elizondo-García, J., Gomez-Zermeño, M., & Aleman, L. (2019). Teacher professional development and school leadership in Mexican Elementary schools. *Elementary Education Online*, 18(2), 903-915.
- Elstad, E., & Christophersen, K. A. (2017). Perceptions of digital competency among student teachers: Contributing to the development of student teachers' instructional self-efficacy in technology-rich classrooms. *Education Sciences*, 7(1), 27.
- Mahaye, N. E. (2020). The impact of COVID-19 pandemic on education: navigating forward the pedagogy of blended learning. *Research online*.
- Friedel, C. R., Cletzer, A., Bush, S. A., & Barber, J. D. (2017). Relationships between Eco-Leadership and Problem-Solving Styles of Gifted and Talented Youth. *Journal of Leadership Education*, 16(4).

- Fauzi, I., & Khusuma, I. H. S. (2020). Teachers' elementary school in online learning of COVID-19 pandemic conditions. *Jurnal Iqra': Kajian Ilmu Pendidikan*, 5(1), 58-70.
- Friedrich, T., Schlauderer, S., Weidinger, J., & Raab, M. (2017). *On the Research Paradigms and Research Methods Employed in the BISE Journal-A Ten-Year Update*. Paper presented at the Proceedings der 13. Internationalen Tagung Wirtschaftsinformatik (WI 2017)
- García-Peñalvo, F. J., & Mendes, A. J. (2018). Exploring the computational thinking effects in pre-university education. *Computers in human behavior*, 80, 407-411.
- Geer, R., White, B., Zeegers, Y., Au, W., & Barnes, A. (2017). Emerging pedagogies for the use of iPads in schools. *British Journal of Educational Technology*, 48(2), 490-498.
- Gil-Flores, J., Rodríguez-Santero, J., & Torres-Gordillo, J.-J. (2017). Factors that explain the use of ICT in secondary-education classrooms: The role of teacher characteristics and school infrastructure. *Computers in human behavior*, 68, 441-449.
- Gkolia, A., Koustelios, A., & Belias, D. (2018). Exploring the association between transformational leadership and teacher's self-efficacy in Greek education system: a multilevel SEM model. *International Journal of Leadership in Education*, 21(2), 176-196.
- Godfrey, D., & Brown, C. (2018). How effective is the research and development ecosystem for England's schools? *London review of education*, 16(1), 137-153.
- Goerres, A., Siewert, M. B., & Wagemann, C. (2019). Internationally comparative research designs in the social sciences: Fundamental issues, case selection logics, and research limitations. *KZfSS Kölner Zeitschrift für Soziologie und Sozialpsychologie*, 71(1), 75-97.
- Greenhow, C., & Askari, E. (2017). Learning and teaching with social network sites: A decade of research in K-12 related education. *Education and Information Technologies*, 22(2), 623-645.
- Gumus, S., Bellibas, M. S., Esen, M., & Gumus, E. (2018). A systematic review of studies on leadership models in educational research from 1980 to 2014. *Educational Management Administration & Leadership*, 46(1), 25-48.
- Gunbayi, I. (2020). Knowledge-constitutive interests and social paradigms in guiding mixed methods research (MMR). *Journal of Mixed Methods Studies (JOMES)*, 1(1), 41-53.

- Haelermans, C. (2017). *Digital tools in education on usage, effects, and the role of the teacher* [1 online resource (119 sidor)]. Retrieved from <https://www.sns.se/wp-content/uploads/2017/10/digital-tools-in-education.pdf>
- Häkkinen, P., Järvelä, S., Mäkitalo-Siegl, K., Ahonen, A., Näykki, P., & Valtonen, T. (2017). Preparing teacher-students for twenty-first-century learning practices (PREP 21): a framework for enhancing collaborative problem-solving and strategic learning skills. *Teachers and Teaching*, 23(1), 25-41.
- Hallinger, P. (2018). Surfacing a hidden literature: A systematic review of research on educational leadership and management in Africa. *Educational Management Administration & Leadership*, 46(3), 362-384. Retrieved from <https://journals.sagepub.com/doi/abs/10.1177/1741143217694895>
- Hallinger, P. (2019). A systematic review of research on educational leadership and management in South Africa: mapping knowledge production in a developing society. *International Journal of Leadership in Education*, 22(3), 316-334. Retrieved from <https://doi.org/10.1080/13603124.2018.1463460>
- Hallinger, P., & Walker, A. (2017). Leading learning in Asia—emerging empirical insights from five societies. *Journal of Educational Administration*, 55(2), 130-146.
- Hamilton, G., Forde, C., & McMahon, M. (2018). Developing a coherent strategy to build leadership capacity in Scottish education. *Management in education*, 32(2), 72-78.
- Harris, A., & Jones, M. (2017). Middle leaders matter: Reflections, recognition, and renaissance. *School Leadership & Management* 37(3), 213-216.
- Harris, A., & Jones, M. (2020). COVID 19 – school leadership in disruptive times. *School Leadership & Management*, 40(4), 243-247.
- Harris, A., Jones, M., & Hashim, N. (2021). System leaders and system leadership: exploring the contemporary evidence base. *School Leadership & Management*, 1-22.
- Hartmann, S. B., Nygaard, L. Q. V., Pedersen, S., & Khalid, M. S. (2017). The potentials of using cloud computing in schools: A systematic literature review. *The Turkish Online Journal of Educational Technology*, 16(1), 190-202.
- Hashim, H., Rafiq, R. M., & Md Yunus, M. (2019). Improving ESL learners' grammar with Gamified-learning. *Arab World English Journal (AWEJ) Special Issue on CALL*(5).

- Hasija, K. G., Mehtani, A. M. H. M., & Mehtani, M. (2020). Significant Effect of Transformational Leadership Style on Academicians In B-Schools. *Qualitative and Quantitative Research Review*, 16(1), 15-22.
- Heeks, R., & Wall, P. (2018). Critical realism and ICT4D research. *The Electronic Journal of Information Systems in Developing Countries*, 84(6), e12051.
- Heinrich, S., & Kupers, R. (2019). Complexity as a big idea for secondary education: Evaluating a complex systems curriculum. *Systems Research and Behavioral Science*, 36(1), 100-110.
- Heissel, J. A., & Ladd, H. F. (2018). School turnaround in North Carolina: A regression discontinuity analysis. *Economics of Education Review*, 62, 302-320.
- Held, M. B. (2019). Decolonizing research paradigms in the context of settler colonialism: An unsettling, mutual, and collaborative effort. *International Journal of Qualitative Methods*, 18, 1609406918821574.
- Henderson, M., Selwyn, N., & Aston, R. (2017). What works and why? Student perceptions of 'useful' digital technology in university teaching and learning. *Studies in Higher Education*, 42(8), 1567-1579.
- Hermans, C. (2021). Discernment as predictor for transformational leadership: a study of school leaders in Catholic schools in India. *Journal of Beliefs & Values*, 42(3), 393-408.
- Hesse-Biber, S. (2016). Qualitative or mixed methods research inquiry approaches: Some loose guidelines for publishing in sex roles. *Sex Roles*, 74(1), 6-9.
- Hines, M. G., & Lynch, R. (2019). The relationship of grade 7 students' general ICT use and attitudes towards ICT use for school related activities with ICT self-efficacy in eleven English program schools of Thailand. *Scholar: Human Sciences*, 11(2), 366-366.
- Ho, J., Kang, T., & Shaari, I. (2020). Leading from the middle: vice-principals in Singapore as boundary spanners. *Journal of Educational Administration*, 59(2), 145-161.
- Ho, J. M. P. Y., & Tay, L. Y. (2020). Ensuring learning continues during a pandemic. *International Studies in Educational Administration*, 48(2), 49-55.
- Hodges, C. B., Moore, S., Lockee, B. B., Trust, T., & Bond, M. A. (2020). The difference between emergency remote teaching and online learning. *Educause Review*, 1(3), 1-12.

Howard, P., O'Brien, C., Kay, B., & O'Rourke, K. (2019). Leading educational change in the 21st century: Creating living schools through shared vision and transformative governance. *Sustainability*, *11*(15), 4109.

Howard, S. K., & Thompson, K. (2016). Seeing the system: Dynamics and complexity of technology integration in secondary schools. *Education and Information Technologies*, *21*(6), 1877-1894.

Howlett, G., & Zainee, W. (2019). 21st CENTURY LEARNING SKILLS AND AUTONOMY: STUDENTS' PERCEPTIONS OF MOBILE DEVICES IN THE THAI EFL CONTEXT. *Teaching English with Technology*, *19*(1), 72-85.

Huggins, K. S., Klar, H. W., Hammonds, H. L., & Buskey, F. C. (2017). Developing Leadership Capacity in Others: An Examination of High School Principals' Personal Capacities for Fostering Leadership. *International Journal of Education Policy and Leadership*, *12*(1), 1-15.

Huijser, H., Kek, M. Y., Abawi, L. A., & Lawrence, J. (2019). Leveraging creativity to engage students in an agile ecology for learning. *Student Engagement in Higher Education Journal*, *2*(3), 138-153.

Hultén, M., & Larsson, B. (2018). The Flipped Classroom: Primary and Secondary Teachers' Views on an Educational Movement in Schools in Sweden Today. *Scandinavian Journal of Educational Research*, *62*(3), 433-443.

Hung, D., Huang, J. S., & Tan, C. (2020). Leadership in times of pandemics: Reflections from Singapore. *International Studies in Educational Administration*, *48*(2), 56-63.

Hung, D., Jamaludin, A., Toh, Y., Lee, S. S., Wu, L., & Shaari, I. (2016). A system's model of scaling: leveraging upon centralised and decentralised structures for diffusion. *Learning: Research and Practice*, *2*(2), 143-159.

Hunter, N., & Storksdieck, M. (2017). Understanding the Use of Tablet Technology as a Mechanism for Improving Teaching and Learning in the Corvallis School District.

Hussain, M. A., Ahmad, I., & Qadir, A. (2016). Relationship Between Transformational School Leadership and Commitment of Teachers to Change: A Case for Secondary School Teachers (Ssts) In Southern Punjab, Pakistan. *The Sindh University Journal of Education-SUJE*, *45*(1), 87-112.

Hussein, E., Daoud, S., Alrabaiah, H., & Badawi, R. (2020). Exploring undergraduate students' attitudes towards emergency online learning during COVID-19: A case from the UAE. *Children and youth services review, 119*, 105699.

Hwang, G.-J., & Fu, Q.-K. (2019). Trends in the research design and application of mobile language learning: A review of 2007–2016 publications in selected SSCI journals. *Interactive Learning Environments, 27*(4), 567-581.

Ibrahim, M. S., Ghavifekr, S., Ling, S., Siraj, S., & Azeez, M. I. K. (2014). Can transformational leadership influence on teachers' commitment towards organization, teaching profession, and students learning? A quantitative analysis. *Asia Pacific Education Review, 15*(2), 177-190.

Indu, P. V., & Vidhukumar, K. (2019). Research designs-an Overview. *Kerala Journal of Psychiatry, 32*(1), 64-67.

Ismail, A., & Mydin, A. A. (2019). *The impact of transformational leadership and commitment on teachers' innovative behaviour*. Paper presented at the 4th ASEAN Conference on Psychology, Counselling, and Humanities (ACPCH 2018).

Israel, A. N. (2018). Chief executive officer leadership role and small and medium enterprises performance in Southwest Nigeria. *International Journal of Advances in Agriculture Sciences, 5*(5).

Jagušt, T., Botički, I., & So, H. J. (2018). A review of research on bridging the gap between formal and informal learning with technology in primary school contexts. *Journal of Computer Assisted Learning, 34*(4), 417-428.

Jogezai, N. A., Baloch, F. A., Jaffar, M., Shah, T., Khilji, G. K., & Bashir, S. (2021). Teachers' attitudes towards social media (SM) use in online learning amid the COVID-19 pandemic: the effects of SM use by teachers and religious scholars during physical distancing. *Heliyon, 7*(4), e06781.

Johns, K., Troncale, J., Trucks, C., Calhoun, C., & Alvidrez, M. (2017). Cool tools for school: Twenty-first-century tools for student engagement. *Delta Kappa Gamma Bulletin, 84*(1), 53.

Joyce-Gibbons, A., Galloway, D., Mollé, A., Mgoma, S., Pima, M., & Deogratias, E. (2018). Mobile phone use in two secondary schools in Tanzania. *Education and Information Technologies, 23*(1), 73-92.

- Kaliisa, R., & Picard, M. (2017). A systematic review on mobile learning in higher education: The African perspective. *TOJET: The Turkish Online Journal of Educational Technology*, 16(1), 1-18.
- Kassem, M. A. M. (2018). The effect of a suggested in-service teacher training program based on MALL applications on developing EFL students' vocabulary acquisition. *Journal of Language Teaching and Research*, 9(2), 250-260.
- Kaufman, E., & Cletzer, D. A. (2020). Eco-Leadership Among County 4-H Organizations: Relationship to Programmatic Success and Best Practices for Eco-Leaders. *Journal of Leadership Education*, 19(14), 20-37.
- Kek, M. Y. A., Huijser, H., Abawi, L., & Lawrence, J. (2019). Leveraging creativity to engage students in an agile ecology for learning. *Student Engagement in Higher Education Journal*, 2(3), 138-153.
- Kgwete, E. M. (2014). *Understanding school leadership: a study of the ACE school leadership programme and leadership practices*: University of Pretoria (South Africa).
- Kim, K. M., & Md-Ali, R. (2017). GeoGebra: towards realizing 21st century learning in mathematics education. *Malaysian Journal of Learning and Instruction*, 93-115.
- King, F., & Travers, J. (2017). Social justice leadership through the lens of ecological systems theory. *A Global Perspective of Social Justice Leadership for School Principals*. Information Age Publishing, 147-165.
- Kirori, M., & Dickinson, D. (2020). Not a panacea, but vital for improvement? Leadership development programmes in South African schools. *South African Journal of Education*, 40(1), 1-11.
- Kirschner, P. A., & De Bruyckere, P. (2017). The myths of the digital native and the multitasker. *Teaching and Teacher Education*, 67, 135-142.
- Kitur, K., Choge, J., & Tanui, E. (2020). *Relationship between Principals' Transformational Leadership Style and Secondary School Students' Academic Performance in Kenya Certificate of Secondary Education in Bomet County, Kenya*. (PhD). Maasai Mara University, Kenya, <http://41.89.101.166:8080/handle/123456789/11054>.

- Koh, T.-S., & Hung, D. W.-L. (2018). Leadership for change in Singapore Schools: An introduction. In *LEADERSHIP FOR CHANGE: The Singapore Schools' Experience* (pp. 1-28): World Scientific.
- Kokare, M., & Strautins, K. (2018). *Setting up blended learning at school: leadership perspective*. Paper presented at the Society Integration Education Proceedings of the International Scientific Conference.
- Kovács, A., Kiss, D., Kassai, S., Pados, E., Kaló, Z., & Rácz, J. (2019). Mapping qualitative research in psychology across five Central-Eastern European countries: Contemporary trends: A paradigm analysis. *Qualitative Research in Psychology*.
- Krishnan, I. A., Ching, H. S., Ramalingam, S., Maruthai, E., Kandasamy, P., De Mello, G., Munian, S., & Ling, W. W. (2020). Challenges of learning English in 21st century: Online vs. traditional during Covid-19. *Malaysian Journal of Social Sciences and Humanities (MJSSH)*, 5(9), 1-15.
- Kumatongo, B., & Muzata, K. K. (2021). Research Paradigms and Designs with their Application in Education. *Journal of Lexicography and Terminology (Online ISSN 2664-0899. Print ISSN 2517-9306)*. 5(1), 16-32.
- Kunalan, H., & Ali, H. M. (2020). Preliminary Findings of Correlations Between School Leaders' strategic Leadership Practice, Quality Assurance System Practice, And Risky & Nonrisky Malaysian Schools. *Kuwait Chapter of the Arabian Journal of Business and Management Review*, 9(4), 188-197.
- Kundu, A., & Bej, T. (2021). Experiencing e-assessment during COVID-19: an analysis of Indian students' perception. *Higher Education Evaluation and Development*, 15(2), 114-134.
- Kushkiev, P. (2019). On the Role of Values in Educational Research: a Critique of Two Research Studies.
- Landa, N., Zhou, S., & Marongwe, N. (2021). Education in emergencies: Lessons from COVID-19 in South Africa. *International Review of Education*, 67(3), 167–183.
- Langtree, T., Birks, M., & Biedermann, N. (2019). *Separating "fact" from fiction: Strategies to improve rigour in historical research*. Paper presented at the Forum Qualitative Sozialforschung/Forum: Qualitative Social Research.

Latorre-Coscolluela, C., Suárez, C., Quiroga, S., Sobradíel-Sierra, N., Lozano-Blasco, R., & Rodríguez-Martínez, A. (2021). Flipped Classroom model before and during COVID-19: Using technology to develop 21st century skills. *Interactive Technology and Smart Education*, 18(2), 189-204.

Lawrence, K. C., & Fakuade, O. V. (2021). Parental Involvement, Learning Participation and Online Learning Commitment of Adolescent Learners during the COVID-19 Lockdown. *Research in Learning Technology*, 29.

Lay, A.-N., & Osman, K. (2018). Developing 21st century chemistry learning through designing digital games. *Journal of Education In Science Environment And Health*, 4(1), 81-92.

Lee, C. (2020). Courageous leaders: promoting and supporting diversity in school leadership development. *Management in education*, 34(1), 5-15.

Lee, M. (2018). Ethical and Methodological Issues Resulting from Recording Lapses in Qualitative Research. *Qualitative Report*, 23(7), 1509-1514.

Lee, Y.-D., & Kuo, C.-T. (2019). Principals' Transformational Leadership and Teachers' Work Motivation: Evidence from Elementary Schools in Taiwan. *International Journal of Organizational Innovation*, 1(3), 90-113.

Leem, J., & Sung, E. (2019). Teachers' beliefs and technology acceptance concerning smart mobile devices for SMART education in South Korea. *British Journal of Educational Technology*, 50(2), 601-613.

Le Grange, L. (2021). Covid-19 pandemic and the prospects of education in South Africa. *Prospects*, 51, 425-436.

Leithwood, K., Harris, A., & Hopkins, D. (2020). Seven strong claims about successful school leadership revisited. *School Leadership & Management*, 40(1), 5-22.

Lemenkova, P. (2019). Numerical Data Modelling and Classification in Marine Geology by the SPSS Statistics. *International Journal of Engineering Technologies IJET*, 5(2), 90-99.

Lerra, M. D. (2021). Leadership Competencies for Quality Education in Rural Primary Schools of Ethiopia: The Case of Amhara and Oromia Regional States. *Turkish Journal of Computer and Mathematics Education (TURCOMAT)*, 12(12), 4156-4168.

- Li, L., & Liu, Y. (2020). An integrated model of principal transformational leadership and teacher leadership that is related to teacher self-efficacy and student academic performance. *Asia Pacific Journal of Education*, 1-18.
- Lin, C.-L., Jin, Y. Q., Zhao, Q., Yu, S.-W., & Su, Y.-S. (2021). Factors influence students' switching behavior to online learning under COVID-19 pandemic: A push-pull-mooring model perspective. *The Asia-Pacific Education Researcher*, 30(3), 229-245.
- Lindberg, O. J., Olofsson, A. D., & Fransson, G. (2017). Same but different? An examination of Swedish upper secondary school teachers' and students' views and use of ICT in education. *The international journal of information and learning technology*, 34(2), 122-132.
- Ling, Y.-L., & Soon, G. T. (2019). The Influence of Principal's Transformational Leadership towards Teachers' Collective Efficacy in Rural Secondary Schools of Kanowit, Malaysia. *Advances in Social Science, Education and Humanities Research*, 8, 11.
- Literat, I. (2021). "Teachers Act Like We're Robots": TikTok as a Window Into Youth Experiences of Online Learning During COVID-19. *AERA Open*, 7, 2332858421995537.
- Longmore, A.-L., Grant, G., & Golnaraghi, G. (2018). Closing the 21st-century knowledge gap: Reconceptualizing teaching and learning to transform business education. *Journal of Transformative Education*, 16(3), 197-219.
- Luciani, M., Campbell, K., Tschirhart, H., Ausili, D., & Jack, S. M. (2019). How to design a qualitative health research study. Part 1: Design and purposeful sampling considerations. *Professioni infermieristiche*, 72(2).
- Luckin, R., Clark, W., Avramides, K., Hunter, J., & Oliver, M. (2017). Using teacher inquiry to support technology-enhanced formative assessment: a review of the literature to inform a new method. *Interactive Learning Environments*, 25(1), 85-97.
- Lupinacci, J. J. (2017). Addressing 21st Century challenges in education: An ecocritical conceptual framework toward an ecotistical leadership in education. *Impacting Education: Journal on Transforming Professional Practice*, 2(1), 20-27.
- Lynch, M., Plucker, J. A., Hegarty, C. B., & Trautvein, N. (2018). Summer camp as a force for 21st century learning: Exploring divergent thinking and activity selection in a residential camp setting. *Journal of Youth Development*.

- Lyon, A. R., Cook, C. R., Brown, E. C., Locke, J., Davis, C., Ehrhart, M., & Aarons, G. A. (2018). Assessing organizational implementation context in the education sector: confirmatory factor analysis of measures of implementation leadership, climate, and citizenship. *Implementation Science, 13*(1), 1-14.
- Lyonga, N. A. N. (2019). Principals' Transformational Leadership Skills and Teachers' Job Satisfaction In Secondary Schools in Meme Division of Cameroon. *European Journal of Education Studies, 6*(1), 326-343.
- Mabaso, B. A. (2017). *Twenty-first century skills development in rural school learners*. (Masters Degree). University of Cape Town,
- MacNeill, N., Silcox, S., & Boyd, R. (2018). Transformational and Transactional Leadership: a false dichotomy of leadership in schools. *Education today, 11*(4), 10-12.
- Mahaye, N. (2020). The Impact of COVID-19 Pandemic on South African Education: Navigating Forward the Pedagogy of Blended Learning. *South Africa: the MEC for Education*.
- Makhasane, S., & Khanare, F. (2018). Teachers' Perspectives about causes of learner-on-teacher violence in two South African schools: Implications for school leadership. *Anthropologist, 31*(1-3), 15-24.
- Mampane, T. J. (2021). Revisiting the Tension between Management and Leadership Practices in Ensuring Quality Teaching and Learning. *New Challenges to Education: Lessons from Around the World, 19*(1), 1-16.
- Manca, S., Grion, V., Armellini, A., & Devecchi, C. (2017). Student voice. Listening to students to improve education through digital technologies. *British Journal of Educational Technology, 48*(5), 1075-1080.
- Manns, M. R. (2019). *Unfolding the Logic of a 21st Century Learning Center: A Program Evaluation*. (Doctor of Education (Ed.D.) Dissertation). The College of William and Mary,
- Maphosa, V. (2021). Teachers' Perspectives on Remote-based Teaching and Learning in the COVID-19 Era: Rethinking Technology Availability and Suitability in Zimbabwe. *European Journal of Interactive Multimedia and Education, 2*(1), e02105.
- Maphosa, V., Dube, B., & Jita, T. (2020). A UTAUT Evaluation of WhatsApp as a Tool for Lecture Delivery during the COVID-19 Lockdown at a Zimbabwean University. *International Journal of Higher Education, 9*(5), 84-93.

- Maree, J. G. (2022). Managing the Covid-19 pandemic in South African Schools: turning challenge into opportunity. *South African Journal of Psychology*, 52(2), 249-261.
- Marlatt, R. (2019). "I didn't say, 'Macbeth,' it was my Google Doc!": A secondary English case study of redefining learning in the 21st Century. *E-learning and Digital Media*, 16(1), 46-62.
- Mathebula, R. N., & Runhare, T. (2021). Saving the curriculum or Saving Life? The risk of Opening Schools in South Africa at the peak of the Country's COVID-19 Pandemic. *Journal of Educational and Social Research*, 11(3), 187-201.
- Mathew, M. A. (2018). The need for digital and media literacy in Indian higher secondary and secondary curricula to cater to future generations. *Asia Pacific Journal of Research*, 1(88), 128-130.
- Mayfield, K., & Hester, L. (2018). *What does it take to establish a computer science education degree? The collaborative journey between a computer science and secondary education professor*. Paper presented at the Proceedings of the International Conference on Frontiers in Education: Computer Science and Computer Engineering (FECS).
- Mbandlwa, Z. (2021). The impact of the quality of education was caused by the changes from face-to-face to Remote Learning as a result of the Covid-19 pandemic. *Ilkogretim Online*, 20(4).
- McDonald, S. D. (2017). Enhanced Critical Thinking Skills through Problem-Solving Games in Secondary Schools. *Interdisciplinary Journal of e-Skills and Lifelong Learning*, 13, 79-96.
- McGrath, C., Palmgren, P. J., & Liljedahl, M. (2019). Twelve tips for conducting qualitative research interviews. *Medical teacher*, 41(9), 1002-1006.
- McGuire, C. (2018). *Transforming Traditional Teaching Practices with 21st Century Skills in K-12 Classrooms*. (Master of Science in Information Media: Technology Integration). St. Cloud State University Culminating Projects in Information Media.
- Mensah, J., & Amponsah-Tawiah, K. (2016). Mitigating occupational stress: The role of psychological capital. *Journal of Workplace Behavioral Health*, 31(4), 189-203.
- Mercer, N., Hennessy, S., & Warwick, P. (2019). Dialogue, thinking together and digital technology in the classroom: Some educational implications of a continuing line of inquiry. *International Journal of Educational Research*, 97, 187-199.

- Merz, J. R. (2017). Addressing Quality Teaching: An Interview with Susan Kuenzel Regarding the National Board for Professional Teaching Standards. *Delta Kappa Gamma Bulletin*, 83(3), 6-11.
- Mestry, R. (2017). Empowering principals to lead and manage public schools effectively in the 21st century. *South African Journal of Education*, 37(1), 1-11.
- Meyer, I., & Gent, P. (2016). The status of ICT in education in South Africa and the way forward. *National Education Collaboration Trust*.
- Mhlanga, D., & Moloji, T. (2020). COVID-19 and the digital transformation of education: What are we learning on 4IR in South Africa?. *Education sciences*, 10(7), 180.
- Mishra, P., & Mehta, R. (2017). What we educators get wrong about 21st-century learning: Results of a survey. *Journal of Digital Learning in Teacher Education*, 33(1), 6-19.
- Mohamad, F., & Ismail, S. N. (2018). The Concept and Model of Strategic Leadership and Its Importance in Increasing School Achievement. *Journal: Journal of Social Science Research*, 12(01).
- Mohammed, P. N. J., & Kadhem, A. I. H. F. Subject Review: Strategic Leadership Style: From the Bottom to The Top. *International Journal of Research in Social Sciences and Humanities*, 10(3), 51-54.
- Monroe, M. C., Adams, A. E., & Greenaway, A. (2019). Considering research paradigms in environmental education. *Environmental Education Research*, 25(3), 309-313
- Moorosi, P., & Grant, C. (2013). Preparing and developing school leaders: the African perspective. *BELMAS Leadership preparation and development report*. Sheffield: BELMAS.
- Mowat, J. G. (2019). ‘Closing the gap’: systems leadership is no leadership at all without a moral compass—a Scottish perspective. *School Leadership & Management*, 39(1), 48-75.
- Moyo, L., & Hadebe, L. B. (2018). The relevance of teacher education as a trajectory in developing and sustaining inclusivity in the digital classroom. *European Journal of Open Education and E-learning Studies*, 3(1), 1-17.
- Mpu, Y., & Adu, E. O. (2021). The challenges of inclusive education and its implementation in schools: The South African perspective. *Perspectives in Education*, 39(2), 225-238.

Msila, V. (2017). Leaving a sinking ship? School principals in flight, Lessons and Possible Solutions. *Africa Education Review*, 14(1), 87-104. Retrieved from <https://doi.org/10.1080/18146627.2016.1224575>

Mthimunye, K. D. T., & Daniels, F. M. (2019). Nurse educators' challenges and corresponding measures to improve the academic performance, success and retention of undergraduate nursing students at a university in the Western Cape, South Africa. *The Independent Journal of Teaching and Learning*, 14(1), 53-67.

Mudaly, R., & Mudaly, V. (2021). Exploring how the national COVID-19 pandemic policy and its application exposed the fault lines of educational inequality. *Journal of Education*, (84), 106-124.

Muhammad, R., Ziarab, M., Aslam, A., & Javed, I. (2021). Contribution Of Leadership Training In Improving Financial Aspects Of Schools Heads In Punjab. *Multicultural Education*, 7(5), 330-339.

Muhindi, C., Ngui, T., & Awuor, E. (2020). Transformational Leadership, Organizational Culture, Organizational Tenure and Performance of Teachers In Public Secondary Schools In North-eastern Kenya *International Journal of Management and Leadership Studies*, 20(3), 101-114.

Mulenga, E. M., & Marbán, J. M. (2020). Prospective teachers' online learning mathematics activities in the age of COVID-19: A cluster analysis approach. *EURASIA Journal of Mathematics, Science and Technology Education*, 16(9), em1872.

Munby, S. (2020). The development of school leadership practices for 21st century schools. *European Journal of Education*, 55(2), 146-150.

Munir, F., & Aboidullah, M. (2018). Gender Differences in Transformational Leadership Behaviors of School Principals and Teachers' Academic Effectiveness. *Bulletin of Education and Research*, 40(1), 99-113.

Musgrave, S., & De Wet, C. (2017). An Evaluative Study of An ICT Module for A School Leadership and Management Preparation Program *Turkish Online Journal of Distance Education*, 18(2), 43-55

Mvenene, J. (2020). The Dynamics and Implications of Leadership In Education: A South African Experience. *American Journal of Humanities and Social Science* 5(2), 1-18.

- Myende, P. E., Samuel, M. A., & Pillay, A. (2018). Novice rural principals' successful leadership practices in financial management: Multiple accountabilities. *South African Journal of Education*, 38(2), 1-11.
- Naidoo, S. (2019). Affecting Job Satisfaction at a private school in Pietermaritzburg, KwaZulu-Natal. *The Independent Journal of Teaching and Learning*, 14(1), 68-85.
- Nappi, J. S. (2017). The importance of questioning in developing critical thinking skills. *Delta Kappa Gamma Bulletin*, 84(1), 30.
- Nasreen, A., & Odhiambo, G. (2018). The Continuous Professional Development of School Principals: Current Practices in Pakistan. *Bulletin of Education and Research*, 40(1), 245-266.
- Nasution, A. R., & Nandiyanto, A. B. D. (2021). Utilization of the google meet and quiziz applications in the assistance and strengthening process of online learning during the COVID-19 pandemic. *Indonesian Journal of Educational Research and Technology*, 1(1), 31-34.
- Navalta, J. W., Stone, W. J., & Lyons, T. S. (2019). Ethical issues relating to scientific discovery in exercise science. *International Journal of Exercise Science*, 12(1), 1.
- Ndamani, P. L. (2016). *Leadership Efficacy of Secondary School Principals in the Free State Province and Its Effect on Their Leadership Practices and the School Climate*. Bloemfontein: Central University of Technology, Free State,
- Ndiritu, A. W., & Mbugua, J. M. (2019). Lessons for School Principals from Transformational Leadership Characteristics. *Journal of Education and Practice*, 10(12), 44-51.
- Ng, S.-w., & Szeto, S.-y. E. (2016). Preparing school leaders: The professional development needs of newly appointed principals. *Educational Management Administration & Leadership*, 44(4), 540-557.
- Nguyen, D. T., & Kieuthi, T. C. (2020). New Trends In Technology Application In Education And Capacities Of Universities Lecturers During The Covid-19 Pandemic. *International Journal of Mechanical and Production Engineering Research and Development (IJMPERD)*, 10, 1709-1714.
- Nguyen, T. T. L. (2019). Selection of research paradigms in English language teaching: Personal reflections and future directions. *KnE Social Sciences*, 3(19), 1–19.

- Nhlapo, V. A. (2020). The leadership role of the principal in fostering sustainable maintenance of school facilities. *South African Journal of Education, 40*(2).
- Niessen, C., Mäder, I., Stride, C., & Jimmieson, N. L. (2017). Thriving when exhausted: The role of perceived transformational leadership. *Journal of Vocational Behavior, 103*(4), 41-51.
- Ninković, S. R., & Knežević Florić, O. Č. (2018). Transformational school leadership and teacher self-efficacy as predictors of perceived collective teacher efficacy. *Educational Management Administration & Leadership, 46*(1), 49-64.
- Njukunye, P., & Waithaka, P. (2020). Strategic leadership and performance of secondary schools in Samburu Central Sub-county. *International Academic Journal of Human Resource and Business Administration, 3*(9), 104-128.
- Noel, L.-A., & Liub, T. L. (2017). Using design thinking to create a new education paradigm for elementary level children for higher student engagement and success. *Design and Technology Education, 22*(1), n1.
- Nouri, J., Zhang, L., Mannila, L., & Norén, E. (2020). Development of computational thinking, digital competence and 21st century skills when learning programming in K-9. *Education Inquiry, 11*(1), 1-17.
- Nyenyembe, F. W., Maslowski, R., Nimrod, B. S., & Peter, L. (2016). Leadership Styles and Teachers' Job Satisfaction in Tanzanian Public Secondary Schools. *Universal Journal of Educational Research, 4*(5), 980-988.
- Nyirenda, L., Kumar, M. B., Theobald, S., Sarker, M., Simwinga, M., Kumwenda, M., . . . Sibanda, E. (2020). Using research networks to generate trustworthy qualitative public health research findings from multiple contexts. *BMC medical research methodology, 20*(1), 1-10.
- Oakley, G., Pegrum, M., Xiong, X. B., Lim, C. P., & Yan, H. (2018). An online Chinese-Australian language and cultural exchange through digital storytelling. *Language, Culture and Curriculum, 31*(2), 128-149.
- Ogbonnaya, U. I., Awoniyi, F. C., & Matabane, M. E. (2020). Move to online learning during COVID-19 lockdown: Pre-service teachers' experiences in Ghana. *International Journal of Learning, Teaching and Educational Research, 19*(10), 286-303.

- Okoth, U. A. (2018). Transformational leadership practices in curriculum implementation (environmental education) in secondary schools in Siaya County, Kenya. *European Scientific Journal, ESJ*, 14(10), 320-331.
- Ongghena, P., Maes, B., & Heyvaert, M. (2019). Mixed methods single case research: State of the art and future directions. *Journal of mixed methods research*, 13(4), 461-480.
- Oribhabor, C. B., & Anyanwu, C. A. (2019). Research Sampling and Sample Size Determination: A practical Application. *Journal of Educational Research (Fudjer)*, 2(1), 47-57.
- Osakwe, J., Dlodlo, N., & Jere, N. (2017). Where learners' and teachers' perceptions on mobile learning meet: A case of Namibian secondary schools in the Khomas region. *Technology in Society*, 49, 16-30. doi:10.1016/j.techsoc.2016.12.004
- O'Sullivan, M. K., & Dallas, K. B. (2010). A collaborative approach to implementing 21st century skills in a high school senior research class. *Education Libraries*, 33(1), 3-9.
- Palaiologou, I., & Male, T. (2017). *Towards an ecological paradigm on formation of partnerships*. London Centre for Leadership in Learning. <https://discovery.ucl.ac.uk/id/eprint/1565145/1/Towards%20an%20ecological%20paradigm%20on%20formation%20of%20partnerships.pdf>.
- Pan, H.-L. W., & Chen, W.-Y. (2021). How principal leadership facilitates teacher learning through teacher leadership: Determining the critical path. *Educational Management Administration & Leadership*, 49(3), 454-470.
- Pardede, P. (2015). *EFL theory and practice: voice of EED UKI*. Paper presented at the Proceeding of EED Collegiate Forum.
- Pather, S., & Booi, E. (2020). *An assessment of student resource readiness for online learning during COVID 19: A South African case study*. Paper presented at the Proceedings of ICERI2020 Conference.
- Patrick, H. O., Abiolu, R. T., & Abiolu, O. A. (2021). Reflections on COVID-19 and the viability of curriculum adjustment and delivery options in the South African educational space. *Transformation in Higher Education*, 6(2), 499-508.

- Qi, P., Yan, C., Zang, C., Xu, J., Huang, X., Dai, X., ... & Zhao, T. (2020). Analysis of Factors Influencing the Resistance of a Type of Air Filter Paper Based on SPSS. In *IOP Conference Series: Materials Science and Engineering* (Vol. 711, No. 1, p. 012060). IOP Publishing.
- Petko, D., Cantieni, A., & Prasse, D. (2017). Perceived Quality of Educational Technology Matters: A Secondary Analysis of Students' ICT Use, ICT-Related Attitudes, and PISA 2012 Test Scores. *Journal of Educational Computing Research*, 54(8), 1070-1091.
- Phothongsunan, S. (2019). Revisiting the Dichotomy of Educational Research Paradigms: English Language Teaching Underpinning. *Journal of MCU Peace Studies*, 7(1), 254-265.
- Pillay, I. (2021). The impact of inequality and COVID-19 on education and career planning for South African children of rural and low-socioeconomic backgrounds. *African Journal of Career Development*, 3(1), 1-7.
- Pramanik, S., Johnson, V. E., & Bhattacharya, A. (2021). A modified sequential probability ratio test. *Journal of Mathematical Psychology*, 101, 102505.
- Prasetia, I., Melfayetty, S., & Dewi, R. (2020). The Effect of Transformational Leadership and Academic Optimism Culture on Teacher Empowerment and Motivation Along Its Impact on The Effectiveness of Medan State Junior High School. *INTERNATIONAL JOURNAL ON LANGUAGE, RESEARCH AND EDUCATION STUDIES*, 4(2), 276-290.
- Prestridge, S. (2012). The beliefs behind the teacher that influences their ICT practices. *Computers & Education*, 58(1), 449-458.
- Pretorius, D. M. (2019). Private Schools In South African Legal History. *Fundmina*, 25(2), 94-131.
- Qi, P., Yan, C., Zang, C., Xu, J., Huang, X., Dai, X., Jin, Y., & Zhao, T. (2020). *Analysis of Factors Influencing the Resistance of a Type of Air Filter Paper Based on SPSS*. Paper presented at the IOP Conference Series: Materials Science and Engineering.
- Quin, J., Deris, A., Bischoff, G., & Johnson, J. T. (2015). Comparison of transformational leadership practices: Implications for school districts and principal preparation programs. *Journal of Leadership Education*, 14(3).
- Rafique, G. M., Mahmood, K., Warraich, N. F., & Rehman, S. U. (2021). Readiness for Online Learning during COVID-19 pandemic: A survey of Pakistani LIS students. *The Journal of Academic Librarianship*, 47(3), 1023346-1102346.

- Rahman, M. R. A., Nor, M. Y. M., Wahab, J. L. A., & Suliman, A. (2020). The Relationship between Educational Transformational Leadership and Teacher Quality at Secondary School: Total Quality Management as Mediator. *Universal Journal of Educational Research*, 8(12), 6369-6377.
- Rajagopal, N. K., Barathi, S., Parimoo, D., Narayanan, S., & Salimath, M. (2021). Relationship between Training Needs and Strategic Leadership. *LINGUISTICA ANTVERPIENSIA*, 15(2), 1438-1447.
- Ramli, M. F., Majid, M., & Badyalina, B. (2020). Impeding Factors Towards the Effectiveness of Online Learning During Covid-19 Pandemic among Social Sciences Students. *International Journal of Learning and Development*, 10(4), 37-49.
- Ramrathan, L. (2020). School curriculum in South Africa in the Covid-19 context: An opportunity for education for relevance. *Prospects*, 1-10.
- Reimers, F. M. (2022). *Primary and secondary education during COVID-19: Disruptions to educational opportunity during a pandemic* (p. 475). Springer Nature.
- Richards, K. A. R., Killian, C. M., Graber, K. C., & Kern, B. D. (2019). Studying recruitment and retention in PETE: Qualitative and quantitative research methods. *Journal of Teaching in Physical Education*, 38(1), 22-36.
- Ridder, H.-G. (2017). The theory contribution of case study research designs. *Business Research*, 10(2), 281-305.
- Roberts, K., Dowell, A., & Nie, J.-B. (2019). Attempting rigour and replicability in thematic analysis of qualitative research data; a case study of codebook development. *BMC medical research methodology*, 19(1), 1-8.
- Romanowski, M. H., Sadiq, H., Abu-Tineh, A. M., Ndoeye, A., & Aql, M. (2018). The skills and knowledge needed for principals in Qatar's independent schools: policy makers', principals' and teachers' perspectives. *International Journal of Leadership in Education*, 48(5), 893-915.
- Ryan, G. (2018). Introduction to positivism, interpretivism and critical theory. *Nurse researcher*, 25(4), 41-49.
- Sabwami, K. M., Areba, G. N., & Abenga, E. (2020). Effect of Principals' Practices of Transformational Leadership on Management of School Financial Resources in Public

Secondary Schools of Trans-Nzoia County, Kenya. *International Journal of Education and Research*, 8(7), 145-160.

Saido, G. M., Siraj, S., Nordin, A. B. B., & Al_Amedy, O. S. (2018). Higher order thinking skills among secondary school students in science learning. *MOJES: Malaysian Online Journal of Educational Sciences*, 3(3), 13-20.

Sarmi, R. S. (2019). *Learning media analysis in the development of integrated science teacher book with theme the energy in the life using type integrated of 21st century learning*. Paper presented at the Journal of Physics: Conference Series.

Sayed, S., & Edgar, D. (2019). The role of leadership competencies in supporting the Al Nahda University for becoming a learning organization: a new qualitative framework of the DLOQ. *International Journal of Business Administration*, 10(2), 43-62.

Scherer, R., Tondeur, J., Siddiq, F., & Baran, E. (2018). The importance of attitudes toward technology for pre-service teachers' technological, pedagogical, and content knowledge: Comparing structural equation modeling approaches. *Computers in human behavior*, 80, 67-80.

Schneider, S. L., & Council, M. L. (2020). Distance learning in the era of COVID-19. *Archives of Dermatological Research*, 313, 389–390.

Sebastian, J., Huang, H., & Allensworth, E. (2017). Examining integrated leadership systems in high schools: Connecting principal and teacher leadership to organizational processes and student outcomes. *School Effectiveness and School Improvement*, 28(3), 463-488.

Senge, P., Hamilton, H., & Kania, J. (2015). The dawn of system leadership. *Stanford Social Innovation Review*, 13(1), 27-33.

Sepuru, M. G., & Mohlakwana, M. A. (2020). The perspectives of beginner principals on their new roles in school leadership and management: A South African case study. *South African Journal of Education*, 40(2), 1-11.

Shaked, H., & Schechter, C. (2017). Systems thinking among school middle leaders. *Educational Management Administration & Leadership*, 45(4), 699-718.

Shaked, H., & Schechter, C. (2020). Systems thinking leadership: New explorations for school improvement. *Management in education*, 34(3), 107-114.

- Shanmugam, K., & Balakrishnan, B. (2019). Motivation in Information Communication and Technology-based science learning in Tamil schools. *Jurnal Pendidikan IPA Indonesia*, 8(1), 141-152.
- Shapira-Lishchinsky, O., & Ben-Amram, M. (2018). Exploring the social ecological model based on national student achievements: extracting educational leaders' role. *International Journal of Leadership in Education*, 21(3), 380-398.
- Shava, G., & Heystek, J. (2021). Managing teaching and learning: integrating instructional and transformational leadership in South African schools context. *International journal of educational management*, 35 (5), 1048-1062.
- Shava, G. N. (2021). Principal leadership and school performance: Integrating instructional and transformational leadership in South African schools context. *International Journal of Education and Learning*, 3(1), 1-12.
- Shidiq, A. S., & Yamtinah, S. (2019). Pre-service chemistry teachers' attitudes and attributes toward the twenty-first century skills. *Journal of Physics: Conference Series*, 1157(4), 1-8.
- Siddiq, F., Gochyyev, P., & Wilson, M. (2017). Learning in Digital Networks–ICT literacy: A novel assessment of students' 21st century skills. *Computers & Education*, 109, 11-37.
- Sim, J., & Waterfield, J. (2019). Focus group methodology: some ethical challenges. *Quality & Quantity*, 53(6), 3003-3022.
- Simkins, T., Coldron, J., Crawford, M., & Maxwell, B. (2019). Emerging schooling landscapes in England: How primary system leaders are responding to new school groupings. *Educational Management Administration & Leadership*, 47(3), 331-348.
- Singphen, T., Poopayang, P., Siphai, S., & Charoensuk, P. (2019). Strategic leadership factors of school administrators influencing the effectiveness of small-sized schools. *International Journal of Educational Administration and Policy Studies*, 11(3), 20-28.
- Smit, B. (2017). A narrative inquiry into rural school leadership in South Africa. *Qualitative Research in Education*, 6(1), 1-21.
- So, S. (2016). Mobile instant messaging support for teaching and learning in higher education. *The Internet and Higher Education*, 31, 32-42.

- Sofo, F., & Abonyi, U. K. (2018). Investigating the self-reported professional development activities of school leaders in Ghanaian rural basic schools. *Professional Development in Education, 44*(4), 521-538. Retrieved from <https://doi.org/10.1080/19415257.2017.1359795>
- Song, P., & Shen, S. (2019). *A Comparative Analysis on Positivism and Critical Realism in Accounting Research*. Paper presented at the 4th International Conference on Social Sciences and Economic Development (ICSSSED 2019 School of Water Conservancy and Environment. South Africa. Department of, E. (2004). *White paper on e-education : transforming learning and teaching through information and communication technologies (ICTs)*. Pretoria: Government Printer.
- Sovacool, B. K., Axsen, J., & Sorrell, S. (2018). Promoting novelty, rigor, and style in energy social science: towards codes of practice for appropriate methods and research design. *Energy Research & Social Science, 45*, 12-42.
- Spaull, N., & Van der Berg, S. (2020). 'Counting the cost: COVID-19 school closures in South Africa and its impact on children'. *South African Journal of Childhood Education, 10*(1), 1-13.
- Starks, D. M. (2018). *A study of the relationships among the transformational leadership practices of the Michigan high school principal, school culture, and student achievement*. (PhD). Eastern Michigan University, Ypsilanti, Michigan.
- Starr, L., M. PhD. (2021). *Learning Leadership is a Complex System Problem*. (PhD). Thomas Jefferson University, <https://jdc.jefferson.edu/jscpsfp/8>.
- Staunton, H., Willgoss, T., Nelsen, L., Burbridge, C., Sully, K., Rofail, D., & Arbuckle, R. (2019). An overview of using qualitative techniques to explore and define estimates of clinically important change on clinical outcome assessments. *Journal of patient-reported outcomes, 3*(1), 1-10.
- Subekti, A. S. (2021). Covid-19-triggered online learning implementation: Pre-service English teachers' beliefs. *Metathesis: Journal of English Language, Literature, and Teaching, 4*(3), 232-248.
- Sun, R., & Henderson, A. C. (2017). Transformational leadership and organizational processes: Influencing public performance. *Public Administration Review, 77*(4), 554-565.
- Tan, J., Koh, E., Chan, M., Costes-Onishi, P., & Hung, D. (2017). Advancing 21st Century Competencies in Singapore. Asia Society. *Centre for Global Education, 32*(1), 1-33.

- Tan, L. T., Goh, B. P. L., & Ramanathan, S. (2017). Engaging secondary school students in authentic research projects based on environmental science theme. *Research Brief Series* (NIE Research Brief Series No. 17-016), Singapore: National Institute of Education.
- Tang, Y., & Hew, K. F. (2017). Is mobile instant messaging (MIM) useful in education? Examining its technological, pedagogical, and social affordances. *Educational Research Review, 21*, 85-104.
- Thomas, L., Tuytens, M., Devos, G., Kelchtermans, G., & Vanderlinde, R. (2020). Transformational school leadership as a key factor for teachers' job attitudes during their first year in the profession. *Educational Management Administration & Leadership, 48*(1), 106-132.
- Tilley, S. (2019). The role of critical qualitative research in educational contexts: A Canadian perspective. *Educar em Revista, 35*, 155-180.
- Timms, M. J., Moyle, K., Weldon, P. R., & Mitchell, P. (2018). Challenges in STEM learning in Australian schools. *Policy Insights, Camberwell, VIC: ACER, 7*.
- Tingle, E., Corrales, A., & Peters, M. L. (2019). Leadership development programs: Investing in school principals. *Educational Studies, 45*(1), 1-16.
- Toh, Y., Jamaludin, A., Hung, W. L. D., & Chua, P. M. H. (2014). Ecological leadership: Going beyond system leadership for diffusing school-based innovations in the crucible of change for 21st century learning. *The Asia-Pacific Education Researcher, 23*(4), 835-850.
- Tondeur, J., Aesaert, K., Pynoo, B., van Braak, J., Fraeyman, N., & Erstad, O. (2017). Developing a validated instrument to measure preservice teachers' ICT competencies: Meeting the demands of the 21st century. *British Journal of Educational Technology, 48*(2), 462-472.
- Tondeur, J., Van Braak, J., Ertmer, P. A., & Ottenbreit-Leftwich, A. (2017). Understanding the relationship between teachers' pedagogical beliefs and technology use in education: a systematic review of qualitative evidence. *Educational technology research and development, 65*(3), 555-575.
- Tong, W., & Razniak, A. (2017). Building professional capital within a 21st century learning framework. *Journal of Professional Capital and Community, 2*(1), 36-49.
- Torres Martín, C., Acal, C., El Honrani, M., & Mingorance Estrada, Á. C. (2021). Impact on the virtual learning environment due to COVID-19. *Sustainability, 13*(2), 582-598.

- Trach, J., Lee, M., & Hymel, S. (2018). A social-ecological approach to addressing emotional and behavioral problems in schools: Focusing on group processes and social dynamics. *Journal of Emotional and Behavioral Disorders*, 26(1), 11-20.
- Truitt, J. H., Plante, J. D., Cox, T. D., & Robinson, S. L. (2017). Strategic leadership: Developing 21st century citizens who invest their time, talent, and treasure in the service of others. In *Encyclopedia of strategic leadership and management* (pp. 1637-1654): IGI Global.
- Truong, T. D., Hallinger, P., & Sanga, K. (2017). Confucian values and school leadership in Vietnam: Exploring the influence of culture on principal decision making. *Educational Management Administration & Leadership*, 45(1), 77-100.
- Tuytens, M., Moolenaar, N., Daly, A., & Devos, G. (2019). Teachers' informal feedback seeking towards the school leadership team. A social network analysis in secondary schools. *Research Papers in Education*, 34(4), 405-424.
- Turhan, N. S. (2020). Karl Pearson's chi square tests. *Educational Research and Reviews*, 15(9), 575-580.
- Twomey, S. J., Lambrev, V., Leong, K., Watanabe, J., Baxa, G.-V., Noh, E., & Hampton, C. (2017). The EdD Consultancy Project: Social Justice Leadership Practice. *Educational Perspectives*, 49(1), 19-26.
- Ubogu, R. (2018). Original paper analysis of leadership styles on school administration in public secondary schools in Delta Cental Senatorial Districts, Delta State, Nigerial. *World Journal of Educational Research*, 5(1), 77-97.
- Ucar, R., & Dalgic, S. (2021). Relationship between School Principals' Strategic Leadership Characteristics and School Teachers' Organizational Commitment Levels. *Eurasian Journal of Educational Research*, 91, 105-126.
- Usman, N., Murniati, A., Marlina, L., & Irani, U. (2020). The Principal Strategic Leadership on Teachers' Professional Development at Junior High Schools in Banda Aceh. *Journal of Critical Reviews*, 7(13), 831-835.
- Vaismoradi, M., Jones, J., Turunen, H., & Snelgrove, S. (2016). Theme development in qualitative content analysis and thematic analysis. *Journal of Nursing Education and Practice*, 6(5), 100-110.

- Van den Beemt, A., & Diepstraten, I. (2016). Teacher perspectives on ICT: A learning ecology approach. *Computers & Education*, *92*, 161-170.
- Van Laar, E., Van Deursen, A. J., Van Dijk, J. A., & De Haan, J. (2017). The relation between 21st-century skills and digital skills: A systematic literature review. *Computers in human behavior*, *72*, 577-588.
- van Niekerk, M. (2017). Value-based leadership approach: A way for principals to revive the value of values in schools. . *Educational Research and Reviews*, *12*(3), 133-142.
- Varela, D. G., & Fedynich, L. (2020). *Leading schools from a social distance: Surveying south texas school district leadership during the COVID-19 pandemic*. Paper presented at the National Forum of Educational Administration and Supervision Journal.
- Varghese, M. M., Vate-U-Lan, P., & John, V. K. (2019). Students' Perception Of Technology Factors And Its Impact On BYOD-Based Learning In Private Secondary Schools In Dubai, UAE. *Social Science Asia*, *5*(1), 35-46.
- Veelen, R. v., Slegers, P. J., & Endedijk, M. D. (2017). Professional learning among school leaders in secondary education: The impact of personal and work context factors. *Educational administration quarterly*, *53*(3), 365-408.
- Veeriah, J., Piaw, C. Y., Li, S. Y., & Hoque, K. E. (2017). Teachers 'perception on the Relationships Between Transformational Leadership And School Culture In Primary Cluster Schools. *MOJEM: Malaysian Online Journal of Educational Management*, *5*(4), 18-34.
- Volmink, J., & van der Elst, L. (2017). The evolving role of 21st century education NGOs in South Africa: Challenges and opportunities. *Centurion, South Africa: National Education Collaboration Trust*, 1-8.
- Walker, A. R. (2017). Multiple Perspectives on Principal Leadership Effectiveness, by Beycioglu, K., & Pashiardis, P. *Leadership and Policy in Schools*, *16*(4), 629-633.
- Wang, T. (2017). Overcoming barriers to 'flip': building teacher's capacity for the adoption of flipped classroom in Hong Kong secondary schools. *Research and practice in technology enhanced learning*, *12*(1), 6. doi:10.1186/s41039-017-0047-7
- Wang, Y., Lavonen, J., & Tirri, K. (2018). Aims for learning 21st century competencies in national primary science curricula in China and Finland. *Eurasia journal of mathematics science and technology education*, *14*(6), 2081–2095.

- Webb, M., Davis, N., Bell, T., Katz, Y. J., Reynolds, N., Chambers, D. P., & Sysło, M. M. (2017). Computer science in K-12 school curricula of the 21st century: Why, what and when?. *Education and Information Technologies*, 22(2), 445-468.
- Weinstein, J., Azar, A., & Flessa, J. (2018). An ineffective preparation? The scarce effect in primary school principals' practices of school leadership preparation and training in seven countries in Latin America. *Educational Management Administration & Leadership*, 46(2), 226-257.
- Wenner, J. A., & Campbell, T. (2017). The theoretical and empirical basis of teacher leadership: A review of the literature. *Review of educational research*, 87(1), 134-171.
- Williams, C. J. (2015). An investigation of K-12 teachers' attitudes toward computer technology use in schools. *Journal of Business & Economic Policy*, 2(1), 71-87.
- Xu, P., & Yue, X. (2019). Talent leadership strategies enhance teacher's professional competencies in 21st century education for sustainable development. *IOP Conference Series: Earth and Environmental Science*, 373(1), 1-11.
- Yates, A., Starkey, L., Egerton, B., & Flueggen, F. (2021). High school students' experience of online learning during Covid-19: the influence of technology and pedagogy. *Technology, Pedagogy and Education*, 30(1), 59-73.
- Ylä-Anttila, T., Gronow, A., Stoddart, M. C., Broadbent, J., Schneider, V., & Tindall, D. B. (2018). Climate change policy networks: Why and how to compare them across countries. *Energy Research & Social Science*, 45, 258-265.
- Zakaria, I. B., Mohd Nor, M. Y. B., Alias, B. S. B., & Hamid, A. H. A. (2021). The Influence of Principals' Strategic Leadership on Students' Outcome. *International Journal of Academic Research in Business and Social Sciences*, 11(2), 407-417.
- Zappa-Hollman, S., & Duff, P. A. (2019). Qualitative Approaches to Classroom Research on English-Medium Instruction. *Second Handbook of English Language Teaching*, 1029-1051.
- Želvys, R., Dukynaitė, R., Vaitekaitis, J., & Jakaitienė, A. (2019). School leadership and educational effectiveness: Lithuanian case in comparative perspective. *Management: Journal of Contemporary Management Issues*, 24(Special Issue), 17-36.

Zengin, M., & Akan, D. (2019). The Correlation Between Transformational Leadership Characteristics of School Administrators and School Safety. *Journal of Education and Training Studies*, 7(11), 121-127.

Zheng, B., Yim, S., & Warschauer, M. (2018). Social media in the writing classroom and beyond. *The TESOL encyclopedia of English language teaching*, 1-5.

Zongozzi, J. N. (2021). A concept analysis of theory in South African Open Distance and E-Learning research. *Open Learning: The Journal of Open, Distance and e-Learning*, 36(2), 149-163.

Zulirfan, Z., Yennita, Y., & Rahmad, M. (2020). *STEM at home: provide scientific activities for students during the Covid-19 pandemic*. Paper presented at the Journal of Physics: Conference Series.

APPENDIX A: GATEKEEPER EMAIL TO PRINCIPALS REQUESTING PERMISSION TO CONDUCT RESEARCH

Attention: The School Principal

Dear Principal

My name is Mr. D.E M Naidoo and I am a PhD student at the Graduate School of Business and Leadership at the University of KwaZulu-Natal. The topic of my research is: **The development of a leadership model for the interpretation and enactment of 21st Century Learning: A case of private secondary schools in KwaZulu-Natal.** A brief summary of my research follows but a detailed description can be found in the second attachment.

- I have identified fifty-five private secondary schools in KwaZulu-Natal and have invited all of them, including your school, to participate in my research.
- My research has undergone ethical clearance by the Research Office at UKZN. Confidentiality and anonymity will strictly be maintained.
- Phase one of my research involves the completion of an online questionnaire which is only filled in by the principal, deputy principals and subject heads.
- The online questionnaire **does not require any personal details of participants and is anonymous.** It will take less than thirty minutes to complete.
- Phase two of my research involves me selecting a smaller sample of the fifty-five private secondary schools to conduct short interviews with the principal, one deputy principal, and one focus group consisting of a few subject heads.
- I will select the sample of schools based on the information provided in the questionnaires. The research will be done in August and September of the third term.
- I will not disrupt any activities of the school during my research any I will only work at the convenience of yourself and your staff.
- When I do write my thesis, **I will not mention the names of schools or individuals, but I will use pseudonyms instead.** I am obligated by the ethical clearance from UKZN to present my research to you for verification and review before submission to the university.
- All raw data will **only** be used for this research and be destroyed thereafter.
- My research can potentially assist schools in the future. Please allow me to conduct research at your institution **by completing the letter of consent in attachment one and emailing it me (mnaidoo@crawfordschools.co.za).**

**APPENDIX B – COMPLETE RESEARCH DETAILS FOR
PRINCIPAL/GATEKEEPER**

UNIVERSITY OF KWAZULU-NATAL

GRADUATE SCHOOL OF BUSINESS AND LEADERSHIP

Informed Consent Letter to the School Principal

215 Epsom Downs

44 Ronald Road

Montclair

4004

Date: 13-04-2018

Dear Principal

INFORMED CONSENT LETTER

My name is Dean Edmund Michael Naidoo. I am a student studying at the Graduate School of Business and Leadership, of the University of KwaZulu-Natal (Westville Campus). I have identified your school as one of the potential research sites for the research that I am doing. I therefore kindly seek your permission for your school to be part of my research project. You are invited to participate in my research which is entitled: **The development of a leadership model for the interpretation and enactment of 21st Century Learning (21 CL): A case of South African private secondary schools in KwaZulu-Natal.** The objectives of the study are to:

- To determine how ICT is utilised to facilitate 21 CL in private secondary schools in the province of KwaZulu-Natal.
- To assess how 21 CL is interpreted and enacted in private secondary schools in KwaZulu-Natal.

- To determine the roles of school leadership in the interpretation and enactment of 21 CL in private secondary schools in KwaZulu-Natal.
- To develop a model for leadership in private secondary schools in KwaZulu-Natal to effectively interpret and enact 21 CL.

Phase one of my research involves the principal (yourself), deputy principal and subject heads/heads of departments at your school completing an online questionnaire. Based on the information provided in the questionnaire ten schools will be purposively and conveniently selected for phase two of my research. Phase two of my research involves me interviewing the principal (yourself), one deputy principal and one small group of subject heads/heads of departments.

Please note that:

- Anonymity/confidentiality will be maintained by not revealing the names of those sent questionnaires or interviewed or that of the companies they form part of. Pseudonyms for both the research sites and the participants will be used.
- The interview may last for about 1 hour and may be split depending on individual preferences.
- Any information given by individual participants cannot be used against them, and the collected data will be used for purposes of this research only.
- Data will be stored in secure storage and destroyed after 5 years.
- Individuals have a choice to participate, not participate or stop participating in the research. They will not be penalised for taking such an action.
- The research aims at developing a leadership model for the interpretation and enactment of 21st Century Education in private secondary schools in KwaZulu-Natal.
- Involvement is purely for academic purposes only, and there are no financial benefits involved.
- All participants willing to be interviewed, will be asked whether they are willing to allow the interview to be recorded using audio equipment.

I Dean Edmund Michael Naidoo can be contacted at:

Email: mnaidoo@crawfordschools.co.za

Cell: 0823167680

The names of my supervisors are: Dr. Cecile Gerwel Proches – gerwel@ukzn.ac.za (031 2608318);
Dr. Angela James – jamesal@ukzn.ac.za (031 2603438).

For additional information, you may also contact the UKZN Research Office through:
Ms P Ximba (0312603587).

Please can you complete the letter of consent according to the template in the other attachment, stamp it with the school stamp and email it to me (mnaidoo@crawfordschools.co.za). Thank you for your contribution to this research.

**APPENDIX C – CONSENT LETTER EMAILED TO SCHOOL PRINCIPALS AS AN
ATTACHMENT TO THE GATEKEEPER EMAIL**

Please can you complete the letter of consent according to the template below, stamp it with the school stamp and email it to me (mnaidoo@crawfordschools.co.za).

Thank you for your contribution to this research.

(***) Please note that this letter must be returned on the company letterhead(***)

Dr Cecile Gerwel Proches & Dr Angela James
University Of KwaZulu-Natal
Westville Campus
Durban
3630

[Date]

Dear Dr Cecile Gerwel Proches and Dr Angela James

RE: PERMISSION TO CONDUCT RESEARCH

This letter serves to confirm that I, [principal], [position in and name of School] hereby acknowledge and approve the research of Mr. D. E. M Naidoo (Registration number: 9402281) within the School for the completion of his PhD studies.

Sincerely,

[Your signature]

[Your name]

[Your position]

[Your details]

APPENDIX D: CONSENT LETTER TO RESEARCH PARTICIPANT

UNIVERSITY OF KWAZULU-NATAL

GRADUATE SCHOOL OF BUSINESS AND LEADERSHIP

Informed Consent Letter to the Research Participant

215 Epsom Downs
44 Ronald Road
Montclair
4004
Date:

Participant: _____
School: _____
Address: _____

Dear Participant

INFORMED CONSENT LETTER

My name is Dean Edmund Michael Naidoo. I am a student studying at the Graduate School of Business and Leadership, of the University of KwaZulu-Natal (Westville Campus). I have identified you as one of my potential research participants for the research that I am doing. I therefore kindly seek your permission to be part of my research project. You are invited to participate in my research which is entitled: **The development of a leadership model for the interpretation and enactment of 21st Century Learning: A case of South African private secondary schools in KwaZulu-Natal.** The objectives of the study are to:

- To determine how ICT is utilised to facilitate 21 CL in private secondary schools in the province of KwaZulu-Natal.
- To assess how 21 CL is interpreted and enacted in private secondary schools in KwaZulu-Natal.
- To determine the roles of school leadership in the interpretation and enactment of 21 CL in private secondary schools in KwaZulu-Natal.
- To develop a model for leadership in private secondary schools in KwaZulu-Natal to effectively interpret and enact 21 CL.

Phase one of my research involves the principal, deputy principal and subject heads/heads of departments at your school completing an online questionnaire. Based on the information provided in the questionnaire a smaller sample of schools will be purposively selected for phase two of my research. Phase two of my research involves me interviewing the principal, one deputy principal, the Information and Communication Technology subject head and one small group of subject heads/heads of departments.

Please note that:

- Anonymity / confidentiality will be maintained by not revealing the names of those sent questionnaires or interviewed or that of the companies they form part of. Pseudonyms for both the research sites and the participants will be used.
- The interview may last between thirty to sixty minutes and may be split depending on individual preferences.
- Any information given by individual participants cannot be used against them, and the collected data will be used for purposes of this research only.
- Data will be stored in secure storage and destroyed after 5 years.
- Individuals have a choice to participate, not participate or stop participating in the research. They will not be penalised for taking such an action.
- The research aims at developing a leadership model for the interpretation and enactment of 21st Century Learning in private secondary schools in KwaZulu-Natal.
- Involvement is purely for academic purposes only, and there are no financial benefits involved.

- All participants willing to be interviewed, will be asked whether they are willing to allow the interview to be recorded using audio equipment.

I Dean Edmund Michael Naidoo can be contacted at:

Email: mnaidoo@crawfordschools.co.za

Cell: 0823167680

The names of my supervisors are: Dr. Cecile Gerwel Proches – gerwel@ukzn.ac.za (O31 2608318);

Dr. Angela James – jamesal@ukzn.ac.za (031 2603438).

For additional information, you may also contact the UKZN Research Office through:

Ms P Ximba (0312603587)

Thank you for your contribution to this research.

DECLARATION OF CONSENT

I..... (Name and surname of participant) hereby confirm that I understand the contents of this document and the nature of the research project, and I consent to participating in the research project.

In addition, I consent /do not consent to the interview being voice-recorded.

I understand that I am at liberty to withdraw from the project at any time, should I so desire.

SIGNATURE OF PARTICIPANT

DATE

.....

.....

APPENDIX E – QUESTIONNAIRE

UNIVERSITY OF KWAZULU-NATAL GRADUATE SCHOOL OF BUSINESS AND LEADERSHIP

Researcher: Mr: D.E.M Naidoo - PhD Student (0823167680)

Supervisors: Dr Cecile Gerwel Proches (031 2608318);

Dr Angela James (031 2603438)

Research Office: Ms P Ximba (0312603587)

Title of Research Study

The development of a leadership model for the interpretation and enactment of 21st Century Learning: A case of South African private secondary Schools in KwaZulu-Natal.

Introduction

My name is Mr. D.E.M Naidoo and I am a PHD student at the University of KwaZulu-Natal. Existing literature seems to suggest that effective leadership is a crucial component in the interpretation and enactment of 21st Century Learning (21 CL) in schools. The principles of 21 CL focuses on developing learners' social and emotional proficiency; civic literacy, global awareness and cross cultural skills; critical and innovative thinking; communication, collaboration and information skills (Toh *et al.*, 2014). 21 CL is also cross disciplinary in nature. In the context of this study 21 CL will refer to the interpretation and enactment of frameworks or curriculums that focus on the above 21st century competencies as well as newly developed subject specific curriculums which are more relevant to the context of the 21st century. In this study 21 CL will also refer to the teaching methods, assessment strategies and resources involved in the interpretation and enactment of these new frameworks or curriculums. This questionnaire forms part of a research study which is designed to explore the role of school leadership in the interpretation and enactment of 21 CL in private secondary schools in the province of KwaZulu-Natal.

The information from this questionnaire will be kept strictly confidential and the anonymity of all participants and schools stringently maintained. The information will only be used for the purpose of descriptive and inferential statistical analysis.

The information from this questionnaire has the potential to develop school leadership and facilitate the adoption of 21 CL by other South African schools in the future.

Thank you for answering this questionnaire and contributing to this research study. It will take approximately 30 minutes to complete. Please click on to link below to complete the online questionnaire. (THE ABOVE PORTION OF THIS DOCUMENT FORMED THE INTRODUCTION AND INSTRUCTIONS IN THE EMAIL THAT WAS SENT TO PARTICIPANTS. THE QUESTIONS BELOW WERE PRESENTED IN AN ONLINE GOOGLE FORM.)

Biographical Information of the Participant

1. Which age group do you belong to?

20 – 25 years	26 – 30 years	31 – 35 years	36 – 40 years
41 – 45 years	46 – 50 years	51 -55 years	56 years or older

2. Which gender are you?

Male	Female
------	--------

3. What is your current teaching position? More than one option may be chosen.

Teacher	Subject Head	Deputy Principal	Principal
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4. In which of the following subject departments do you teach in?

English	Physical Science	Mathematics	Business Studies	Drama
Afrikaans	Life Science	Engineering Graphics and Design	Music/Dance	Geography
IsiZulu	Information Technology	Accounting	Art	History

Other or None? Please specify:

5. How many total years of experience do you have in secondary school education throughout your entire career?

0 – 5 years	6 – 10 years	11 – 15 years	16 – 20 years
21 – 25 years	26 – 30 years	31 – 35 years	36 years or more

6. What is your highest tertiary qualification?

Diploma	Degree	Honours degree
Master's Degree	PhD/Doctorate	

Objective 1: To determine the experiences (understanding and practice) of school leaders about the use of technology at their respective schools.

1.1 Does your school have an official Information and Communication Technology (ICT) programme?

YES	NO	NOT SURE
-----	----	----------

1.2 If so, does your school have an ICT team to manage the programme?

YES	NO	N/A
-----	----	-----

1.3 Do you actively and regularly use different forms of technology in your classroom teaching/administration?

YES	NO
-----	----

1.4 If so, is this for administration purposes or classroom teaching or both.

ADMINISTRATION	CLASSROOM TEACHING	BOTH
----------------	-----------------------	------

1.5 Please indicate which forms of technology, if any, that you utilise in your teaching/administration.

DIGITAL PROJECTORS	LAPTOPS	NOTEPADS	IPADS/ TABLETS	CELL- PHONES	CHROME BOOKS	WIFI
--------------------	---------	----------	-------------------	-----------------	-----------------	------

Other? Please specify:

1.6 Please indicate which of the following applications/platforms, if any, that you use in your teaching/administration.

INTERNET	e-BOOKS	IDOCEO	GOOGLE CLASSROOM	GOOGLE DOCS	GOOGLE FORMS
GOOGLE DRIVE	WORD	EXCEL	POWERPOINT	ONE DRIV	

Other? Please specify.

1.7 Please indicate which forms of technology, if any, that the students at your school utilise in the classroom.

LAPTOPS	NOTEPADS	IPADS/ TABLETS	CELLPHONES	CHROME BOOKS	WIFI
---------	----------	-------------------	------------	-----------------	------

Other? Please specify:

1.8 Please indicate which applications/platforms, if any, that the students at your school utilise in the classroom or to complete their homework.

INTERNET	e-BOOKS	GOOGLE FORMS	GOOGLE CLASSROOM	GOOGLE DOCS
GOOGLE DRIVE	WORD	EXCEL	POWERPOINT	ONE DRIVE

Other? Please specify:

1.9 Do you require students at your school to complete online assessments/exercises?

YES	NO
-----	----

1.10 In your opinion, what approximate percentage of teachers on your staff actively and regularly use technology in their teaching practice.?

< 20	20	40	60	80	100	UNSURE
------	----	----	----	----	-----	--------

1.11 Have you attended any courses, seminars or programmes which focused on the incorporation of technology in schools?

YES	NO
-----	----

1.12 If so, have these courses been organised by your school or have they been externally coordinated?

INTERNAL	EXTERNAL
----------	----------

1.13 Are these courses consistently offered in the form of structured programmes or are they randomly arranged?

CONSISTENT AND STRUCTURED	RANDOM	N/A
---------------------------	--------	-----

1.14 How would you rate the courses according to the following categories?

POOR	ADEQUATE	GOOD	EXCELLENT	N/A
------	----------	------	-----------	-----

1.15 If you have answered YES to question 1.12 what should be maintained about the courses and what should be improved?

Objective 2: To determine the experiences (understanding and practice) of school leaders about the interpretation and enactment of 21st Century Learning in their respective schools.

2.1 How would you rate your knowledge/experience of 21st Century Learning according to the following categories?

UNSURE	POOR	FAIR	GOOD	EXCELLENT
--------	------	------	------	-----------

2.2 Does your school have an official cross curricular programme? Cross curricular programmes allow learners to study topics across disciplines/subjects.

UNSURE	YES	NO
--------	-----	----

2.3 If so, does your school have a cross curricular team to manage the programme?

YES	NO	N/A
-----	----	-----

2.4 Does your school have an official thinking schools programme? Thinking school programmes are affiliated with the Thinking Schools South Africa agency.

UNSURE	YES	NO
--------	-----	----

2.5 If so, does your school have a thinking schools team to manage the programme?

YES	NO	N/A
-----	----	-----

2.6 Does your school have an official research skills programme? Research skills programmes specifically teach learners how to undertake research.

UNSURE	YES	NO
--------	-----	----

2.7 If so, does your school have a research skills team to manage the programme?

YES	NO	N/A
-----	----	-----

2.8 Does your school have an official 21st Century Learning programme? 21st Century Learning programmes specifically teach learners about 21st century competencies.

UNSURE	YES	NO
--------	-----	----

2.9 If so, does your school have a 21st Century Learning team to manage the programme?

YES	NO	N/A
-----	----	-----

2.10 Are any of the assessments/exercises at your school or in your subject based on inquiry-based learning strategies? Inquiry-based learning is learner centred, involves research and occurs in a community of learning.

UNSURE	YES	NO
--------	-----	----

2.11 Are any of the assessments/exercises at your school cross curricular in nature?

UNSURE	YES	NO
--------	-----	----

2.12 Do you, or to your knowledge to the teachers at your school formally incorporate 21st Century Learning competencies in their teaching? The word formally indicates the inclusion of 21st Century Learning as part of the lesson preparation.

UNSURE	YES	NO
--------	-----	----

2.13 If so, which of the following 21st Century Learning competencies do you, or to your knowledge do the teachers at your school formally incorporate in their teaching?

SOCIAL PROFICIENCY	EMOTIONAL PROFICIENCY	CIVIC LITERACY	GLOBAL AWARENESS	CROSS CULTURAL SKILLS
CRITICAL THINKING	INNOVATIVE THINKING	COMMUN- ICATION	COLLAB- ORATION	INFORMATION SKILLS

Other? Please specify:

2.14 If so, in which of the following grades do you, or to your knowledge other teachers at your school incorporate these 21st Century Learning competencies?

UNSURE	8	9	10	11	12	N/A
--------	---	---	----	----	----	-----

2.15 Are there any grades, if any that you, or to your knowledge other teachers at your school tend to focus on when utilising 21st Century Learning principles? More than one option may be selected.

UNSURE	8	9	10	11	12	N/A
--------	---	---	----	----	----	-----

2.16 If you do incorporate 21st Century Learning competencies in your teaching, please briefly elaborate on how you utilise these competencies in your teaching.

2.17 In your opinion, what percentage of teachers on your staff actively use 21st Century Learning in their teaching practice?

< 20	20	40	60	80	100	UNSURE
------	----	----	----	----	-----	--------

2.18 Have you attended any courses, seminars or programmes which focused on the following?

21 st CENTURY EDUCATION	CROSS CURRICULAR STUDIES	THINKING SCHOOLS	INQUIRY BASED LEARNING
---------------------------------------	--------------------------------	---------------------	------------------------------

Other? Please specify:

2.19 If so, have these courses been organised by your school or have they been externally coordinated?

INTERNAL	EXTERNAL	N/A
----------	----------	-----

2.20 Are these courses consistently offered in the form of structured programmes or are they randomly arranged?

CONSISTENT AND STRUCTURED	RANDOM	N/A
------------------------------	--------	-----

2.21 How would you rate the courses according to the following categories?

POOR	ADEQUATE	GOOD	EXCELLENT	N/A
------	----------	------	-----------	-----

2.22 If you have answered YES to question 2.18 what should be maintained about the courses and what should be improved?

Objective 3: To determine the experiences (understanding and practice) of school leaders about the leadership practices regarding the interpretation and enactment of 21st Century Learning in your school.

3.1 Do you possess a certificate, advanced certificate, higher certificate, diploma, degree or post graduate degree specialising in leadership or management studies?

YES	NO
-----	----

3.2 Have you attended any leadership courses, seminars or programmes?

YES	NO
-----	----

3.3 If so, have these courses been organised by your school or have they been externally coordinated?

INTERNAL	EXTERNAL	N/A
----------	----------	-----

3.4 Are these courses consistently offered in the form of structured programmes or are they randomly arranged?

CONSISTENT AND STRUCTURED	RANDOM	N/A
------------------------------	--------	-----

3.5 How would you rate the courses according to the following categories?

POOR	ADEQUATE	GOOD	EXCELLENT	N/A
------	----------	------	-----------	-----

3.6 If you have answered YES to question 3.2 what should be maintained about the courses and what should be improved?

3.7 How would you rate your knowledge/experience of transformational leadership according to the following categories?

NONE	POOR	FAIR	GOOD	EXCELLENT	UNSURE
------	------	------	------	-----------	--------

3.8 Have you attended any courses, seminars or programmes which focused on transformational leadership in the context of 21st Century Learning?

YES	NO
-----	----

3.9 If so, have these courses been organised by your school or have they been externally coordinated?

INTERNAL	EXTERNAL	N/A
----------	----------	-----

3.10 Are these courses consistently offered in the form of structured programmes or are they randomly arranged?

CONSISTENT AND STRUCTURED	RANDOM	N/A
------------------------------	--------	-----

3.11 How would you rate the courses according to the following categories?

POOR	ADEQUATE	GOOD	EXCELLENT	N/A
------	----------	------	-----------	-----

3.12 If you have answered YES to question 3.8 what should be maintained about the courses and what should be improved?

3.13 How would you rate your knowledge/experience of strategic leadership according to the following categories?

NONE	POOR	FAIR	GOOD	EXCELLENT	UNSURE
------	------	------	------	-----------	--------

3.14 Have you attended any courses, seminars or programmes which focused on strategic leadership in the context of 21st Century Learning?

YES	NO
-----	----

3.15 If so, have these courses been organised by your school or have they been externally coordinated?

INTERNAL	EXTERNAL	N/A
----------	----------	-----

3.16 Are these courses consistently offered in the form of structured programmes or are they randomly arranged?

CONSISTENT AND STRUCTURED	RANDOM	N/A
------------------------------	--------	-----

3.17 How would you rate the courses according to the following categories?

POOR	ADEQUATE	GOOD	EXCELLENT	N/A
------	----------	------	-----------	-----

3.18 If you have answered YES to question 3.14 what should be maintained about the courses and what should be improved?

3.19 How would you rate your knowledge/experience of system leadership according to the following categories?

NONE	POOR	FAIR	GOOD	EXCELLENT	UNSURE
------	------	------	------	-----------	--------

3.20 Have you attended any courses, seminars or programmes which focused on system leadership in the context of 21st Century Learning?

YES	NO
-----	----

3.21 If so, have these courses been organised by your school or have they been externally coordinated?

INTERNAL	EXTERNAL	N/A
----------	----------	-----

3.22 Are these courses consistently offered in the form of structured programmes or are they randomly arranged?

CONSISTENT AND STRUCTURED	RANDOM	N/A
------------------------------	--------	-----

3.23 How would you rate the courses according to the following categories?

POOR	ADEQUATE	GOOD	EXCELLENT	N/A
------	----------	------	-----------	-----

3.24 If you have answered YES to question 3.20 what should be maintained about the courses and what should be improved?

3.25 How would you rate your knowledge/experience of ecological leadership according to the following categories?

NONE	POOR	FAIR	GOOD	EXCELLENT	UNSURE
------	------	------	------	-----------	--------

3.26 Have you attended any courses, seminars or programmes which focused on ecological leadership in the context of 21st Century Learning?

YES	NO
-----	----

3.27 If so, have these courses been organised by your school or have they been externally coordinated?

INTERNAL	EXTERNAL	N/A
----------	----------	-----

3.28 Are these courses consistently offered in the form of structured programmes or are they randomly arranged?

CONSISTENT AND STRUCTURED	RANDOM	N/A
------------------------------	--------	-----

3.29 How would you rate the courses according to the following categories?

POOR	ADEQUATE	GOOD	EXCELLENT	N/A
------	----------	------	-----------	-----

3.30 If you have answered YES to question 3.26 what should be maintained about the courses and what should be improved?

THE END – THANK YOU

APPENDIX F – SCHEDULE OF INTERVIEW QUESTIONS FOR SEMI-STRUCTURED INTERVIEWS

**UNIVERSITY OF KWAZULU-NATAL
GRADUATE SCHOOL OF BUSINESS AND LEADERSHIP**

Researcher: Mr: D.E.M Naidoo - PhD Student (0823167680)

Supervisors: Dr Cecile Gerwel Proches (031 2608318);

Dr Angela James (031 2603438)

Research Office: Ms P Ximba (0312603587)

Title of Research Study

The development of a leadership model for the interpretation and enactment of 21st Century Learning: A case of South African private secondary Schools in KwaZulu-Natal.

This Interview schedule is designed to explore the role of leadership in the interpretation and enactment of 21st Century Learning in private secondary schools in KwaZulu-Natal with the aim of designing a leadership model.

Interview Questions

1. Biographical Information of the Participant

1.1 Present position:

1.2 Years of experience in the teaching profession including various positions held:

Objective 1: To determine the experiences (understanding and practice) of school leaders about the use of technology at their respective schools.

1.1 Does your school have an official information and Communication Technology (ICT) programme? Please elaborate.

1.2 Does your school have an ICT team?

1.3 What forms of technology, if any, do you use in your classroom teaching/administration? Please elaborate. (egs. digital projectors, laptops, notepads, iPads, tablets, cell phones, chrome books, wifi)

1.4 What applications/platforms, if any, do you use in your teaching/administration? Please elaborate. (egs. internet, e-Books, Idoceo, google classroom, google docs, google forms, google drive, word, excel, powerpoint, one drive)

1.5 What forms of technology, if any, do the students at your school use? Please elaborate. (egs. laptops, Notepads, Ipads/Tablets, cellphones, chrome books or wifi) Please elaborate.

1.6 What applications/platforms, if any, do the students at your school utilise in the classroom? Please elaborate. (egs. internet, e-books, google forms, google classroom, google docs, google drive, word, excel, powerpoint, one drive)

1.7 Do you require students at your school to complete online assessments/exercises? Please elaborate.

1.8 In your opinion, is the entire staff actively engaged with the use of technology in their teaching practice?

1.9 Have you attended any courses, seminars or programmes which focused on the incorporation of technology in schools? Please elaborate. (internal/external; consistent/random; effective/ineffective; suggestions)

Objective 2: To determine the experiences (understanding and practice) of school leaders about the interpretation and enactment of 21st Century Learning in their respective schools.

2.1 What is your understanding of 21st Century Learning? Please elaborate.

2.2 Does your school have an official cross curricular programme? Please elaborate.

2.3 If so, does your school have a cross curricular team to manage the programme? Please elaborate.

2.4 Does your school have an official thinking schools programme? Please elaborate.

2.5 If so, does your school have a thinking schools team to manage the programme? Please elaborate.

2.6 Does your school have an official research skills programme? Please elaborate.

2.7 If so, does your school have a research skills team to manage the programme? Please elaborate.

2.8 Does your school have an official 21st Century Learning programme? Please elaborate.

2.9 If so, does your school have a 21st Century Learning team to manage the programme? Please elaborate.

2.10 Are any of the assessments/exercises at your school based on inquiry-based learning strategies? Please elaborate.

2.11 Are any of the assessments/exercises at your school cross curricular in nature? Please elaborate.

2.12 To what extent, if any, do you or to your knowledge, other teachers at your school formally incorporate 21st Century Learning competencies in their teaching? Please elaborate. (egs. Social proficiency, emotional proficiency, civic literacy, global awareness, cross cultural skills, critical thinking, innovative thinking, communication, collaboration, information skills)

2.13 Is your entire staff actively engaged with 21st Century Learning? Please elaborate?

2.14 Have you attended any courses, seminars or programmes which focused on the 21st Century Learning, cross curricular studies, thinking schools or inquiry-based learning? Please elaborate. (internal/external; consistent/random; effective/ineffective; suggestions)

Objective 3: To determine the experiences (understanding and practice) of school leaders about the leadership practices regarding the interpretation and enactment of 21st Century Learning in your school.

3.1 Do you possess any formal qualifications specialising in leadership or management studies?

3.2 Have you attended any leadership courses, seminars or programmes? Please elaborate. (internal/external; consistent/random; effective/ineffective; suggestions)

3.3 What is your knowledge/experience of transformational leadership?

3.4 Have you attended any courses, seminars or programmes which focused on managing transformation and change in the context of 21st Century Learning? Please elaborate. (internal/external; consistent/random; effective/ineffective; suggestions)

3.5 What is your knowledge/experience of strategic leadership?

3.6 Have you attended any courses, seminars or programmes which focused strategic leadership in the context of 21st Century Learning? Please elaborate. (internal/external; consistent/random; effective/ineffective; suggestions)

3.7 What is your knowledge/experience of system leadership? Please elaborate. (internal/external; consistent/random; effective/ineffective; advice)

3.8 Have you attended any courses, seminars or programmes which focused on system leadership in the context of 21st Century Learning? Please elaborate. (internal/external; consistent/random; effective/ineffective; suggestions)

3.9 What is your knowledge/experience of ecological leadership?

3.10 Have you attended any courses, seminars or programmes which focused on ecological thinking in the context of 21st Century Learning? Please elaborate. (internal/external; consistent/random; effective/ineffective; suggestions)

THE END

**APPENDIX G – SCHEDULE OF INTERVIEW QUESTIONS FOR FOCUS GROUP
INTERVIEWS**

**UNIVERSITY OF KWAZULU-NATAL
GRADUATE SCHOOL OF BUSINESS AND LEADERSHIP**

Researcher: Mr: D.E.M Naidoo - PhD Student (0823167680)

Supervisors: Dr Cecile Gerwel Proches (031 2608318);

Dr Angela James (031 2603438)

Research Office: Ms P Ximba (0312603587)

Title of Research Study

**The development of a leadership model for the interpretation and enactment of 21st
Century Learning: A case of South African private secondary Schools in KwaZulu-Natal.**

This Interview schedule is designed to explore the role of leadership in the interpretation and enactment of 21st Century Learning in private secondary schools in KwaZulu-Natal with the aim of designing a leadership model.

Interview Questions

Objective 1: To determine the experiences (understanding and practice) of school leaders about the use of technology at their respective schools.

1.1 Does your school have an official information and Communication Technology (ICT) programme? Please elaborate.

1.2 Does your school have an ICT team?

1.3 What forms of technology, if any, do you use in your classroom teaching/administration? Please elaborate. (egs. digital projectors, laptops, notepads, iPads, tablets, cell phones, chrome books, wifi)

1.4 What applications/platforms, if any, do you use in your teaching/administration? Please elaborate. (egs. internet, e-Books, Idoceo, google classroom, google docs, google forms, google drive, word, excel, powerpoint, one drive)

1.5 What forms of technology, if any, do the students at your school use? Please elaborate. (egs. laptops, Notepads, Ipads/Tablets, cellphones, chrome books or wifi) Please elaborate.

1.6 What applications/platforms, if any, do the students at your school utilise in the classroom? Please elaborate. (egs. internet, e-books, google forms, google classroom, google docs, google drive, word, excel, powerpoint, one drive)

1.7 Do you require students at your school to complete online assessments/exercises? Please elaborate.

1.8 In your opinion, is the entire staff actively engaged with the use of technology in their teaching practice?

1.9 Have you attended any courses, seminars or programmes which focused on the incorporation of technology in schools? Please elaborate. (internal/external; consistent/random; effective/ineffective; suggestions)

Objective 2: To determine the experiences (understanding and practice) of school leaders about the interpretation and enactment of 21st Century Learning in their respective schools.

2.1 What is your understanding of 21st Century Learning? Please elaborate.

2.2 Does your school have an official cross curricular programme? Please elaborate.

2.3 If so, does your school have a cross curricular team to manage the programme? Please elaborate.

2.4 Does your school have an official thinking schools programme? Please elaborate.

2.5 If so, does your school have a thinking schools team to manage the programme? Please elaborate.

2.6 Does your school have an official research skills programme? Please elaborate.

2.7 If so, does your school have a research skills team to manage the programme? Please elaborate.

2.8 Does your school have an official 21st Century Learning programme? Please elaborate.

2.9 If so, does your school have a 21st Century Learning team to manage the programme? Please elaborate.

2.10 Are any of the assessments/exercises at your school based on inquiry-based learning strategies? Please elaborate.

2.11 Are any of the assessments/exercises at your school cross curricular in nature? Please elaborate.

2.12 To what extent, if any, do you or to your knowledge, other teachers at your school formally incorporate 21st Century Learning competencies in their teaching? Please elaborate. (egs. Social proficiency, emotional proficiency, civic literacy, global awareness, cross cultural skills, critical thinking, innovative thinking, communication, collaboration, information skills)

2.13 Is your entire staff actively engaged with 21st Century Learning? Please elaborate?

2.14 Have you attended any courses, seminars or programmes which focused on the 21st Century Learning, cross curricular studies, thinking schools or inquiry-based learning? Please elaborate. (internal/external; consistent/random; effective/ineffective; suggestions)

Objective 3: To determine the experiences (understanding and practice) of school leaders about the leadership practices regarding the interpretation and enactment of 21st Century Learning in your school.

3.1 Do you possess any formal qualifications specialising in leadership or management studies?

3.2 Have you attended any leadership courses, seminars or programmes? Please elaborate. (internal/external; consistent/random; effective/ineffective; suggestions)

3.3 What is your knowledge/experience of transformational leadership?

3.4 Have you attended any courses, seminars or programmes which focused on managing transformation and change in the context of 21st Century Learning? Please elaborate. (internal/external; consistent/random; effective/ineffective; suggestions)

3.5 What is your knowledge/experience of strategic leadership?

3.6 Have you attended any courses, seminars or programmes which focused strategic leadership in the context of 21st Century Learning? Please elaborate. (internal/external; consistent/random; effective/ineffective; suggestions)

3.7 What is your knowledge/experience of system leadership? Please elaborate. (internal/external; consistent/random; effective/ineffective; advice)

3.8 Have you attended any courses, seminars or programmes which focused on system leadership in the context of 21st Century Learning? Please elaborate. (internal/external; consistent/random; effective/ineffective; suggestions)

3.9 What is your knowledge/experience of ecological leadership?

3.10 Have you attended any courses, seminars or programmes which focused on ecological thinking in the context of 21st Century Learning? Please elaborate. (internal/external; consistent/random; effective/ineffective; suggestions)

THE END

APPENDIX H – FINAL ETHICAL CLEARANCE



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INYUVESI
YAKWAZULU-NATALI

20 August 2018

Mr Dean Edmund Michael Naidoo (9402281)
Graduate School of Business &
Leadership Westville Campus

Dear Mr Naidoo,

Protocol Reference Number : HSS/0380/018D

Project title: The development of a leadership model for the interpretation and enactment of 21st Century Education : A case of South African private secondary schools in KwaZulu-Natal

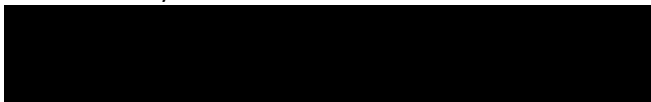
Full Approval — Expedited Application In response to your application received 8 May 2018, the Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol has been granted FULL APPROVAL. Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment /modification prior to its implementation. In case you have further queries, please quote the above reference number.

PLEASE NOTE: Research data should be securely stored in the discipline/department for a period of 5 years.

The ethical clearance certificate is only valid for a period of 3 years from the date of issue. Thereafter Recertification must be applied for on an annual basis.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully



Professor Shenuka Singh (Chair)
Humanities & Social Sciences Research Ethics Committee

/pm

Cc Supervisor: Professor Cecile Gerwel Proches and Dr
Angela James cc Academic Leader Research: Professor

Muhammad Hoque cc School Administrators: Ms Zarina
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