TITLE

SECONDARY SCHOOL LANGUAGE TEACHERS' EXPERIENCES OF ACCEPTING

AND USING INFORMATION COMMUNICATION TECHNOLOGY – AN OVERVIEW

OF LITERATURE ON THE *STATUS QUO*

MA in Technology for Language Learning

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ABSTRACT

This thesis examines the importance of incorporating technology into language teaching and learning in South African secondary schools, with illustrative reference to the position in the Western Cape region. By exploring the current challenges many high school teachers face with the lack of technology in their classes, this study aims to investigate these limitations and discuss the benefits of using technology within the current school system. One of the main challenges teachers face with regards to incorporating technology into their classes is their inexperience of using the various technological platforms. Students are often more adept at learning to understand and use these various platforms, thereby disclosing a radical disconnect between teachers and students using technology within the classroom. Examining reports from language classes such as Afrikaans Home Language, and English First Additional Language this study aims to demonstrate how utilising technology within these language classes could assist teachers now already, as well as in the future. By improving their computer literacy teachers could be empowered to better teach, guide and prepare these learners to become successful players on the world stage. To gain an in-depth understanding of the benefits of using technology in secondary schools this study draws on various sources and on first-hand accounts of teachers who have experienced both the benefits and challenges of using technology within the school system. The need to incorporate technology in schools is articulated in a recent national and Western Cape Education Department (WCED) policy; however, the policy was implemented with minimal preparation for the transition. Keeping this policy in mind, the study offers an overview of three themes pertinent to teachers tasked with introducing new technologies in their classrooms. Additionally, this study considers the problem of teachers and teacher educators have in weighing up materials that investigate, inform and advise on the relation between using new technologies and effective teaching and learning.

OPSOMMING

Die doel van hierdie tesis is om die belangrikheid van die gebruik van tegnologie by taalonderrig en –leer in Suid-Afrikaanse sekondêre skole te ondersoek met illustratiewe verwysing na die posisie in Wes-Kaapse onderwys. Deur te verwys na die uitdagings wat sekondêre skoolonderwysers tans ondervind met die gebrek aan tegnologie in hulle klaskamers, beoog hierdie navorsing om die beperkinge uit te lig en om die voordele van die gebruik van tegnologie binne die skoolstelsel te ondersoek. Een van die grootste uitdagings wat onderwysers met die insluit van tegnologie in hulle klasse ervaar, is hulle gebrek aan ondervinding in die gebruik van die verskeidenheid sosiale platforms wat tans beskikbaar is. Leerders is dikwels baie meer vertroud met die gebruik van hierdie platforms as van hul onderwysers, gevolglik is daar 'n groot verskil in van hoe leerders en onderwysers met hierdie beskikbare tegnologie in die klas omgaan. Met die nodige fokus op hoe die beskikbare tegnologie in veral Afrikaans Huistaal en Engels Eerste Addisionele Taal aangewend word, beoog hierdie ondersoek om te toon hoe die gebruik van tegnologie onderwysers nou reeds en in die toekoms kan ondersteun. Deur die rekenaargeletterdheid van onderwysers te ontwikkel, kan hulle bemagtig word om die leerders in hul klasse beter te onderrig, te lei en voor te berei sodat hulle deur die gebruik van tegnologie, suksesvol kan wees op die wêreld verhoog. Hierdie ondersoek beoog verder om in diepte 'n verskeidenheid beskikbare bronne in die vorm van publikasies te bestudeer, asook deur te verwys na die eerstehandse ervaring van onderwysers wat sowel die voordele as die uitdagings van die gebruik van tegnologie in hul klaskamers en in die skoolstelsel, ervaar het. Die vereiste om tegnologie in klaskamers te gebruik, vorm deel van 'n nasionale (Departement van Nasionale Onderwys) en provinsiale (Wes-Kaapse Onderwysdepartement) beleid wat onlangs geïmplementeer is, waar daar minimale voorbereiding was vir hierdie oorgang. Met hierdie beleid in gedagte, gee hierdie ondersoek 'n oorsig oor drie pertinente temas wat onderwysers kan ondersteun in die opdrag om nuwe tegnologie in hul klasse te inkorporeer. Verder gee hierdie studie aandag aan die uitdaging wat onderwysers en onderwyser-opvoeders ervaar om die beskikbare bronne wat die gebruik van tegnologie bied, te ondersoek en inligting en advies daaroor te gee rakende die verhouding tussen die gebruik van nuwe tegnologie en suksesvolle onderrig en leer.

DEDICATION

I dedicate this thesis to:

My wife, Josephine Patricia Cupido, with whom I did this course and who was my source of encouragement through the very difficult times;

My children – Robin, Chavonne, Stephen James John and Jo-Dean, and to
my colleague, Pauline McCloen, who has assisted with ideas, reference work and editing;

My sister, Johanna Saunders, who raised me and the late Mr B.S. April who encouraged and supported me since I was one of his learners at Heathfield High School.

DECLARATION

I, Stephen Cupido, the undersigned, hereby declare that the study, "Secondary School Language Teachers' Experiences of Accepting and Using Information Communication Technology – An Overview of Literature on the Status Quo, is my original work and that I have not previously in its entirety or in part submitted it at any university for a degree. Where appropriate, the resources I have used and quoted have been properly acknowledged and referenced.

StephenCupido

Date: December 2022

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I would like to thank Professor C. Anthonissen for the excellent support and guidance that she provided when asked to take over as supervisor.

I would also like to thank Westerford High School for exposing me to new technologies in the language classroom, and giving me the opportunity from 2007 to 2017 to use and reflect on the value of such technology in language teaching. As a staff member at the school, I was given the tools to use the available technology. I was also fortunate to get valued assistance from the support staff who were always willing to assist whenever it was needed.

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CHAPTER 1

1.1   Introduction to the study

This study will reflect on the kinds of resources currently available to secondary school language teachers in implementing the compulsory use of technology to support their delivery of quality education in grades eight and nine in the Western Cape, South Africa. It will focus on the needs and realistic possibilities of introducing IT in language classrooms in a school dedicated to developing learners' practical skills with a view to employment directly after matric. The thesis is organised in six chapters, each introducing an aspect relevant to the topic of this study, i.e., to the use of information and communication (ICT) resources in language classrooms, considering the perspective of the teachers. Chapter 1 introduces the study and its relevance, followed by a problem statement As this is a very wide topic, three themes have been selected: (i) the concepts of "new media" and "new literacy" and their relevance to using ICT in classrooms where the learners are characterised as "digital natives", (ii) selected resources available for preparing teachers to use technology in language teaching of young secondary school learners, and (iii) the kinds of resistance experienced language teachers present to the use of IT in their classrooms.

In a fast-changing world where many children already use cell phones, tablets and other electronic devices in everyday life as well as in learning, schools and teachers are challenged to keep up and use such technology to enhance teaching and learning. As Deputy Director-General of Curriculum and Assessment Management of the Western Cape Education Department, Brian Schreuder[1], gave directions for all teachers to use technology to improve teaching and learning in its schools. According to Lesch (2015) "It's not about the technology; it's about using technology to enhance teaching and learning". Lesch (2015) continues by focusing on the Department of Education's vision, which is to enhance teaching and learning through the effective use of technology to improve learning outcomes and better prepare learners for the 21st century world of work and learning. The latter articulates a further important reason for properly incorporating IT use in classrooms: the world of employment

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[1] Schreuder has since 2016 been appointed Superintendent General (Head of Education) of the Western Cape Education Department.

for which current secondary school learners are being prepared, depends excessively on various IT systems for which those entering the job market need to be suitably prepared.

Educators largely recognize the importance of developing technological skills in students so they will be prepared to enter the workforce once they complete their schooling (Teachhub.com 2018). There has already been a significant change in the way that teachers teach and learners learn with the help of technology in terms not only of enjoyment, but also of effective education.

The Western Cape Education Department (WCED) identified three key steps (Circular: 0038/2016) to create a technology-rich environment in its schools, namely to provide high speed broadband in most schools by the end of 2016, to equip schools with Wi-Fi, and to create an enabling environment in which learners, teachers and parents have access to digital resources. Lesch (2015:5) further cites Schreuder as saying that the Department would ensure that teachers receive training to enable them to use smart classrooms and e-learning technology optimally. By offering a review of the literature, this study aims to offer a contribution to creating an enabling environment in which teachers guide learners in the use of new technologies, particularly in the language teaching and learning context. Specifically, it will investigate a selected number of resources currently available to secondary school teachers in the Western Cape, who would also refer to such resources in the development of their own teaching strategies for young Afrikaans first language (L1) learners in a largely skills-based education environment.

To start out, I give an impression of what is happening in the Western Cape regarding ICT in schools and which resources are provided by the Western Cape Education Department to support secondary schools in the use of ICT.

In the Western Cape, with over 2000 schools (both public and private) in urban and rural areas, there is a big divide between the "have's" and "have nots". This is not only evident in the infrastructure that schools have, personnel provisioning and class sizes, but also in the availability of technology for the enhancement of teaching and learning. In private schools teaching and learning with the help of technology is regular educational process offered daily. Although there is a big difference between schools in the Western Cape and the availability of technology for teaching and learning, most schools in this province are still better off than

schools in other provinces in South Africa. The Western Cape Education Department has its own challenges when it comes to providing technology to all schools as it is dependent on the National Department of Education for funding. However, through public-private partnerships they have managed to provide additional support for schools within the province to acquire much needed infrastructure.

To support the statement above, we need to consider the e-Education White Paper DBE (2004). This White Paper DBE (2004) is a prominent policy document which sets out support of ICT in education, particularly at the primary and secondary school level. On 26 August 2004, the Minister of Education released the White Paper on e-Education, which serves as the foundation for ICT development in South African education. The White Paper lays out a plan to use ICT in schools to improve teaching quality and to modernize administration and management. Importantly, it states that "every South African learner in the general and further education and training bands shall be ICT capable (that is, utilize ICT confidently and creatively to help build the skills and knowledge they need to attain personal goals and to contribute to society" White Paper DBE (2004).

Since acceptance of the White Paper on e-Education in 2004, and according to the National Implementation Strategy for e-Education 5 2011–2014 DBE (2011), gradual but insufficient progress has been achieved in providing ICT infrastructure to schools.

A survey conducted by Isaacs (2007) focused on the following important information pertaining to the use of technology in schools:

Computers per capita by type of school

According to the data, the number of computers per 1000 students was higher in secondary schools than in primary schools. This is in line with the findings of the e-Education White Paper DBE (2004). According to the report, the average growth rate of schools that purchased computers between 2000 and 2002 was 59%, with secondary institutions ahead of primary schools.

Access to the Internet

According to the study results, 31% of schools in the country have internet access via dial-up, ISDN, ADSL, 3G, or other means – which currently includes fibre. Even though internet access

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is increasingly widespread, the percentage of schools linked to the internet in some regions remains low. The findings of the ICT in Education study conducted by Isaacs (2007) show that access to the Internet has gradually improved in schools, while it is still relatively low in rural and areas of low socio-economic status (SES regions), according to the National Implementation Strategy (2011).

Schools with many venues/rooms that are all connected to the Internet

Although Internet access is becoming more common, its use for teaching and learning purposes remains very limited. According to the White Paper on e-Education (2004), the impediments to IT use in classrooms are " high connectivity and telecommunication costs, lack of local content and examples, and inadequate technical and pedagogical support". According to Isaacs's (2007) ICT in Education survey results, only 6% of the participating schools, have classrooms with computers connected to the Internet.

Learners' access to computers and internet

Access to computers and the Internet is critical for developing the knowledge (digital) economy. However, as previously stated, such access is currently limited in most of the country's provinces. The ratio of schools with computer labs (9%) and specifically computer labs for Computer Applications Technology and Information Technology (16%) that are used for teaching and learning purposes, is relatively low. Provincial Education Departments need to improve the support they offer by ensuring that learners are afforded the opportunity to acquire skills much needed in their future work life. Currently, the majority can only get access via the computers in the schools' computer labs, since most learners do not have access to the internet at home.

Implementation plan

The 2011 strategy implementation plan was based on what was available at the time. In the short term, the National Implementation Strategy (2011,) aimed to roll out a single ICT Lab to every school that had registered to offer subjects that require 100 percent computer access. This is far below the goal described in the White Paper on e-policy Education that envisaged progress by 2013 that would give every South African learner in the general and further education and training bands the opportunity to be "ICT capable (that is, use ICT confidently

and creatively to help develop the skills and knowledge they need to achieve personal goals and be full participants in the global community." Realising that there were time constraints to achieve these goals, the National Development Plan was developed aiming to reach these goals by 2030. With its Vision 2030, the priority is to "improve the quality of education, skills development and innovation" NDP (2012:16). Realising that Education cannot reach these goals on its own, government adopted the South Africa Connect National Broadband Policy in 2013. This is an initiative of the Department of Communications which connected 288 schools to fast internet through cyber-labs. The South Africa Connect National Broadband Policy of 2013 aims to ensure that the country achieves universal internet access by 2030. The Department of Basic Education realised the importance of collaborating with other government departments to ensure that previously set goals to provide all state schools with the necessary ICT tools and support are met. Because the provisioning of technology to schools is a very expensive exercise, those responsible for the roll-out are responsible for ensuring that there are checks and balances in place so that government and schools, as beneficiaries, are held accountable for the safety and protection of the equipment installed in schools. According to Munjelita (2020) the DBE must reinforce existing monitoring and evaluation mechanisms to facilitate the identification of contextual challenges and the provision of assistance where necessary.

Maintenance and refurbishment of computers

Already in 2004 the White Paper on e-Education DBE (2004) indicated that the Department of Education would "promote and assist the formation of training programs and small business incubators for the maintenance and refurbishment of computers". This would be accomplished in collaboration with appropriate government ministries, providers of further education and training programs, and higher education institutions that offered computer science programs. Considering the rate at which technology advances and new technologies become available, basic technical upkeep will always be a central part of providing IT support and training to use the most recent technologies adeptly.

Technical assistance provided to schools

The importance of technical assistance is recognized, therefore technical assistance has to be provided to schools. By 2016 more than 35 percent of schools in most provinces had already

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received technical assistance, with the Western Cape (90 percent) and Gauteng (61 percent) having received the most. There are several parties who provide first- and second-line technical assistance to the schools, emphasizing the critical role that teachers play in this area. The school's educators (19%), private service providers (11%), and the district administration offer most of the first-line support (10 %).

At a meeting on 6 August 2019 the Western Cape Education Department reported to the Education Portfolio Committee on its E-learning Strategy. The representatives then reported their focus on three categories in their roll-out campaign, namely a universal strategy (821 schools), an enhanced strategy (684 schools), and a model strategy (16 schools) to address six integrated work streams: eTechnology, eAdmin, eInfrastructure, eContent, eTeachers, and eCulture.

Although by 2019 most of the categories were well-covered, currently there is still room for improvement in providing e-Infrastructure. Schools with Wi-Fi access via the Western Cape Government (WCG) broadband are 91% (1611 of 1273 schools). Implementation of the strategy for providing technology in schools has now reached more than 50% of schools. Of concern here, are the schools that are not part of the roll-out, most of which are situated in rural areas and are "no-fee schools" who cannot afford these services and therefore need to wait for the Government roll-out. In its 2019-report to the committee the representatives alluded to the accompanying challenges and risks they faced to ensure that all schools are provided with the described and planned infrastructure. In their presentation they referred not only to their successes, but were also frank about their failures.

Professional Development for Educators

ICT professional development for administration, teaching, and learning is one of the strategic objectives mentioned in the National Implementation Strategy for e-Education DBE (2011). The National Strategy Implementation Plan (2011) states that providing ICT infrastructure to schools must be supplemented by ICT skills-training for teachers and managers. Provincial Departments of Education (PDE) have this role, which is supported by the Department of Basic Education (DBE) through guideline publications and partnerships with stakeholders. Ming, Hall, Azman and Joyce (2010:75) found that lack of skills and training in ICT makes many of the teachers reluctant to use it, which suggests that continuously training teachers will enable

them to successfully use ICT in their teaching. Professional development, therefore, helps update teachers' knowledge and skills and involves them in sharing knowledge with one another (Al-Harbi 2011:61).

The DBE's 2013–2025 e-Education strategy is another milestone that serves as a roadmap for achieving the country's ICT-integration plan DBE (2014). The implementation strategy of this plan had specific roles and responsibilities for relevant stakeholders, including provincial education departments (DBE 2014). In reporting on the progress of this plan, the DBE in February 2018 pointed out that it had successfully connected 16,102 schools nationally with basic ICT resources, of which 1,951 were in the Western Cape province (Parliament of the Republic of South Africa 2018).

According to figures provided by Isaacs's (2007) study the Western Cape and Gauteng have the most schools in which teachers are competent to teach Computer Applications Technology (CAT) and Information Technology (IT). The percentages in the other provinces are all quite low. This is an example of what would be required to achieve the goals listed in the National Strategy Implementation Plan's professional development implementation plan (2011). In order to prepare learners properly for the world of work, CAT and IT are subjects that should be included in the subject choice of all learners. This would better equip learners for the world in which they are to be employed after school.

Providing computers in schools

According to an ICT-in-Education survey in 2010 (DBE 2010), the Western Cape (99 percent) is significantly better prepared than the rest of the country, with nearly all schools having one or more computers in working order. Gauteng (92%) and Limpopo Province (77%) both have a high number of schools with at least one computer in good functioning order. So, even though the Western Cape is better off than many other regions regarding the provision of technology in schools, there is still a disparity between richer schools in quintile 5 and the poorest schools in quintiles 1, 2 and 3. Schools in the fifth quintile have more computers and access to technology than schools in the other quintiles simply because of where they are situated, their annual income generated through user fees that are used to get much needed infrastructure that the state and province simply can't supply. On the other hand, schools, especially those in poorer areas in quintiles one to three, are completely reliant on the state

and province and must simply wait for when funding become available. According to the National Implementation Strategy for e-Education 2011 – 2014 DBE (2011), since the inception of the White Paper on e-Education (2004), gradual but inadequate progress has been made towards the provision of ICT infrastructure to schools. By looking at the slow pace in which by National and Provincial Governments roll out ICT to schools, more needs to be done to provide all schools equally. Especially schools in disadvantaged and rural communities need access to ICT tools to prepare them better for the successful completion of their schooling and in becoming meaningful role-players in a global community.

The WCED, with the introduction of the Khanya project, aimed to ensure that every school within the province (rural and suburban) would have access to technology by 2012 Khanya (2009). Shifting from a general perspective to specifics, the Khanya Project's principal goal was to "build a technology-rich province, thereby decreasing the digital divide and utilizing the power of technology to provide curriculum in order to increase the number and quality of learner results." This unfortunately did not happen as expected because, for various reasons like affordability and connectivity, these policies were not properly implemented in all schools. The Khanya project was terminated in 2010 after having installed a total of 23 948 computers in schools across the province and training 15773 teachers in how to use technology optimally for curriculum delivery. A total of 524 179 learners had benefitted from the project (WCED 2012). The training of teachers in the use of technology has now been taken over by the Cape Teaching Institute (CTI). So, instead of extending this program of digitizing education and better preparing schools, learners and teachers for the information age, the WCED's goals initially set out with the establishment of Khanya were not met and came to an abrupt end. A programme of this nature, timeously established, could have assisted schools in poor areas during the Covid-19 period when schools were closed down and online learning became an important means of delivering education.

In the 2019-report on the Department of Basic Education Action Plan, the DBE conceded that technology-enhanced learning had not advanced as predicted in South Africa. According to Gibson *et al*., (2018) a country's ICT policies guide the adoption and use of technology by explicitly setting out what needs to be done to achieve national goals. Although there are excellent policies in place in South Africa, their implementation is a cause of concern. This was

evident in South African schools when this country, as others elsewhere in the world, was confronted by Covid-19 in 2020.

The impact of Covid-19 on ICT in secondary schools in the Western Cape

In 2020 when schools were abruptly closed due to the Covid 19 pandemic, especially schools in the rural and low socio-economic areas could not use technology to ensure that teaching and learning would continue during the enforced school closures. As elsewhere, the educational impact the pandemic had in South Africa, was noted in (i) learning losses due to school closures, (ii) deepening of pre-existing education inequities, and (iii) loss of learning gains earned over time (Dorn *et al*. 2020; Hanushek and Woessmann 2020; United Nations 2020).

This was not the case in schools in more affluent areas, because learners in these schools were already using different platforms like Google Classroom, which enable remote learning. There were two options for continuing learning activities during the Level 5 lockdown introduced in March 2020: either online learning or self-learning with parental and sibling support. Several factors influenced the success of online learning, even for advantaged schools and students who could afford it. The lack of time to build an implementation plan or a system of educator and learner support, for example, was a result of the pandemic's urgency. Overnight educators and students were thrown into an education model of which they had no prior experience (Doukakis and Alexopoulos 2020).

Learners in well-resourced schools were able to continue with remote learning as they could maintain contact with their teachers through various platforms. Although it took effort and offered obstacles for both teachers and parents, more advantaged schools and households were better able to sustain learning by utilizing online learning tools. This better equipped set of learners completed their education using online lessons, either through live online instruction or through the uploading of recorded lessons.

According to the results of a Covid-19 survey conducted by the Western Cape Education Department and despite millions spent on e-learning, the digital divide is still a challenge across the province, especially in no-fee schools.

The outbreak of Covid 19 came as a wake-up call to the education sector in South Africa. For learners in primary and secondary schools in disadvantaged urban and rural areas education came to a halt as most of them did not have access to technology and the internet while they were at home due to the hard lockdown imposed on all schools. The crisis exacerbated pre-existing education inequalities by reducing the opportunities for many of the most vulnerable children, youth and adults, especially those living in poor or rural areas, girls, refugees, persons with disabilities and forcibly displaced persons who could not continue their learning. Most young people from disadvantaged backgrounds in South Africa continue to be denied access to information and communications technology because of poor infrastructure and the digital divide Matli (2020).

For schools in rural and poor urban areas learning ended abruptly during the pandemic as learners did not have access to technology and data. Many low-income schools lacked the resources to provide adequate online learning opportunities (Parker *et al*. 2020; Van der Berg and Spaull 2020). Many children in disadvantaged households lacked a peaceful workplace, a desk, a computer, or internet access, as well as parents who had the time or capacity to take on the role of home schoolers. According to the 2018 General Household Survey, 22% of South African households had access to a computer, but only 10% had internet connectivity Stats SA (2019:63). According to a poll done by Van der Berg and Spaull (2020:8), while 90% of all South African families claimed having access to a mobile phone, only 60% reported having access to the internet via their cell phone.

In some of these rural schools where learners do not have their own devices to access work sent by teachers, teaching and learning stopped completely. According to Steele (2019), Digital inequality is made worse by a lack of data devices, internet access, and digital skills. This is precisely what rural learners are experiencing in their classrooms daily. Steele (2019) continues by saying that digital inequality is obvious between urban and rural communities, socio-economic classes, less and more economically developed nations, and the educated and ignorant populace. According to Steele (2019), the divide between people who have access to broadband connections and those who do not, is made wider by slow broadband speeds, low-performance PCs, and restricted access to subscription-based content. This resulted in rural and poor learners falling behind further. In some of these schools teachers formed WhatsApp groups to send work to learners. Where learners did not have access to cell

phones, they did not receive the work. Others could not access the work due to a lack of data. The South African Democratic Teacher Union SADTU (2021) conducted a survey of its members and discovered that two-thirds of learners from poorer households received almost no communication from their teachers during the school closures. Van der Berg and Spaull (2020) calculated that 18 percent of all school-aged children lived in households without an adult caretaker throughout the day. Further, many African language mother-tongue learners would have had little help managing the English in which most of the lectures would have been delivered if there had been no instructor contact or adult supervision.

In order to overcome these challenges, in some rural schools' work was delivered to and collected from the homes of learners. An example of the difficulty that some learners in rural areas experienced when they received work during the hard lockdown is summed up by the following statement: some students were lucky to have access to some form of learning but did so through many struggles. In South Africa, a 17-year-old student complained about her ability to study effectively with online tools (Human Rights Watch 2020). In most cases when work was collected from learners during the lockdown period no work had been done, partly also because parents did not supervise the learners when they were supposed to be busy with schoolwork. Davids (2020) contends that students at private schools and wealthy middle-class public schools had an advantage over their peers in underprivileged communities during school closures. These students benefit from devices and connectivity as well as assistance from parents and teachers. Another reason several learners mentioned for not doing schoolwork was that they did not understand the work because no one explained it to them. In his response to the Standing Committee on Education in 2019, the Department's business intelligence management chief director, Ian de Vega, admitted that the technology-driven survey which targeted learners from Grade 7 to 12, had disclosed learners' parents and all educators faced huge challenges because of access to smart devices and data. Christians (2019) called on the Education Department to ensure that school connectivity always works, especially in the quintile 1 to 3 schools which are the most vulnerable and were completely denied access to education during the school closures of the lockdown period.

Suggestions for improving technology implementation in South Africa

In an insightful publication Jantjies (2019) mentioned and elaborated on five conditions for reaching a sufficient and appropriate level of technology implementation in schools. One of

the areas in which technology is already playing a major role is the school system with some South African schools having already embraced it. President Ramaphosa announced in his 2019 state of the nation address that tablets would be rolled out to all South African schools. There has also been extensive research in recent years into the potential role of electronic and mobile learning in the country's schools. There have also been plans to ensure the provision of digitising learning resources. Technology can be deployed to help improve learning outcomes in our schools. Changes in the way we interact with information means that the classroom is just one place where our children will be educated in the 21st Century. If there is anything that we have learnt during the last two years, it's that technology, digital learning, and the access to information all have a key role to play in reducing inequalities in our education system. Digital literacies, such as ICT literacy, information literacy, and media literacy have been emphasized as the pillars of 21st century skills (Wang *et al.* 2015). It is for this reason that all learners within the school system can benefit if and/or when they are equipped to use modern technology in their learning inside the classroom.

Mmaki Jantjies, a senior lecturer in information Systems at the University of the Western Cape, asks the pertinent question in an article, (The Conversation: 2019, if all South Africa's public schools are ready to use technology for teaching and learning. Sadly, the answer is no, as there is still a big gap between the richer urban schools in quintile 5 and their poorer counterparts in quintiles 1,2 and 3. Jantjies (2019) suggests that there are five important factors to be considered before the question raised above could be answered with a resounding yes.

Factors that, according to Jantjies (2019), will ensure that the playing fields in schools will be levelled in the use of technology are:

(i)   Infrastructure

Technical infrastructure is required in schools to provide both online and offline access to digital content. That physical infrastructure must be appropriately managed and maintained. For this, adequate planning is required: when schools have many other financial needs, hardware is often the last priority. In the adoption of any technology in schools, a long-term budgetary plan for hardware upkeep is essential. In your quintile 5 schools these processes are in place and form part of their annual budgets and could be purchased when fees are

increased. In your quintile 1,2 and 3 schools, of which most of them fall into the category of no-fee schools, this is not possible as there simply is not enough money. These items are often referred to as luxury items. Because of rising class sizes, moneys received by the state is instead used for other more pressing things like textbooks and stationary items. Van der Berg and Spaull (2020) have argued that the poorest in South Africa have limited to no access at all to ICTs such as computers and the internet and, even when there is some access, inadequate ICT infrastructure, malfunctioning ICT devices, teachers' attitudes to the use of technology, their incompetence, and their general unpreparedness along with theft and vandalism perpetuate the digital divide.

(ii)   Data costs

Data in South Africa is very expensive and schools and parents cannot afford these costs. Chisango and Lesame (2019) noted that that most learners in disadvantaged schools lack ICT skills, did not have the tools to manage ICT, had no access to wi-fi, could not afford to buy data, and had network connection problems. Software related applications and learning content must be available offline so that learners can keep working beyond the school premises. In your affluent areas this is possible as parents can afford the high data costs. In your poor areas this is not possible because poor parents would rather buy food than data. Schools in rural areas formed WhatsApp groups to get work to learners during the pandemic and after five weeks when learners returned to school teachers were horrified as no work has been done while learners were at home. When asked why no work was done, almost everyone said that they could not afford data. The cost of mobile data is part of the problem. For example, compared with its fellow members of the Brazil, Russia, China and South Africa (BRICS) group of nations, South Africa has the highest average price for 1GB of mobile data. As a result, many young people in low-income communities do not have instant access to the internet Matli (2020). Mundejita (2020), agrees with Matli by stating that some teachers bear the cost of using technology in the classroom. For example, they use their own data to download material for lessons. Furthermore, they use their own laptops and data projectors.

(iii)   Teacher training and support

According to Jantjies (2019) teacher training and support should be high on schools, districts, and provincial department's lists. This often not the case as when training and support is

provided to teachers, it is normally once off. This is in line with findings by Marongwe *et al.* (2019) that teachers need more training, and that one-size-fits-all training should be avoided. Hsu (2010) has argued that a teacher who is well-trained in the use of ICT is most likely to use it in the classroom but those who lack confidence in this area are unlikely to use technology in their teaching. Jantjies (2019) further stresses the importance of continuous training and support. Some teachers, especially the older teachers, received little or no training in the use of technology while they were studying. Some of these teachers are also fearful of using today's advanced technology in the classroom. They, in fact need more training and ongoing support in the use of technology for teaching and learning. In most cases there is little training provided by the schools which simply do not have the time for training in a normal school day or do not have a trainer available to do the training. In most cases this task is given to the Computer Applications Technology teacher, who in most instances have a full teaching load and there is simply not enough time in his/her busy schedule which consist of teaching, being the IT administrator, assist teachers and principals when they encounter problems with the technology at school. Training from the District's side is also limited and only a selected few are given the training and they are then expected to train other teachers through the cascade model.

(iv)   A collaborative approach

According to Jantjies, when teachers are empowered to use technology for teaching and learning they can do so much better by joining local communities of practice where they work together and learn from each other. This can provide them with the support that they need when they make the transition from older teaching materials to the modern technology. This is extremely important for more experienced teachers who might find teaching with technology very daunting. By working collaboratively, they can ask their peers for assistance where they might struggle with certain concepts and they can explore things together.

(v)   Technical support

The introduction of technology in schools need ongoing help desk support. When schools embark on this campaign teachers need help on a regular basis. This task is often assigned to the CAT or IT teachers at the school. They are seen as the go to person whenever teachers run into any trouble while using the technological equipment. Often these teachers are seen as the experts on technology and they must just assist whenever they are called upon. These teachers become burdened and might leave the school because of the workload. This is

especially relevant in your poorer schools. In Former Model C schools full time technological administrators are employed and their jobs are to support the teaching staff on a full-time basis and to teach IT to all the learners at the school. These administrators are permanent members of staff and they provide all the necessary support that the school might need. It goes without saying that by spending money on network managers, wealthy schools are better able to support and train their instructors and learners for using technology, further expanding the digital divide. By investing in network administrators, the affluent schools can better prepare and support their teachers and learners with the use of technology leading to a further widening the digital divide.

For schools to successfully introduce technology to enhance teaching and learning the Western Cape Education Department, together with the Western Cape Government and Public and Private entities, have different plans and programs in place to support the schools. Because this is a very expensive exercise there is a no way that the Department alone can successfully support all schools with the successful rollout of the required technological tools. It is therefore necessary that a multipronged approach is followed for its vision to equip all schools with the necessary tools to be materialized. During a media release on 23rd February 2015 the then-premier of the Western Cape, Hellen Zille made the following statement: ''It is imperative that we prepare all our learners to be active participants in the economy after school. By investments by the private sector, we will be able to equip learners with skills of the future and better prepare them with the 21st century skills needed in a global society". She then acceded that the process took much longer than expected and planned, but promised that they would, through intensive planning and resources, ensure that the process ends successfully.

In the next part of the discussion the focus will be on ICT and network support at schools in the Western Cape. The situation at three types of schools will be briefly touched on, i.e.: a former MODEL C school, a private school and a "no-fee" rural school. By comparing these three schools it will become clear that there is still a huge gap when it comes to the provisioning of infrastructure and network support.

IT AND NETWORK SUPPORT AT SCHOOLS IN THE WESTERN CAPE

Although some secondary schools in the WCED employ full-time network administrators, the function of network administrator is frequently undertaken by a teacher who also teaches computer-related subjects. All three these schools offer CAT. In the Two richer schools CAT is taught as an extra subject, while in the rural school with only a limited number of resources, it is one of the seven compulsory subjects taken by learners up to grade 12.

Concerns about the subject, CAT, were addressed at a session for concerned ICT teachers held at the University of Pretoria on Thursday, 29th October 2009. Zeeman (2009). One of the themes discussed was the decrease in the number of pupils and the amount of content that ICT teachers must cover. To begin with, teachers were asked to manage school ICT infrastructures, which resulted in less time spent teaching. Second, ICT teachers were expected to "maintain computers, deal with viruses, and software problems on their own" Zeeman (2009). The huge workload of these teachers makes it difficult for them to assist colleagues experiencing problems with using the available technological tools at school.

Many principals in low-income areas struggle to meet their personnel quotas while also struggling financially. They are, understandably, forced to enlist the help of educators to fulfil the position of network administrator.

The population of schools in the Western Cape totals 236 and includes both public and private institutions.

ICT incorporation in different school contexts

The socio-economic context of learners and teachers may also affect ICT adoption in disadvantaged schools. In affluent settings, many learners and teachers have access to computers at home. They are therefore confident regarding the use of computers in school settings Müller *et al.* (2007:175). In these homes learners are exposed to the regular use of technology by their parents and they can even count on their parents for support if they encounter problems with said technology, whereas this is not the case for learners in disadvantaged communities where there is no access to technology.

To illustrate how IT implementation has been done in some Western Cape schools, this section will refer to three specific cases[2]: (1) a well-resourced urban government school, in which there was early buy-in to the use of technology in teaching and learning, (2) an established private school with high fees, and a rural school which is partly privately funded and partly state funded. According to Munjejita (2020) owing to the challenges that work against endeavors to achieve equity, schools in disadvantaged communities continue to lag in terms of school resources, including ICT. This is supported by Oliver (2020) who stated that more than 80% of public schools are under-resourced. They are ill-equipped to respond to the teaching and learning challenges of the 21st century. Munjejita (2020) further states that access to the Internet gives learners at resourced schools an edge over those in under-resourced schools and that it exacerbates existing challenges contributing to learners' poor performance when compared to those in resourced schools.

For the benefits of this study, it is therefore important to focus on examples of ICT implementation in three different types of schools in the Western Cape.

ICT incorporation in a well-resourced Former Model C school

A school in the Central District in the Western Cape followed a "Bring Your Own Device" strategy (BYOD) which required learners to bring their own device (a tablet) to be able to engage with technology in class. Although this strategy saved the school money, they experienced connecting problems when all learners tried to get onto the internet at the same time. The school did not have control over the type of device that was brought into the classroom. Although this approach was very exciting, it led to lots of frustration amongst staff and network administrators.

Allowing pupils to connect their own laptops to school networks generated a lot of excitement. This trend was noticed in the business world as well Emery (2012), as was the necessity for schools to implement a BYOD policy as the school budget would otherwise not reach set goals. BYOD is fuelled by the increasing commercialization of ICT and the blurring of lines between work and personal life. According to a few schools, BYOD laws look to place

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[2] The schools used as illustrative cases here are real, and are ones of which the researcher is well-informed due to his interest and practice in ICT incorporation in education. However, no specific data collection was done there and they are anonymized as the description here is very broadly given, just to give an impression of the various ways in which the national policy is implemented.

more pressure on network infrastructure, and we will see "greater pushback from technology experts due to the complexity, change, labour, planning, and resources required." Livingston (2012).

According to Emery (2012), allowing BYOD has a variety of advantages, including "a superior, familiar, and more productive user experience," simplicity of deployment, and cost savings. Allowing users to connect their own devices on an ad hoc basis, according to Emery (2012), exposes data to security breaches both inside and externally. Organizations may employ one of three strategies, according to Emery (2012). The first is a general method that may be applied to any device. The second is a hybrid technique, in which users have a limited number of devices to choose from, and the third is a zero-tolerance strategy, in which users must use what they are given. All these methods have advantages and disadvantages.

ICT incorporation in a Private school

Staff and learners at one of the wealthy private schools in the Western Cape have access to a wide range of technologies and understand how to utilize them correctly and efficiently. Staff and learners use mobile devices, although they also have some fixed PCs. A computer room with PCs, a data projector, printer, scanner, and digital projector is available. There are also digital cameras and digital video cameras, a library with projection and interactive collaboration technology, a large selection of educational software, a "Sound House" with PCs and electronic keyboards for working with sound, images, and video to create multi-media creations, and a recording studio. All the classrooms are equipped with projectors, speakers, and Wi-Fi, allowing for a high-speed network.

Through their Office 365 account, each learner gets access to the Internet and email, as well as Cloud storage. This is a service that is available both on and off campus. Access to the internet is regulated, and undesirable websites are blocked. Teaching and advising pupils in the proper use of the Internet is a part of their ICT curriculum. This school has a laptop program in which each student receives a regular laptop. The learners at this school clearly have an advantage over the counterparts in the other 2 types of schools mentioned above. By making use of standard issue devices and a secured network, this is an example of best practice that the WCED and other schools can look at in order to give every learner in the province a chance to be prepared for their future careers after school. Unfortunately, the

affordability factor comes into play here and for many disadvantaged learners this dream of being in a school that is so well-resourced will never be realised.

ICT incorporation in a Rural school

Rural areas are defined as "farms and traditional areas characterized by low population density, low level of economic activity and low level of infrastructure" Department of Basic Education (2017:20). According to Adukaite *et al.* (2017), schools in South Africa's rural areas are faced with numerous challenges, including unstable electricity, high dropout rates, poor classroom infrastructure, security problems. Waller and Maxwell (2017), agrees by stating that schools in South African rural areas suffer from shortages of teachers and of teaching and learning materials.

At a rural school in the Western Cape that has been in existence for four years, there is no internet access, resulting in teachers using their own data when they want learners to do research for assignments. Through private funding the school managed to purchase data projectors and a few laptops for some classes. After numerous requests for assistance from the Education department the school received 10 laptops and data-projectors for use in classrooms. The school had to purchase sound equipment to make the equipment received from the department work properly. The Department of Basic Education (DBE) Rural Education Draft Policy of 2017 states that "it is difficult to recruit, retain and develop qualified teachers in a rural setting due to the distances of schools from towns, poor infrastructure and limited-service delivery" Department of Basic Education (2017:18). To assist in reducing the challenges that rural schools experience, the policy recommends an increased supply of ICTs and better internet connectivity to rural schools.

Different programs of support offered by WCED

For the next part of this discussion the focus will be on the different programs offered by the Western Cape Education Department to the Secondary schools in the province.

(i)   **The Khanya Project**

This Project was started in 2000 in the Western Cape with its main purpose the roll-out ICT infrastructure in schools in the Western Cape. The goal was to ensure that by the end of the 2011/12 financial year, technology would be incorporated in every

school in the Western Cape. This project unfortunately ended in 2010 due to a lack of funding.

(ii)   The Interactive Telematics Programme

The programme includes broadcasting lessons from a studio at Stellenbosch University to learners in 120 schools across the province using satellite technology, laptops and cell phones, creating a cyber-classroom which makes it possible for the WCED to reach large numbers of learners and provide them with quality individual tutoring.

(iii)   Teacher Laptop Initiative (TLI)

In order to support teachers in the classroom, 3 500 of the Western Cape educators have been selected to receive a laptop as part of the national Teacher Laptop Initiative. The aim of this roll-out is to assist to make teaching more organised and professional, and will help the educators with their administrative tasks, lesson plan development and can be used for further research and development.

(iv)   The Western Cape Government support of e-Education

The provisioning of technology to new schools and the upgrading or advancement of technology in existing schools; Researching and evaluating the use of e-Education methodologies and cutting-edge technologies; Training in ICT for educators; The sourcing, procurement and provisioning of digital resources through multiple access points; and on-going support of e-Education at schools.

(v)   E-learning game-changer

The linking of schools through a high-speed, real-time Wide Area Network (WAN), the provision of Local Area Networks (LANs) in schools, the refresh of existing computer laboratories and the provision of new laboratories and technology rich classrooms (smart classrooms),the development and expansion of online digital resources that are made available to all learners, parents and teachers, teacher training and development in ICT and the use of E-learning in schools and Private Sector and donor funding.

(vi)   ICT integration unit

This unit is tasked with providing ICT integration interventions for teachers, school leaders and curriculum officials. The objective of these courses is to provide participants with the necessary skills and knowledge to integrate technology effectively into teaching and learning practices. Emphasis is always on understanding

how to use digital technologies effectively for teaching and learning and not just simply learning how to use a digital tool. The interventions consist of training courses, workshops, seminars, webinars and conferences. All the training courses are designed to be interactive and hands-on. Teachers must demonstrate or provide evidence that they have mastered the new skills learnt. This approach makes it easier for teachers to implement new teaching strategies in their classrooms. In the seminars, webinars and conferences the aim is to provide teachers with relevant topics so that they can stay abreast of the latest developments in the use of ICT in the education space.

All professional development opportunities presented by the ICT integration unit forms part of a clearly defined developmental pathway. Teachers and officials who enrol for these ICT integration interventions get the opportunity to embark on an ICT integration development pathway by starting with the beginner courses, then progress to the intermediate and advanced courses and may end up with a university accredited qualification.

(vii)   ICT integration programme coordination

This unit has programme coordinators who ensure that all interventions (face-to-face or virtual) are effectively delivered. In doing so, they liaise with all relevant stakeholders to ensure that the mandate for teacher professional development is successfully achieved and that all participants have a meaningful and enjoyable experience.

(viii)   IT infrastructure support

Part of the responsibility of the ICT integration unit, is to ensure that the Cape Teaching and Leadership Institute (CTLI) has the latest technology to support the operations of the CTLI. This unit is responsible for procuring and maintaining the CTLI's ICT infrastructure, providing ICT support to all visitors and other CTLI units.

Although by 2019 very good progress is being made in the provisioning of infrastructure in the Western Cape schools, there is still a lot of work to be done. In the Western Cape Education Department's briefing to the Standing Committee on Education (2019) the WCED Deputy Director: eLearning, Mr Clinton Walker, covered the following topics in his presentation to the meeting: infrastructure, technology in the classroom, E-teacher,

professional development, administration and support. He outlined the challenges faced and what worked and what did not work in the past. One of the biggest challenges for the Education Department, according to Walker (2019), is to "find alternative solutions for schools that do not have broadband reach. The group of learners in this category is about 20 000 out of the 1.2 million learners throughout the province". The affected schools are mostly situated in far reaching parts of the Western Cape and they are predominantly rural learners. The dire situation in rural areas was highlighted during the school closures in 2020 when these learners did not have access to remote or online learning. It is for this reason that the WCED needs to step up its game and ensure that all learners must be able to have access to online and remote learning, irrespective of where their schools are situated.

In order to overcome these challenges, it is up to schools, districts, provincial, national education departments and the private sector to collaborate in revisiting existing policies and come up with a plan that will support all learners, teachers and schools, so that no child is left behind and that they are well equipped to become meaningful and skilled role players on the world stage. Access to computers, Internet connectivity, ongoing support and teacher skill levels are thus all-important elements in the successful usage and integration of ICT in classrooms. Connectivity is one of the focus areas in the National Implementation Strategy for e-Education (2011). It states that the country's ICT policy framework advocates for basic connectivity to all schools, further, the e-Education White Paper recognizes that adequate bandwidth support is required to schools: "every teacher and learner in General and Further education and training must have access to an educational network and the Internet."

According to Shelly *et al.* (2011), there is an enormous task on the shoulders of teachers as they are expected to embrace new teaching and learning opportunities. Teachers recognize that they must teach learners who are using the new technology daily, by themselves using the available technology. For this to happen, teachers must be properly trained in the use of such tools to assist the learner to use the technology in the classroom. By using the technology, the learner is given the opportunity to become an active participant in the lesson. Both teachers and learners benefit from this situation as the learner is given the opportunity to explore and interact more and not just rely on the teacher as the sole provider of information. The teacher on the other hand can engage with the learner and by doing so, can also learn from the learner. An extensive body of education research shows that technology

supports learning in various ways, such as giving learners much more access to information than with conventional methods, and not limiting them to the teacher's input only. Technology assures more interaction, more shared ideas and more learners collaborating with each other, thus making the learning process more interesting. The teacher also has more time on hand as he/she can give immediate feedback as the tasks can be marked online. Another advantage of using technology is that learners can work at their own pace and work in collaboration with others, resulting in better learning outcomes for all involved.

Conversely, some disadvantages of technology have also been listed according to Shatri (2020). Such disadvantages include:

(a) Technology can sometimes hinder or distract from learning and the educational process. Learners are distracted easily and instead of focusing on the lesson being taught, may opt to do something else on their devices. This means that although technology is used in the classroom, it is not used for the right reason. This places a new responsibility on teachers to be vigilant when integrating technology in class and assisting learners with the appropriate attention and activity. The teacher must thus prepare the lessons very well to keep all learners interested

(b) Schools occasionally purchase technology before they have proper strategies in place for meaningful use of the technology. Because everyone is jumping on the bandwagon of having technology in schools there should be proper planning before technology is hastily purchased. Policies pertaining to the use need to be developed and implemented. These should determine who is responsible for what, who is going to manage the network, what is going to be done to ensure maintenance of the technological tools. These are all important issues that need to be addressed before schools embark on this journey.

(c) Educators are often not adequately equipped for and trained to use IT effectively in their classrooms. This is perhaps the most important concern when schools want to integrate technology for teaching and learning purposes. Because teachers are expected to drive this process, it is of the utmost importance that they are properly trained. By making the training in the use of technology part of the regular staff development program, schools will ensure that the staff is ready for the roll out. A teacher who is well-trained in the use of technology for teaching and learning, will be able to use the technology to guide the learners through the

lesson and ensure that all learners can acquire the skills required by a successful 21st century learner.

According to Selwyn (2010), "Digital technology lies at the heart of contemporary education provision". In a book on the topic, he addresses the key issues in the field of education and he touches on some fundamental but often unvoiced questions about the ever-growing use of technologies in education. Will technology replace the school, university or the teacher? These are important questions as teachers, especially more senior ones who did not grow up with today's technology might find the use of IT in their teaching in the current classrooms very daunting. This could be different if they get proper training in the use of the available technological tools.

Here the researcher's own experience in language teaching at an urban Western Cape school that implemented a policy at the start of 2016 compelling new grade eight learners to bring their own devices to class, is relevant. This policy highlighted difficulties, not only for the students, but also for the teachers in terms of their knowledge of, and access to, adequate resources. In this situation no staff member received prior training in the use of technology in their teaching and learning. It was as if all the other surrounding schools were doing it, so we should do the same, regardless. Laptops and tablets were bought and issued to teachers who had to "play around" with these new and expensive devices to find out what the possibilities of the tools were and how they could best be used in teaching and learning. The next problem teachers experienced was that the school's internet connection was too weak to carry all users who tried to log on at the same time. This resulted in total chaos as 180 learners simultaneously logged in to do research for an assessment task during a given period.

Later, being appointed at a rural skills-based school, added to experience and reflection on the use of IT in a secondary school teaching environment. In this situation, for example, the Grade 9 Afrikaans Home Language learners had to prepare for an oral presentation on role models. No learner had access to technology to do proper research. The school also did not have a Wi-Fi connection; therefore, the teachers had to do research and provide hard copies of the research material to all learners in a rather unsustainable manner. This indicated the importance of supported from the Education Department for all schools, whether rural or urban, to get access to all the resources promised in the various policy documents.

This study will rely on currently available literature, on the one hand for teacher training, and on the other hand for support of teachers who do in-service training either in dedicated workshops, or by self-study and self-enrichment. It aims to report on a search and analysis of materials and resources available to teachers[3] of Grade 8 and Grade 9 learners[4] in their Afrikaans L1 classrooms in August 2019.

The perceptions of the success or failure of IT implementation in language classrooms has prompted an inquiry into what kinds of materials are available in the form of printed books, articles or other materials now also in other communicative modes, as well as online in electronically accessible texts such as online publishing or websites, blogs, and the likes. Eventually, this study aims to inform teachers and teacher trainers on academic and practical materials which they could refer to in introducing various technologies. This study is of limited scope, yet aims to be insightful for teachers implementing the South African education policy directive of integrating IT in teaching and learning in secondary schools in the Western Cape. The implementation plan of the 2013–2025 e-Education strategy of the DBE (2014), spelt out specific roles and responsibilities for relevant stakeholders, including provincial education departments. This left it to provincial education departments like the WCED to ensure that policies the national education department designed would be implemented by the province and its districts. Through its E-Learning Initiatives WCED (2022), the WCED is implementing various strategies to ensure that the province realizes the potential of information and communication technology (ICT) in education. Some of the focus areas in the above-mentioned strategy refer to the use of ICT in schools to deliver and support implementing the curriculum, help raise the levels of teaching and learning in disadvantaged schools, empower and support teachers, bridge the digital divide, empower learners to join the global knowledge community, encourage learners to prepare themselves for careers in the sciences, engineering and ICT, facilitate the handling and dissemination and sharing of administrative information and to ensure that all schools in the province, rural as well as urban, have online and open access to curricular and administrative information. This step focuses on the shortcomings in various policy documents, and aims to support the WCED in delivering on

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[3] Teachers, also referred to as "digital immigrants" or as "digital non-natives" are people who started using technology as adults.
[4] Learners, also referred to as "digital natives", are young people who have grown up using technology from an early age.

these promises to make a quality education possible for all the learners, irrespective of the quintile in which they are situated.

1.2   Problem Statement

This study takes an interest in information available on the use of IT recently implemented in secondary schools and with a specific focus on literature reporting the experience and perceptions of secondary language teachers. Considering that the extended use of technology in schools is a recent national and WCED policy that was implemented with minimal preparation for the transition, this study will, in a selective review on three pertinent themes, turn attention to what is available to the teachers tasked with introducing new technologies in their classrooms. Besides attention to literature on the logistics of implementing new technologies in language teaching, the study considers the problem of weighing up materials that investigate, inform and advise on the relation between using new technologies and effective teaching and learning.

Teachers should be capable of forming and organizing their learning environment in non-traditional ways by merging ICT with new pedagogy. Thus, one would assume training, motivation and encouragement is offered to them in order to overcome their hesitancy regarding adopting ICT in their lessons. Teachers need to develop their classroom management skills in order to teach and involve the learners in their learning. Moreover, they should learn and acquire innovative ways of integrating ICT to enhance the teaching and learning process. Teachers who are rooted in traditional teaching methods need support in accepting current technological changes and need to develop their teaching skills by using the available technological tools. This means that there should be sufficient training, flexible time and task arrangements offered to them in order to provide opportunities to them to incorporate ICT resources into their teaching. Schools, therefore, need to play an important role to make this possible by offering ongoing in-service training, especially to those teachers who might find incorporating technology into their everyday teaching a daunting task.

1.3   Research Questions

In order to address the problem articulated above, my review of the literature will be guided by the following research questions:

1.3.1 What do the terms 'new media' and 'new literacy' mean and how are they relevant to the use of IT in schools and classrooms in the Western Cape?

1.3.2 What does the term 'digital native' refer to? Is it applicable to scholars in Western Cape schools?

1.3.3 What theories and resources are available for preparing teachers to use technology in teaching languages to young secondary school learners?

1.3.4 What are the kinds of problems language teachers encounter when using ICT in their classrooms or for assessment purposes?

Answers to the above questions will be used to articulate guidelines that could support teachers in the transition to more and richer uses of IT in their language classrooms. Specifically, the outcomes of the study will be made accessible to teachers currently still hesitant to introduce new technologies in their educational practices. This study will refer to the challenges that schools face in their readiness to use the available technology in their quest to enhance teaching and learning. By focusing on what schools, and digital non-native language teachers, can do to ensure that they have access to the requisite resources for IT roll-out, this study intends to contribute to improved IT teaching and learning practices.

1.4   Research design and Methodology

This research is a qualitative research project based on literature analysis and reflection, to understand the experiences of language teachers who, without proper training, were instructed to use technology for teaching and learning purposes. The work is introduced with secondary school language classrooms in mind: Afrikaans Home Language, and English First Additional Language. As this is a study based on a literature review and relying to some extent on the author's own experience, no data from specific school classrooms are included. Nevertheless, even in writing up the three research chapters, the author complied with Stellenbosch University's policy on research ethics.

1.5   Chapter overview

In the chapters below, the following themes are addressed:

In Chapter 2 the focus is on the literature on which this study is based, while in Chapter 3, the focus is on "new media", "new literacy" and teaching "digital natives". In this chapter these

terms are identified, unpacked and explained. Next, in Chapter 4, the focus will be on how language teachers are to be prepared for the important task of incorporating technology into their lessons in the teaching of language, while in Chapter 5 the focus will be on how to deal with and support teachers who are reluctant to use ICT in their classrooms. Chapter 6 refers to these themes in giving a summary and conclusion.

CHAPTER 2

Literature review

Literature for this study is embedded in three areas, firstly, the E-learning Policy for South African Schools, secondly the theory that supports the use of technology in teaching and learning, and thirdly literature on teachers' acceptance of and resistance to using IT in language teaching. The review given below is a brief introduction given as background against which the three following chapters are to be read.

## 2.1   E-learning Policy for South African Schools

There are important policy documents that underpin the use of technology in schools, namely the e-Education policy DoE (2004) and the Guidelines for Teacher Training and Professional Development in ICT and Training DoE (2007). They were replaced by the SA National Development Plan (2012), the South Africa Connect National Broadband Policy (2013), The Implementation Strategy for e-Education in South Africa: 2013-2025 (DBE:2013), The National Integrated ICT Policy White Paper (2016) and Enhancing ICT Readiness of schools in South Africa (2021) According to these documents schools have to use technology for teaching and learning purposes. These documents also make provision for teacher training so that learners can be supported in their everyday learning and most importantly the provision of internet access to all public schools in South Africa One of the key priorities in the new development strategy for South Africa, the National Development Plan (Vision 2030) (NDP), is "improving the quality of education, skills development, and innovation" NDP (2012:16). This document acknowledges that Education cannot work alone to achieve the goals of providing modern technologies to schools in order to enhance the quality of teaching and learning. In order to realize the vision of an inclusive digital society, the government must work in partnership with a variety of stakeholders and social partners (including individuals, communities, civil society organizations, the labour movement and NGOs across all sectors, the private sector generally and ICT entities within this, technical experts and academics). This document affirms the government's commitment to multi-stakeholder involvement in this transformation. According to the National Education Collaboration trust (2016:7) ICT integration in schools is successful when Teacher Professional Development (TPD), ICT competence, developmental educational beliefs, and ICT vision and policy are in place in a school, and is unsuccessful when

these factors are absent. Teachers, therefore through regular training and development, can acquire ICT knowledge, skills, values and attitudes for the successful implementation of the policy.

According to the guidelines published by the National Education Department in its Implementation Strategy for e-Education in South Africa DBE (2013), the aim is to integrate ICT into all levels of the education and training system in order to improve the quality of teaching and learning. Further, the document states that the DBE will ensure that ICT professional development is available to all teachers and that technology infrastructure is implemented in all districts and schools. Because the National and Provincial Education Departments are responsible for the roll-out of the resources and the necessary training, they need to ensure that these policies are implemented in schools.

The Department of Education also, through this document, undertakes to ensure that all districts and schools are connected to the internet. This will ensure that schools in disadvantaged urban and rural areas will be able use internet connections at school. If these can be achieved, then South African learners and teachers will be able to use state of the art technology that will ensure that they are able to exploit the benefits of the available technology to enhance their teaching and learning.

 In the next section we will briefly look at the e-Learning Game Changers Document (2017) that gives more specific guidelines on the use of technology in Western Cape schools specifically. The Learning game-changers' aim is to use technology to enhance teaching and learning for all Western Cape learners, predominantly in mathematics and languages. The Game Changer also builds on the e-Vision for Education adopted by the provincial government in 2012. This vision outlined a commitment by the Western Cape Education Department to expand on its existing technology base and digital resources in order to create virtual learning environments at all schools by 2030. This is in line with the goal set by national government through its National Development plan to eliminate poverty and reduce inequality by 2030. The e-Learning Game Changer accelerates this aim and has made enabling universal access to an eLearning environment to all schools by 2019 a strategic priority. The e-Learning game-changer focuses on six streams to achieve this, namely the creation of an e-Culture in schools backed by e-Infrastructure, an e-Admin system to run the school, and well-trained e-Teachers using e-Technology and e-Content in their lessons."

FIGURE 1: E-LEARNING STREAMS
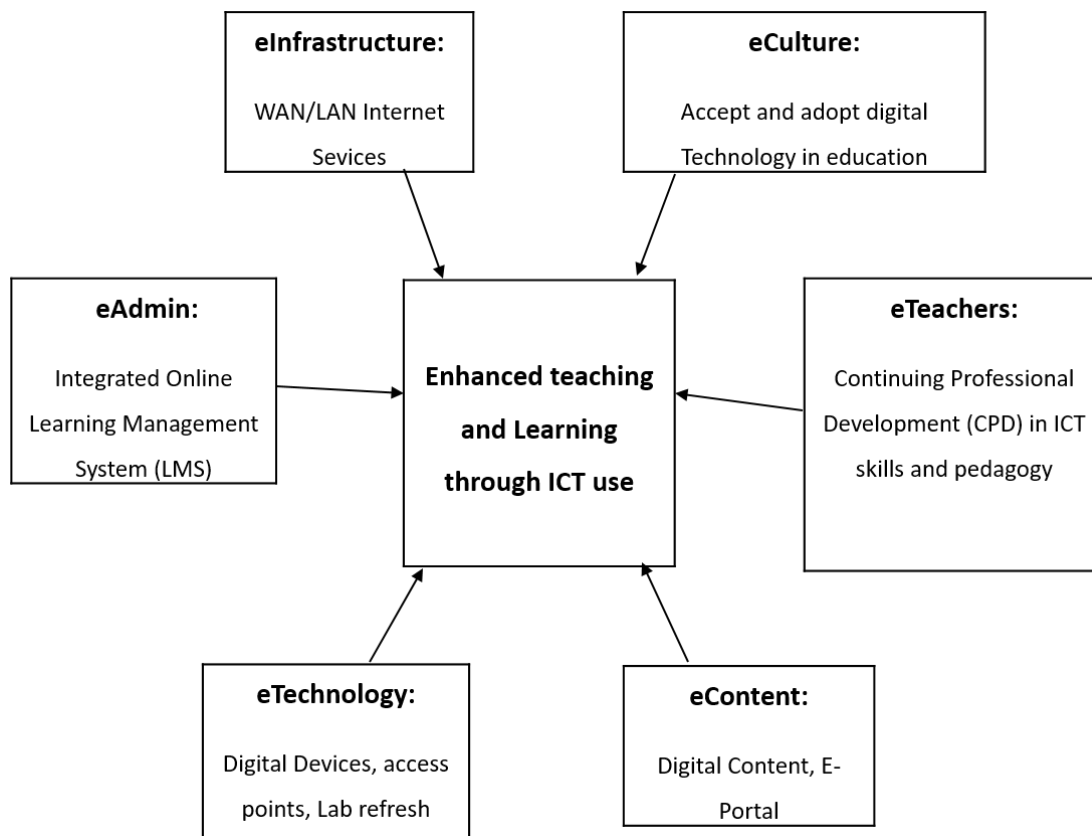
This plan gives one hope that the Provincial Department has by now realized that there should be a plan to ensure that all schools are on the same page insofar the provision of resources and training of teachers is concerned.

2.2   Theory that underpins IT-use in secondary schools

In order to understand where teachers fit into the whole teaching and learning with technology debate, it would be very useful to focus on what researchers say about what teachers need to combine technical and pedagogical skills, for them to create situations in which effective learning can take place.

In this discussion the Hampel and Stickler (2005) model of skills will be critically looked at. It must be pointed out that this is not the only model that is available, but it gives a much better understanding of the basic skills that teachers must have if they want to use the available technology effectively in their classrooms.

Hampel and Stickler (2005) suggested a pyramid of skills in which skill needs to be acquired, each building on previously acquired skills. I agree with this approach because as an older teacher who recently started using technology in my classroom, I find that I learn better if small steps are taken in my learning process.
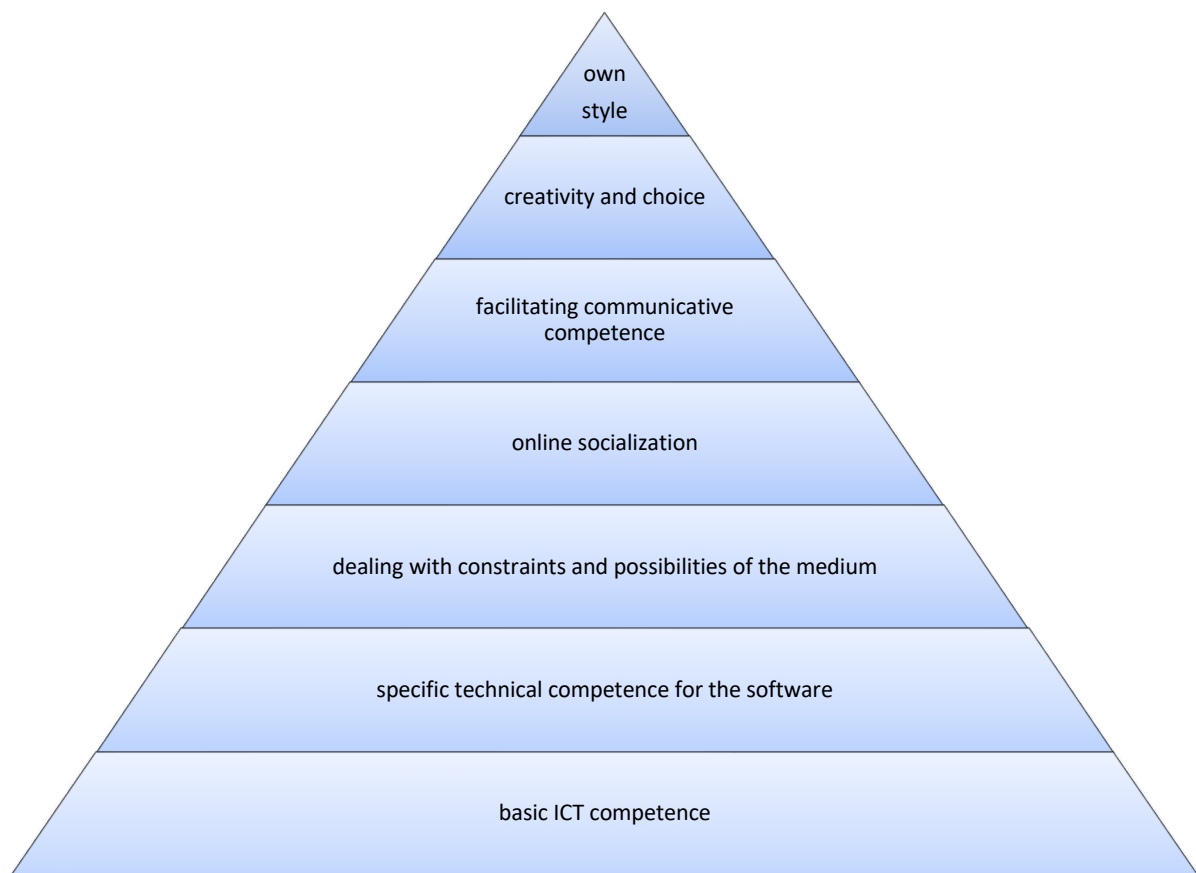
Figure 2: Skills pyramid (from Hampel and Stickler 2005)

- According to Hampel and Stickler (2005), teachers must first be able to handle the keyboard and mouse, word process and use the internet. If a teacher does not know how to do word processing, he/she will find it very difficult to work on his/her own on the computer. Lots of time will be wasted and he/she will have to rely on others to get these simple tasks done. As teachers are using more technology in their everyday life and simple tasks are done electronically, a teacher must know how to do these tasks. A beginners' course in basic computing will be beneficial to a struggling teacher. After

completion of a basic course, the teacher will be able to find his/her way around the technology and will feel more comfortable in using the available technology.

- Secondly, they should know how different applications for teaching like Blackboard, Turnitin or interactive white boards work. By getting training in the use of the available platforms, then trying out new skills on the computer and self-learning, also getting assistance from the school administrator and working collaboratively with a more experienced user the novice-ICT teacher will be able to master the skills to work on the given platforms.

- Thirdly they should know the kinds of learning the software can take as well as its limitations. This third step may be very daunting to a teacher who is not confident in using the available technology. This means that not all teachers are able to control the system of work innovatively from the start. A school with a proper help proper helpdesk or a dedicated administrator who can assist teachers when they need advice on software is critically important to ensure proper implementation of ICT in its classrooms. According to Ashiono et al. (2018:248), "when technical support is lacking, computers will not be maintained and the chances of ICT tools to fail during teaching and learning will thus be increased. Such occurrences obstruct learners from enjoying the benefits ICT tools introduce in the classroom".

- The fourth level is very important because just like learners, teachers must also be able to create online communities. This is indeed of the utmost importance, especially for those older teachers who need a sense of security and belonging in a world where they are seen as digital immigrants who are expected to guide and lead digital natives. By working within the online community, a safety net is created whereby the less experienced user can call on anyone in the community who is able to assist those who are not adept at using ICT. By working together with someone more experienced, older teachers are likely to become more confident when they use the available technology. Knowing that there is a competent collaborator to help with unfamiliar concepts or in following guidelines, is a valuable part of the ICT development process.

- According to Hampel and Stickler the fifth level cannot happen if the previous level did not take place. When this stage is reached, they can now comfortably help their learners to interact with their online peers. A teacher using technology cannot work

on his/her own and expect the learners to do the same in class. The teacher's role has changed from being the main source of information to one who turns to others for information and teaching learners the information-collection skills. By working together with others in an online community the teacher is now able to guide the learners in doing the same in class. This should teach learners the advantages of collaborative work.

- In the sixth level teachers must have the desired searching, designing, and evaluation skills to choose, alter, or create the most appropriate digital learning materials for their specific group/s of learners. This is very important because teachers must know what and where to look for material appropriate to their learners. By engaging with other users, researching via the internet and working closely with colleagues in the same subject department, with other teachers in the school or with colleagues from other schools or in the district, the teacher will gain a lot of resources suitable for use in the classroom. By engaging with others time that would have been spent looking for learning material can now be used more productively.

- In the last level, teachers should now be comfortable with the technology and can now be confident in using their own personal teaching style to deliver quality lessons with the technological tools available in their schools. This is a very important level because the teacher is now more confident in using the technology, and knows where and how to access the information. Therefore, he/she can now distinguish between what is suitable and appropriate for his/her own learners. He/she will now be able to differentiate in class and provide more individual support to the learners.

Berliner (1994) agrees with what this model means for teachers in the following statement: "This model also uses theories about how beginner teachers develop – from nervous concentration on their own performance and the tools of their trade, such as materials and control of the classroom, towards being able to focus on their learners instead, in the process developing an instinctive feel about what works for them and their particular group of learners". I agree with both Berliner (1994) and Hampel and Stickler (2005) that such a step by step model is indeed very helpful in assisting older experienced teachers when they start out using technology in the classroom. Younger teachers starting out are in most instances fully trained in the use of the latest technology and they may skip certain steps as they have

been using technology almost for the whole of their lives. A person's level of computer literacy that will therefore determine the level on which he/she starts.

However, Compton (2009) disagrees with this model as he feels that "the skills do not necessarily have to be developed sequentially, but can also be developed concurrently.

This argument is further supported by Chapelle (2006), who states that, "learning a language does not always require direct interaction with others in the online community; you can have interaction between the learner's mind and already-created language content which results in learning".

One critique of the Hampel and Stickler model is that they believe that there is only one way that learning can take place and that is through the socio-constructivist theory, while other scholars believe that learning with technology can take place through any of the following theories, namely, constructivism, connectivism or behaviourism. Walker and White (2013:139).

The following section will provide an overview of social constructivism and where it fits into the use of technology for learning purposes. Because of today's widespread use of the internet and smartphones in education, the focus is now on the communication and interaction between users. This led to social-constructivism, a theory of learning that has obvious parallels with and benefits for language teaching.

In ICT development the Hampel and Stickler (2005) model focused on five levels; earlier, before such technologies were available, Vygotsky and Cole (1978) believed that learning takes place on two different levels. The first is through social engagement, while the second is through integration into an individual's mental structure. This method emphasizes learners' active construction of knowledge from prior experience. The social and cultural context in which the learner resides frequently influences the personal mental learning process. That is, cognitive growth initially begins as a result of social interaction with others, which is influenced by the individual's cultural context. For effective learning to take place there must be interaction with and collaboration between people. This relates to Vygotsky's first level of social engagement, which can be seen in the classroom where learners work together to solve a problem. This action is beneficial to both learners and teachers as they can learn from one

another while trying to solve a problem. In the case of older teachers, who are required to teach with technology, this idea of learning is still valid as they also form communities of practice in which they collaborate with each other. A person initially struggling with a concept or how to use a particular program or platform can find someone within the community of practice who is better informed. Such a colleague can show how it is done and advise what to look out for, thus enabling the other to solve the problem. By collaborating with each other, most parties benefit as the one who struggles get the task done, while the one showing how the task is done, also benefits because he/she gets better at it. This is also applicable to what Vygotsky and Cole (1978) refers to as the "More Knowledgeable Other", who is someone with a better understanding or a higher ability level than the colleague who might be struggling with a technological concept or task. Vygotsky introduced the "more knowledgeable other" which is where learning by the child (teacher) occurs through social interaction with a skilful tutor. This can be a teacher, peer, older child or even a computer programme. Shaffer (1996) agrees with Vygotsky in the following example where a child is given his/her first jigsaw puzzle. Initially he/she struggles, but with the help of the father, he/she completes the puzzle. By working with the one who is more experienced, the one in need of the assistance is guided through the process and the job gets done. He/she may experience a sense of achievement because the task was completed successfully.

Vygotsky argued that learning is constructed first through social interaction and then on the individual plane. Vygotsky further argued that learning takes place within the **'zone of proximal development'** (ZPD), i.e. the gap between what a learner already knows or can do and what the learner can achieve when working in collaboration with someone who is a little more capable. I can associate with this view, because when older teachers start out using technology in class, some are reluctant if not annoyed at the prospect. They might feel that they are in uncharted waters as they do not feel confident using the technology. They often feel that the learners in their classroom know more than they do when it comes to technology which undermines the authority with which they teach. To overcome these fears, they need to collaborate with other colleagues who are a little more skilled than they are to show them how to do the required tasks. Here Vygotsky's ZPD comes into play as the older teacher has a knowledge gap that can be filled by working in collaboration with someone within the community of practice. This will give the older, less experienced teacher more confidence to

do the task with which he/she initially struggled. As he/she becomes more confident, he/she does not need so much help and guidance anymore and might build up enough courage to attempt similar tasks on his/own. By providing the initial support, the "more knowledgeable one" can now step aside to allow the less-experienced to work on his/her own once he is satisfied that the less-experienced teacher has acquired the necessary skills to master the given task.

Vygotsky reasoned that collaboration that allows learning to take place within the ZPD, provides a structure that supports the learner whilst the knowledge is being built. This demonstrates that collaboration benefits both partners: the more able peer gains through externalizing and articulating knowledge, whilst the other party gains from the support that the more able peer provides" Walker and White (2013:5).

Teachers who are using the available technology in their teaching, thus should not just jump on the bandwagon and just use it for the sake of using it, but should know about where the different ideas, through the existing theories come from. Only when they are aware of these theories, will they be able to use it effectively to support their teaching and learning.

2.3   Enhancers and barriers to ICT-use in secondary school language teaching

Initially a learner is put in school where he or she learns how to read, write and count. However, skills in ICT's are becoming another essential ability for learners to acquire. In this digital era, ICT use in the classroom is important for giving learners opportunities to learn and apply the required 21st century skills. Hence studying the issues and challenges related to ICT use in teaching and learning can assist teachers in overcoming the obstacles and become successful technology users. According to Maürtin-Cairncross (2014:564) and Richardson *et al.* (2014:63), the present youth in our schools, the so-called "Digital Natives or 'Net Generation', usually adapt quickly to technology and are considered to master the technological devices better than adults. Consequently, the Net Generation impacts the situation in the schools. Therefore, there have been worldwide changes taking place in the teaching and learning process towards the use of ICT tools. The schools are faced with a new social and cultural transformation that challenges teachers and learners in relation to their technical ability, knowledge and expertise in the use of ICT. Moreover, the implementation of ICT for all schools has resulted in a growing demand for teachers to use ICT in their lessons in

order to provide learners with a meaningful learning. However, the success of such innovation depends greatly on teacher's adoption of ICT in the language classroom. Up-to-date technology offers many methods of enhancing classroom teaching and learning Ghavifekr *et al*., (2014); Lefebvre *et al.* (2006). Teachers are confronted daily with technology in the classroom that must be integrated in the teaching and learning process. The teacher is expected to prepare the 21st-century learner by using the available technology. If the teacher is not trained properly in the correct technology usage, then the modern learner will not be able to take his rightful place in a world where technology is central. According to Jan (2017:53), the focus is on teaching these students the crucial 21st century abilities of accessing, digesting, and applying information. According to Wagner *et al*. 2006), learning and innovation skills (creativity, innovation, critical thinking, problem solving, communication and cooperation), information, media, and technological skills (information and media literacy), ICT (information, communication, and technology), literacy and life and career skills (flexibility, adaptability, initiative, self-employment, social and cross-cultural skills, productivity, accountability, and lean management), are all important. The education field has changed dramatically and teachers are currently expected to teach all these skills in the language classroom. For them to do it properly, they should be properly prepared to teach these skills through the use of technology in order to prepare learners to become confident players on the world stage.

The teacher is thus key player in improving learning with ICT. Teachers' attitudes towards the use of technology in the teaching and learning process is one of the main factors for achieving a meaningful use of computer technology in the field of education. Moreover, teachers' attitudes are considered as a major predictor of the use of new technologies in the educational settings Therefore, their attitudes towards computers can play an important role in the acceptance and actual use of computers. According to Hyndman (2018) A wide range of research has established that if teachers do not believe in using digital technologies they will fail to transform classes, align with learning goals and integrate technology into curricular content. For the teachers to successfully integrate technology in the classroom there should be buy-in from them to make it work. It must be pointed out that it can only work if they are comfortable in using the technology. However, they must be trained and supported to integrate the available technology. Some of the issues teachers can face relate to the

technology itself. Others relate to student or parent expectations, or whether there is enough of the right professional development to help teachers become proficient in digital technology. Without addressing these concerns, we risk creating a generation of learners who are ill-prepared for a digital future. As previously said, there is little doubt that digital technologies may improve learning by facilitating access to information and enhancing communication, as well as creating options for self-directed and collaborative learning. ICT skills can also assist learners become more capable and future-ready. Although learners may be "digital natives," comfortable with and engaged in technology, they rely on teachers to teach them through digital methods. Along with the curriculum, teachers are required to enhance learners' general ICT competences across all learning areas.

The successful utilization of technologies in the classroom depends mainly on the teachers' attitudes towards these tools in adopting and integrating it. Hence, it can be understood that teachers' attitudes have a direct impact on the usage frequency of technology and usage amount of the technology. Although teachers appear to acknowledge the value of ICT in schools, they continue encountering obstacles during the processes of adopting these technologies into their teaching and learning.

Studies reveal several factors which influence teachers' decisions to use or not use ICT in the classrooms. To better understand why teachers struggle with the use of technology in class the discussion now focuses on ten possible reasons why this is indeed happening as discussed in The Coversation (2018).

(i)   Introduced technology is not always preferred

Technology is not always the answer. Pre-service teachers have reflected on having preferences for manual writing (compared to typing) and incidences of doubling up on time writing notes. Students can also prefer reading print and teachers can disengage from introducing new technology when they don't feel it adds anything extra. Some learners prefer to take down notes in a book than typing it on the device. If this method suits the learner's learning style, then he/she should be allowed to use it as long as the teacher can monitor if actual learning takes place. It is thus up to the teacher to decide when to integrate the technology into the lesson if it adds value to the learning process.

(ii)   Differing device capabilities and instructions

When students are required to bring their own device to school, there can be large differences in device capability, for example between what a cheap android phone can do compared with an iPad. Students may have difficulty writing on small devices over long periods. Teachers may need to give multiple instructions for many different devices. This is indeed a huge problem as the teacher might not have the technical know how to solve these problems and might have to call in the ICT administrator to try and sort out these connection problems.

(iii)   Students can easily be distracted

Learners regularly use devices for social media, playing games, instant messaging, text messaging and emailing rather than for class work. Learners have been described as "digital rebels" (accessing social media and texting), "cyber wanderers" (succumbing to virtual games) and "eLearning pioneers" (undertaking online studies during class time). This is a huge problem for a teacher who does not have enough knowledge about how the device works or there is not a built-in control mechanism that might prevent learners from accessing other platforms while they are supposed to be focusing on the lesson.

(iv)   Technology can affect lesson time and flow

Lessons are interrupted by regular negotiations that reduce lesson time. This is related to learners not putting screens down (during instructions), concealing screens from teachers' view, pretending devices do not work and devices being insufficiently charged. Digital technology training and preparing lessons to include new technologies can also be time consuming. Learners tend to take chances and must be constantly watched and engaged. If the teacher is not vigilant then learners will try and get away with not doing any work.

(v)   Teachers need more professional development

There are many teachers across the province who use the provided technology daily. They need access to ICT improvements for classroom implementation and to keep up with continuous technological advances. This needs to be regular, scaffolded and sustainable. Technology can very quickly become outdated and teachers must be up skilled on a regular basis. In the Western Cape there is simply not enough being done to maintain the current

technological resources because of financial constraints. Only a small number of teachers have been trained in the basic use of technology so there is absolutely no way that they will be able to keep up with the improved ICT tools that become available almost every day.

(vi)   Not everyone has access to technology at home

Not all learners or teachers use a computer at home, are frequent users, have sufficient data or internet access. There is a digital divide of reduced computer literacy in learners from lower socio-economic or regional/rural backgrounds. This is a major problem as learning as in the past should not just take place in the classroom, but anywhere, even at home. Although this is a noble idea and one would expect every single child to be able to have access to technology at home, this is not happening. The reality is that these learners are because of their social status further disadvantaged while their counterparts in richer homes have easy access to these tools. This creates challenges for teachers if they must set different tasks for different students, or if they avoid setting homework with a digital component.

(vii)   Teachers need to protect students

Immersion of students in digital technologies has created additional demands for teachers to protect students' online behaviour (e.g., safety, legal risks and privacy) and to look out for them in the classroom (e.g., theft and locking of devices). Engagement with technology by visiting different platforms for the biggest part of the day and even late at night, means that learners who are on their phones in more than reasonable amounts of time, do not get enough sleep. Possibilities of using the social media to verbally abuse others also need to be checked. These issues often manifest in school and teachers must deal with it.

(viii)   Not all teachers 'believe' in using technology

A wide range of research has established that if teachers don't believe in using digital technologies they will fail to transform classes, align with learning goals and integrate technology into curricular content. Some teachers are so used to teach by using the "chalk and talk" method that they do not want to use the available technology. They are in a comfort zone and feel that they are in control when they teach like it has always been done. Technology is thus seen as a threat and something that will eventually take over their job.

These teachers need to be supported and trained in the use of technology so that the learners in their classroom can benefit and be better prepared for life after school.

(ix)   Lack of adequate ICT support, infrastructure, or time

Appropriate access to technical support (classroom, informally), availability of infrastructure (computer labs, software), policies (whether to administer digital homework) and time allocated to incorporate new technologies are major challenges for teachers. This is indeed a big challenge that must be addressed at school, district and provincial level. It is a real problem and leads to lots of frustration at school level as teachers feel that not enough support is forthcoming. When a teacher struggles with technology in class the school must ensure that is a capable person available to help.

(x)   Tensions between students and teachers

There have been tensions related to teachers confiscating "personally owned" devices, difficulties accessing power, and when students find information online that conflicts with what the teacher is teaching. This problem must be addressed in the school's ICT policy that must be in line with the Provincial and National Policies. At my current school learners are not allowed to use a cellphone in class. Yet, every day learners are 'caught' with cellphones and this leads to disciplinary problems. Times have changed and today's learners are bombarded with loads of information on the same topic. A 2010 Pew Research Center study found that 65 percent of cell-owning teens bring their phones to school despite any bans that may be in place. According to Nulson (2022) cellphones at school cause distractions as learners often forget to turn off their phones in class, and ringing noises or text message alerts disrupt learning and schoolwork. She continues by stating that even if set to silent, cell phones can still cause distraction for students and educators, since text messaging has become a high-tech method of passing notes in school.

This research will focus on the use of technology in teaching and learning, and it will refer to the work of Robert Blake renowned academic and expert in Language Learning and Second Language Acquisition, Laura Nicosia academic and expert in English and Teacher Education, Neil Selwyn, Senior Lecturer at the Institute of Education at the University of London.

Blake (2013) refers to the four critical skills speaking, listening, reading and writing that learners must have. Traditionally these skills were taught in the language classroom by teachers who were seen as the sole provider of information to the learners in the language classroom. Learners were required to be passive recipients of the information given by the teacher. Learners were expected to work on their own and were not given the opportunity to work together and share ideas with their peers. With the development of technology learners are not limited to the teacher whose role is to provide all the information. Through the internet they have access to a variety of resources which can be accessed from anywhere and at any time.

Nicosia (2013) on the other hand focuses on the preparations of teachers to use technology in class by looking at their teaching practice and the delivery of instruction. The focus is further on the co-curricular benefits of technology for teachers. Where Blake (2013) focuses on the four skills for language, Nicosia focuses on reading and writing in the language classroom. According to Nicosia, there is a complex relationship between literacies, schooling, learning and teaching. These new technologies are changing the nature of literacy being engaged with in class and calls for changing in the training of teachers.

Selwyn (2011) focuses more on the production of critical thinkers, critical consumers and critical citizens by teachers. By using the technology learners are connected to a global world where they need to develop a key skill like critical thinking. Language learners can practice these skills in class by making use of technology. By using technology, they can look at international examples of best practice which can prepare them to become meaning role-players on the world stage. Today's learners are therefore much better prepared for a world after school.

Learners in the language classroom can benefit from the use of technology as technology give both teachers and leaners access to so much more. Learning is no longer confined to a classroom but can now, through technology, take place anywhere and anytime.

CHAPTER 3

New media, new literacy, and teaching "digital natives"

This chapter addresses the question of the research project as given in 1.3.1 and 1.3.2 above, namely:

> What do the terms "new media" and "new literacy" mean and how they are relevant to to the use of IT in schools and classrooms in the Western Cape?
>
> What does the term 'digital native' refer to? Is it applicable to scholars in Western Cape schools?

These questions refer to introducing more IT support and skills training in using IT in classrooms populated by 'digital native' learners.

We are living in a fast-changing world in which teachers face many rapid changes. Teachers therefore need to adapt to these changes and adjust their teaching in order to remain relevant. Teachers, especially those who did not receive technological training during their studies must be supported in the use of the available technology. Administrators and policymakers therefore need to be very supportive and ensure that these valuable assets (very experienced teachers), receive the best training to equip them to remain relevant. This can only be achieved by well-planned and proper training, which should be continuous.

To understand the current teaching and learning situation in classrooms, we need to examine the following definitions: "new media", "new literacies", "digital natives" and "digital immigrants". This chapter will therefore explore how these terms fit into a modern classroom. Additionally, this chapter will determine what solutions need to be put into place to ensure that both learners and teachers benefit from what is available for them to reach the best possible learning outcomes.

3.1   What is meant by the term "new media"?

The term "new media" has been contested throughout recent years. Numerous scholars have debated over the significance of this term. This is evident when examining Robert Logan's work, titled *Understanding New Media*, where he argues that:

"New Media refers to those digital media that are interactive, incorporate two-way communication and involve some form of computing, which is very easily processed, stored, transformed, retrieved, hyperlinked and perhaps most radical of all, easily searched for and accessed." Logan (2010).

If a teacher is unaware of these actions, they will be lost in this digital jungle. Teachers therefore must be skilled or up-skilled to be able to access the available technology. This idea is shared by Nicosia (2013) where she states that: "We must prepare instructors/teachers to become tech-savvy. It is not only about classroom practice and the delivery of instruction, but that the focus should also be on the scholarly and co-curricular benefits of the use of technology for teachers". According to Nicosia (2013), these new technologies are not only changing the nature of literacy in contemporary society, but they must also affect changes in the training of our teachers.

When exploring "new media", scholars also need to examine how it relates to the historical "old media", which was used in the classroom to enhance teaching and learning. For years teachers used newspapers, the radio, television and videos to support their teaching. The downside to this was that this media was not very interactive where the learners were passive and the teacher was the source of all information, thus standing central in the teaching and learning process. Today's learners are used to work with the new technologies in a very interactive way where they regularly produce content and they find their way easily around these technologies. By using the old media, learners were usually not allowed to work together, however, with the use of new media, they can collaborate and learn in a more accessible environment. According to new media theorist, Lev Manovich, "new media is native to computers or rely on computers for distribution: i.e. Websites, human-computer interface, virtual worlds, virtual reality, multimedia, computer games, computer animation, digital video, special effects in cinema and interactive computer installations" Manovich (2002).

Gitelman and Pingree (2003) supports Manovich's argument about the uses of new media but offer a slightly altered view. They add another dimension when they state that:

"New Media is examined as a cultural process that involves not only the actual transmission of information, but also the ritualized collocation of senders and recipients" Gitelman and Pingree (2003).

This has the implication that it reflects societal values and societal transformation. Teachers must therefore be aware of how to use the new media and where it fits into their teaching, so that the learning process cannot be seen as a process that is isolated from what is happening in society.

The availability of new media adds another dimension to the learning process as it not only allows for collaboration inside the classroom, but also for the modern learner to have contact with the global world. Brandtzag *et al.* (2016). The implication is that people from all over the world can indeed be in contact and interact with others at any given time and place. Flew (2007) agrees with this when he states that: "As a result of the evolution of new media technologies, globalization occurs". Learning and teaching, therefore, is no longer limited to the confines of the classroom only but can take place anytime and anywhere. Since the media is forever changing at a rapid pace, teachers will have to ensure that they do keep up with what is happening in the information and technology age. They must ensure that they are well prepared to ensure that they can deliver a relevant education to their learners. These learners are so much different to what they have been used to, because of all their exposure to the latest technology. Because technology is forever changing, so must today's teachers change the way in which they do education. The only way that they can do it, is to become life-long learners and be prepared not to see technology as a threat, but as an aid that will help them to enhance their teaching.

3.2   What is meant by the term "new literacies"?

As we examine the terms "New Media", "Digital Natives" and "Digital Immigrants" it is vital to focus on the phrase "New Literacies" and its impact on our understanding of literacy in an age of digitalization. There have been extensive changes to literacy taking place in a digital, networked, multimodal and multitasking world of information and communication. New information and communication technologies (ICTs), such as the Internet (Leu 2000), search engines (Henry 2006), instant messaging (Lewis and Fabos 2005), and email (Reinking 2000), require new literacies and have become important new contexts for literacy, learning, and

life International ICT Literacy Panel (2002). Few, if any, of these new literacies have found their way into the classroom. Indeed, many seem to be resisted by deliberate educational policies (Leu 2006), or by educators who sometimes are not nearly as adept at using the Internet as the students they teach (Chandler-Olcott and Mahar 2003). It is therefore very important for teachers to be aware of these new literacies to support teaching and learning in their classrooms.

Teachers must be able to support learners in acquiring new literacies like online reading comprehension, which is best acquired through social exchange and construction rather than formal, direct instruction. Because literacy is "deictic", "no individual, such as a teacher, can keep up with the many new literacies that rapidly and continuously appear online" (Leu 2000). In the past, instruction has assumed that teachers were always more literate than their learners. This is no longer true because the collective knowledge of a classroom full of "digital natives", using the latest available technologies, is more than the knowledge of one individual teacher. However, we should not underestimate the fact that these two different groups can work well together towards one common goal when they share their knowledge and experience.

For the benefit of this discussion let us return to what is meant by New Literacies by looking at some definitions. It is a broad term developed to articulate literacy practices made available to articulate literacy practices made available through the advent of new and multi-media, particularly (though not exclusively) pertaining to digital advances. Examples of such digital devices include: blogs, fan fiction, video games, websites, online social networking, etc. (Coiro 2005). The National Council of Teachers of English NCTE (2008) defines 21st Century literacies as the ability to:

- Develop proficiency and fluency with the tools of technology;
- Build intentional cross-cultural connections and relationships with others so to pose and solve problems collaboratively and strengthen independent thought;
- Design and share information for global communities to meet a variety of purposes;
- Manage, analyse, and synthesize multiple streams of simultaneous information;
- Create, critique, analyse, and evaluate multimedia texts;
- Attend to the ethical responsibilities required by these complex environments.
    NCTE (2008)

Teachers, therefore must be trained and equipped to use technology with confidence so that the learners can become confident users of the available media which will enable them to exit the system with all the necessary skills and making them confident users of the devices they may encounter in the workplace. It is therefore evident that in today's ever –changing, technological society, having new literacy skills is not an option, but a must.

This idea is supported by Shelow (2016:3) who stated that: "Thanks to technology, the world is getting smaller, and we are communicating with people globally on a regular basis. In order to be successful today, one must be prepared to learn, adapt to, and use new literacies".

Teachers therefore must be able to use and teach new literacy skills to their learners in order to prepare them for life when they exit the school system, whether they are from a poor or affluent school. Digital competence is considered a crucial aspect of education that schools should develop systematically (Ferrari and Punie 2013; Griffin *et al.* 2012). The use of "new literacies" resulting from the use of new technologies, place new demands on teachers and learners. Teachers are expected to move quickly to identify challenges, such as where to find information from several sources, to evaluate and synthesize information from a number of sources and to communicate with others about the challenges they face when they use the new media. They must stay up to date to what is happening in their field in order to prepare their learners properly for the world of work.

Another expectation is that teachers must perform a variety of tasks through the internet and if they do not know how to use it properly it would be a disaster. From the above it is evident that the teacher's role in the classroom must change as they are spoilt for choice in what types of technological tools are available. Despite good access and high national ambitions for developing learners' digital competence, teachers' use of available digital technology was frequently limited to supporting traditional teacher-centred practices, with low learner participation. This implies that newly introduced ICT was used for traditional transmissive pedagogy (Blikstad-Balas and Klette 2020).

Learners are now required to navigate more complex and more rich media that is available online and not just in print. Their teachers must be able to show them how to access and use

the available material. The teacher must then be able to guide the learners through the contexts of learning materials and not just the content.

Schools are made aware of the challenges they face when they are dealing with "New Literacies" when they address important questions about the literacies. Because of all the rapid technological developments schools will have to stay in touch with what is happening and ensure that their teachers and learners are ready for these developments. All this in turn raises important questions about how and where new literacies "fit" into current school practices, and how schools will respond". Schools will have to adjust to what is happening around them and must ensure that they are fully prepared to ensure that their learners benefit from the current technological tools, with proper understanding, guidance and support from their trained teachers.

Teachers sometimes assume that the learners who are on their smart phones all the time know how to use technology productively. This is not true as it is still the teacher's responsibility to guide the learners when they are required to submit online tasks to show them how and what is required. There should be proper guidelines as to the layout and the expected format of the assignment. The teacher must be able tell the learners, how long (total number of words), when the due date is, and if the assignment must be completed online or in a hardcopy format). This can only be done when the teacher knows how to use the available technology properly. This brings us back to the point of teachers being trained in the correct use of technology through a well-planned staff development programme. To illustrate the need, according to the Organisation for Economic Co-operation and Development (OECD 2018), one out of every five teachers in a technologically advanced country such as Norway has a high need for greater knowledge about how to integrate digital technology into their teaching, and most teachers see this as an area where they need more professional development (Throndsen *et al. 2*019). Teachers in Western Cape schools, in fact across South Africa, have the same need of which those in authority should be mindful. By providing the required training and development teachers will be better equipped to use the available technology to enhance teaching and learning in their classrooms.

Although many assume that learners are naturally and intuitively inclined to use new technologies well, we have noted that this is a false assumption. The difficulties many "digital natives" have in using technology to deliver a specific educational outcome, are illustrated in

the work of In studying students' Twitter-use in her college course, Nicholson and Galguera (2013) found that many students had difficulties in using technology to synthesize information and collaborate with their peers – which are two essential new literacy skills. She supports her finding by stating that: "Many of the struggles that the students reported were a result of not having developed sufficient knowledge and skills related to these new literacies" (Nicholson and Galguera 2013:21).

The above shows that teachers must prepare the learners for the future. Learners classified as "digital natives" do not necessarily know how to engage with the new literacies and media. It is therefore imperative for teachers to acquire the necessary skills to lead and guide today's learners in our classrooms. Research shows that access to digital tools is less important for learners' learning than how teachers use them across subjects (Aflalo et al. 2018; Blikstad-Balas and Davies 2017; Baker *et al*. 2018; Jewitt *et al.* 2007; Lei and Zhao, 2007). Without teaching learners new literacy skills, we are not preparing them for their futures. Nicholson and Galguera (2013) suggest five skills that must be taught to address the gap in students' new literacy skills. These skills include:

- The ability to identify questions and frame problems to guide reading on the internet,
- The capacity to identify information that is relevant to one's needs,
- Competence with critically evaluating online information,
- Facility with reading and synthesizing information from multiple multimedia sources, and
- Understanding how to communicate with others in contexts where information is learned about and shared collectively (Nicholson and Galguera 2013:21).

Today's learners often seem not to want to read or even to be lazy readers; whole pages of text seem to be intimidating to them. Teachers must therefore be able to guide them and teach them the correct way. Learners have access to a myriad of text online and if the teacher can source the information first and select what is appropriate for them, they will be able to better understand the questions and tasks. It must again be pointed out that the learners cannot learn and master these skills on their own, but with guidance from their teachers and the opportunity to practice these skills in a safe and collaborative classroom environment.

A new term that came up in the readings on "New Media" and "New Literacies" is "Blended Learning[5]", which is described as "combining the traditional instructor-led classroom learning and technology-based e-learning" (Fong and Wang 2007). Because schools put more technology (computers and other devices) into classrooms teachers should be able to use it to meet learner needs. According to an online article by (McCarthy 2009) "(t)he growth of blended learning is generally paced at the comfort of teachers as they expand their use of digital tools for teaching and learning – at present learning to teach with digital tools seems to be the greater focus than exploring how to deepen students' learning". He continues by stating that the following four categories of tech use in Blended Learning can show teachers how student learning can be deepened:

- Managed learning – Management of instruction and assessment is just as important online as it is the physical classroom.
- Orchestrated learning – Teachers frame learning by directing students toward controlled experience.
- Collaborative learning – Student-led learning experiences – both individual and group activities – can promote collaboration and critical thinking, and,
- Authentic learning – Learning should be made public, where students raise their game when they must share their results with an interested outside audience.

Considering the above we notice the importance of today's teachers being equipped to use their expertise and assessment tools to identify learner's needs, and then to plan properly to use the available resources. According to Blinkstad-Balas and Klette (2020) teachers' discussions in class about ICT are often more practical and technical than intellectual. In addition, learners' use of technology is mostly limited to writing digital texts independently, while many promising educational practices linked to ICT are overlooked. It is therefore important to note that more than an ambitious curriculum and a basic digital infrastructure are required to apply digital technology and to develop digital capabilities in schools. Structures at the national level are insufficient, and professional development at the local level is urgently needed to expand teachers' instructional repertoire and didactic motivation in their connection to digital technology.

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[5] Blended learning is an innovative concept, that embraces the advantages of both traditional teaching in the classroom and ICT supported learning including both offline learning and online learning. It has scope for collaborative learning; constructive learning and computer assisted learning (CAL). Dec 30, 2016

Today's teachers are facing lots of challenges regarding the use of technology in the classroom, and only when they are ready, they will be able to deliver the best possible education in a fast paced world that will enable these learners to compete with their peers from right around the world. For this to happen teachers must be supported in finding new ways of incorporating technology in their classrooms. Hutchinson and Reinking (2011) support this by stating that "(u)nfortunately, classroom instruction is not necessarily responsive to these new ways of reading and writing due to many different reasons, such as not having access to technology or not understanding how to integrate technology". Infrastructure for ICT is a clear requirement for integrating digital technology into education. The lack of such structures at the school level is regarded one of the most significant impediments to ICT deployment (Baydas and Goktas 2016; Bingimlas 2009; Gil-Flores *et al. 2*017).

Teachers therefore need much support in integrating technology for literacy in their classrooms. The support can be in the form of regular training or just an IT support specialist who is available when teachers encounter problems with the technology in the classroom. In this part of the discussion, the focus will be on the support needed by teachers in integrating technology for literacy in the classroom. According to Jaipal-Jamani and Figg (2015), "Teachers must have hands-on experience with technology and then apply it to their teaching". According to Leu *et al.* (2004), this cannot be seen in isolation as they must also properly understand literacy that "includes the new skills and forms of literacy made possible by technological innovations". What then is the support teachers need? To illustrate the complexity of technology integration, I give an indication of where the support is needed:

Frist, access to proper resources as well as an understanding of the educational practices that support technology integration is crucial for effectively delivering teaching and learning in using the available technology (Barron *et al.* 2003; Hew and Brush 2007; Kelner 2000; Miranda and Russel 2011). For teachers to gain such access and teach effectively, they must have the technology available in the classroom. It is the responsibility of the school, district and province to supply the required technological tools.

Second, access to technical support (Earle 2002) is essential for teachers who are expected to use the technology. In certain schools and districts people are assigned to fulfil the role of a

network administrator whose sole responsibility is to offer onsite support. This is unfortunately not possible in most of the poorer schools as the CAT teacher, who also has a full teaching role, would fulfil such a function. The lack of technical, financial and administrative support for schools with ICT resources seems to be an ongoing challenge, with negative implications for teaching and learning (see Bingimlas 2009; Johnson *et al.* 2016; Mirzajani *et al*. 2016; Papaioannou and Charalambous 2011; Wilson-Strydom *et al*. 2005). This idea is supported by Ashiono et al. (2018:48) who reports that when technical support is lacking, computers will not be maintained and the chances of ICT tools failing during teaching and learning will thus be increased. Such occurrences withhold learners from enjoying the benefits ICT tools offer in the classroom.

Third, teachers need general support from administrators, their peers, and school systems Dawes (2012). By providing teachers with an IT support structure, the school will show that it is serious about its ICT program and that it is valuing its staff by making support mechanisms available to them. A teacher who struggles with the use of technology in class can be supported by his/her peers who are more comfortable with the technology. They can also be supported by being part of a community of practice within or outside of the school. According to Norman (2020), teachers who are not tech-savvy can access free software and tools that are available online. He continues by saying that regular internal training sessions help keep staff up to date. Training can be offered by members of staff who regularly use the technological tools available at school. Another useful support system which Norman recommends, is a community of support which can be at school or online.

According to Ertmer (1999) this is not the only support that is needed and she adds the element of the training of teachers and support in changing the attitudes, beliefs, knowledge and skills of teachers to ensure that they can deliver a quality education to the learners in their classrooms. Many studies, such as Ertmer and Ottenbreit-Leftwich (2010), Huthison and Reinking (2011), Miranda and Russel (2011), Overbay *et al.* (2010), Smerdon *et al*. (2000), and Wohlwend (2010) have documented teacher beliefs and attitudes as being factors that explain why they may or may not use new technology in the classroom".
Some teachers are reluctant to implement technology in their classrooms, because they see the technology as a distraction. They simply do not have enough time because they must follow the curriculum and they must finish within a certain timeframe as the focus is on

teaching for results. For these teachers to change their mindsets on the use of new literacies and media, they must feel empowered to do so knowing that they will be supported every step of the way.

The constant and ongoing support that teachers need in their implementation of technology for teaching and learning can only be given through a well-planned, structured Professional Development Programme, and not a once off and one size fits all approach. This programme must include regular training in the use of technology, introduce new developments in teaching and should give teachers the opportunity to collaborate with others in their field. Through these interactions with other teachers, learning communities could be formed that would be a support base, especially for those teachers who are classified as "Digital Immigrants". By embarking on this journey, schools can play a big part in ensuring that every teacher is afforded the opportunity to be properly trained in the available technological tools at their disposal. According to Coiro (2005) "(p)rofessional development is an important part of helping teachers integrate technology … (T)hey need to have models and research-based practices to understand and be able to implement technology into their instruction". This idea is supported by Brennan (2015) who is of the opinion that "(t)eachers need to learn to cultivate an atmosphere that is conducive to creative designing with technology". If they can do that, they can apply what they have learnt in their classrooms.

3.3   What is meant by the terms "digital native" and "digital immigrant"?

At this point it is important to touch on the terms "digital natives" and "digital immigrants" to better understand what happens in today's modern classrooms. "Digital Natives" are also referred to as, "the Net Generation", "Google Generation" or "Millennials". According to Cut (2017) 'Digital natives' are generally born after the 1980s and they are comfortable in the digital age, because they grew up using technology, but 'digital immigrants' are those who are born before 1980's who are fearful about using technology.

It is, therefore, important for older, experienced teachers to be equipped through proper training through a structured staff development programme to allay their fears for using technology in their classrooms where they are required to teach these "Digital Natives" who are more technologically advanced than them. According to Prensky (2001), digital natives

are the generation of young people who are "native speakers" of the digital language of computers, video games and the Internet.

New technologies have been a defining feature in the lives of younger generations in a way that they predict a fundamental change in the way young people communicate, socialize, create and learn. The Internet has reshaped the way we search for information and the way we think. Older teachers may find this very intimidating and must for their own sanity try to understand the modern learner and how they think, see and do things. Cut (2017) further stresses this important point by stating that: "Digital natives see everyone on the equal level and are not dividing the world into hierarchies, they view the world horizontally. They cross boundaries and embrace the benefits of sharing with each other. Those values exist because of what they are driven by".

The difference between "digital natives" and "digital immigrants" is that "digital immigrants" are goal oriented and "digital natives" are value oriented. Digital natives like to multi-task and can do a lot of things at the same time. They read an article, listen to music and can be on social media at the same time. Teachers, who are used to be in total control and have learners concentrating on one goal and working individually, may find this very strange, but need to adopt their teaching to reach the modern learner. They need to read up on the characteristics of "Digital Natives" to better understand how to handle them in class. Kellner (2001:67) argues that "Educators need to restructure schooling to respond constructively and progressively to the technological and social changes that we are now experiencing"

As a result of interacting with technology, "digital natives" think and process information fundamentally differently" Prensky (2001) to"digital immigrants". "Digital natives", therefore process information quickly, enjoy multi-tasking and gaming, while "digital immigrants" process information slowly, working on one thing at a time and do not appreciate less serious approaches to learning. Prensky (2001) argues that this divide, is the greatest problem facing education today and teachers must change the way they teach in order to engage their students. Children raised with the computer think differently and do things differently. They develop hypertext minds. There is a need for education to change in order to create better generation expectations. He claims *the digital native is becoming the dominant global demographic, and the digital immigrant is in decline*. Hagood (2012), agrees

with this statement when they say that "Teachers need to develop their technology, pedagogy, and content knowledge", also referred to as (TPACK)[6] According to Koehler and Mishra (2009), "This framework recognizes that teachers should integrate technological knowledge with subject matter learning, rather than focusing only on technological knowledge at the expense of appropriate pedagogy or the content." Teachers therefore need to realize that the learners will respond better if the teaching they receive in the classroom is in line with the new media is in a "language" that they understand.

It is therefore up to "Digital Immigrants" not to see technology as a threat, but as a tool to work with and a tool which enables them to learn from the "Digital Natives". Teachers, therefore, should be open to embrace the new media and literacies and use it effectively in their classrooms. This can only be achieved if "Digital Immigrants" change their views on the new technologies and accept that these technological tools are part and parcel of their learners', "Digital Natives" everyday life. Once this is realised, these two groups could then work together and achieve collectively. From the "Digital Natives", the "Digital Immigrants" can learn to be more open and willing to engage with learners of differing backgrounds. They can learn from the "Digital Natives" how to sift through and focus on multiple resources and multitask. They can learn to scale the learning and create what is possible. "Digital Immigrants" on the other hand can teach natives to achieve goals by being focused. They can help the "techno-wizards" scale the learning and create what is possible. A "Digital Native" may be able to offer great ideas for layouts, image, design and labelling, while the "Digital Immigrant" would contribute their knowledge to storytelling and the value of including worthy artifacts.

To conclude, teachers do not only require support in the implementation of technology, but also in their ongoing assessment and advancement of learner performance. Recent technological advances have affected many areas of teachers' lives, like how they communicate, collaborate, learn and teach. These advances led to the expansion of their vocabulary which now includes terms like "Digital Natives", "Digital Immigrants" and "Blended Learning". For the 21st Century teacher to move with the times and stay relevant,

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[6] TPACK - Technological pedagogical content knowledge is a framework to understand and describe the kinds of knowledge a teacher needs for effective pedagogical practice in a technology-enhanced learning environment.

they need to embrace new media and new literacies and realize that the learners have also changed. In the following chapter the focus will be on what needs to be done to ensure that teachers, who are expected to use technology can do so with confidence. The focus will be on language teachers and some reading material that could be utilized as a guide to make this transition easier.

CHAPTER 4

Preparing teachers for technology use in language classrooms

This chapter addresses the importance of the different theories and some resources available to teachers to prepare them to use technology efficiently in language classrooms

What theories and resources are available for preparing teachers to use technology in teaching languages to young secondary school learners?

In responding to selected resources available for preparing teachers to use technology in language teaching of young secondary school learners, this chapter will introduce three prominent sources designed to guide teachers who are not 'digital natives' towards a transition to extend IT use in language teaching. Specifically, attention goes to the theories and suggestions such resources put forward.

In the 21st century teachers are migrating into the Information Age. These "digital immigrants", therefore, need to be able to use the available technological teaching tools. There is a huge difference between what is happening in the modern language classroom and how teaching in these classrooms used to be in the past. For these teachers to use the available tools, they must firstly, be willing to use these tools, and secondly know how to use these tools. This can only happen if they are properly trained in the use of the available technology. Once that is done, they should be confident enough to implement the technology in their classrooms, where they are working with "digital natives", who know so much more about the technology than themselves.

4.1   Selected resources available for preparing teachers to use technology

In this discussion the focus will be on what resources are available to teachers, with the specific focus on language teachers who would qualify as "digital immigrants". The discussion will draw on the following three sources that were selected because they can be used as easy-to-follow guidelines for teachers who might find the task to implement technology very daunting. The discussion will focus firstly focus on Shelly's book, secondly on the book authored by Ivers, and thirdly on Bates's book.

- Teachers Discovering computers – Integrating Technology in a Connected World – Shelly *et al*. (2011)

- A Teacher's guide to Using Technology in the Classroom – Ivers (2003)
- Teaching in a Digital Age – Bates (2019)

4.2   A general introduction of teachers discovering computers

Because teachers in today's classrooms are required to use technology for teaching and learning, it is important to understand what they need to know about the technology before they can implement it in the classroom. For the sake of this discussion, it is important to draw on what other scholars say about these teachers tasked with the implementation and what changes they are required to make for the successful integration of technology within their classrooms.

Many teachers who would be identified as "digital immigrants" are currently tasked with teaching "digital natives". According to Prensky (2001) The "digital immigrant" teachers grew up before digital technologies and, therefore, are often not very confident or comfortable with ICT. They can find the introduction of technology to their classroom a daunting task. According to Senjov-Makohon (2006) these teachers must learn new and creative ways to be able to cope with the realities of the modern classroom, where they have to teach with technology.

In order to fully participate in the technologically rich society DITs [7] must actively engage in the construction of authentic and purposeful learning. These teachers find themselves in a very difficult situation as they must move or migrate from a position of being the instructor knowing everything, to a facilitator that must now guide a group of learners who 'speak' a new digital language with which they are not very comfortable with. It is therefore of the utmost importance that these teachers should know how the new media and the accompanying new literacies work. They must unlearn what they learnt in their training many years ago and learn new ways of teaching. They must do this in order to stay relevant. They must assume new roles and must realize that their position has also changed. They should be able to embrace the technology to make it work in their everyday teaching. According to Baş *et al*. (2016) and Lawrence and Tar (2018) the successful use of ICT in classrooms is linked to teachers' positive views about ICT.

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[7] DITs – Digital Immigrant Teachers – teachers who did not grow up with modern technology

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The next part of the discussion briefly touches on Shelly's work and focuses on how the situation in today's classrooms have changed

4.3 Teachers Discovering computers – Integrating Technology in a Connected World – Shelly *et al.* (2011)

According to Shelly *et al.* (2011:2) teachers can, by using this source, reflect on three ways to use the newly acquired knowledge on IT use in classrooms, namely, for their own professional development, for using technology as a tool in the classroom, and for integrating technology, mobile devices, and digital media into their instructional strategies, student-based projects, and for student assessments to improve student learning across the curriculum. This is very important as it is still precisely what needs to be taught by following the curriculum, but the biggest difference today is that the classroom and the context is different. The teacher is still involved in curriculum-specific learning or discipline-specific learning, but through this source, the teacher is learning how to apply teaching principles, knowledge and ideas to authentic and practical classroom lessons and projects that can benefit their learners. Teachers must therefore be aware that traditional 20th century educational practices will no longer provide them with the skills they need to teach their learners effectively in how to become productive citizens in today's high-tech, global workplace. This is precisely what the expectations are for the learner who finds him-/herself in today's language classroom.

Shelly *et al.* (2011) illustrates the changes brought to classrooms by new technologies in the following comparative table:

Traditional Learning Environments	New Learning Environments
Teacher-centred instruction	Learner-centred instruction
Single-sense stimulation	Multi-sensory stimulation
Single-path progression	Multipath progression
Single media	Multimedia
Isolated work	Collaborative work
Information delivery	Information exchange
Passive learning	Active/exploratory/inquiry-based learning
Factual, knowledge-based learning	Critical thinking and informed decision making
Reactive response	Proactive/planned action
Isolated, artificial context	Authentic, real world context

As the table shows, there has been a huge change in the way the modern classroom is organized, what happens inside the classroom and how the teacher's role has changed. To prepare the learners for the world of work or further studies and for them to acquire critical skills the teacher, through the use of technology, has to guide and prepare them. The teacher must be able to properly integrate the technology in the lesson to ideally enable learning. In order to perform this task successfully, teachers need support and training to ensure that the learner receives a quality education and will be able to take up a productive role in the local community, and eventually also in the national and global economy.

Teachers must be aware of their changing roles, adopt new strategies and use the available technologies to enhance their teaching. According to Schlichter (2020:4) in-school assistance and support are also essential. Teachers who work online must "adjust to new pedagogical concepts and modalities of delivery of teaching for which they have not been educated".

After being trained in the proper use of the available tools, these experienced teachers will be able to make the important mindshift toward new ways of teaching. As experts in their field as they already know the learning material. The challenge now is to successfully integrate technology into their classrooms Hepp *et al*. (2015). Teachers must understand how and when to use technology, as a valuable tool in the classroom when used properly (Hollebrands 2020). Teachers' technological abilities, as well as their ability to alter both the quality and quantity of content, are critical to success.

Although the above changes occur in every modern classroom, these changes are also pertinent in the language classroom. Despite a wealth of research into the increasing variety of writing activities in language classrooms, little has been written about the role of technology in the preparation of language teachers focused upon varied forms of writing using new and emerging tools. A language teacher in today's classroom needs a hands-on guide to make the transition from a teacher-centred approach to a learner-centred approach possible.

4.4   A teacher's guide to using technology in the classroom

A Teacher's Guide to Using Technology in the Classroom Ivers (2003) is the second general source that is useful for teachers referred to as DIT's as it is also very user friendly and uses easy language that anyone can easily understand. The book is presented in a way that is

accessible and easy to follow, and it provides teachers with a detailed description of what they should know before they attempt to use technology in the classroom, with scenarios to help readers understand technology integration in practice and action. This easy-to-read guide stands out because there are scenarios that is based on what is happening inside the classroom. A teacher can thus relate to these scenarios and may find the information very useful as there are examples of what happens in real classrooms. There are also follow-up activities and a list of resources that teachers can use to better equip them in their use of technology in the classroom.

4.5   Teaching in a digital age

According to Bates (2019), he decided on his book to fill a gap and allay the fears of teachers who are under-prepared when they are expected to use the available technology in their schools. He continues by saying that the target group that he is writing for are teachers who want to improve their instruction or those teachers who are facing significant changes in the classroom, like introducing technology into their teaching, and whose primary task it is to ensure that their learners are prepared for a post-secondary education or a rapidly changing and highly uncertain job market. He also places a particular emphasis on allaying the fears of teachers who might feel anxious to make the best use technology in their teaching.

The older experienced language teachers need to know exactly this, i.e., that they are not left on their own to use the daunting technology in their classroom inhabited by "digital natives". To support these older teachers when they move from face-to-face teaching to online teaching, research has shown that a number of support mechanisms should be in place in schools. Through mentoring and in-school teams, existing talents and knowledge of staff should be discovered and exploited cooperatively. Depending on the size of the personnel, a buddy system could be beneficial in building abilities. Working with other teachers and watching them utilize different technologies has an impact on their attitudes and beliefs, and can help them gain confidence in using technology (Ertmer 2001; Sadaf *et al.* 2016). Teachers with a lot of experience can be used as role models. Twinning with a larger school may be advantageous for small schools. Teachers can make use of an easy-to-read and user-friendly guide, such as the one Bates (2019) has given. A book of this nature can be used by teachers in any subject, and particularly can also be useful to older and experienced language teachers.

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A variety of technological tools is available for these teachers to use, and only when they are trained in the use of these tools, they would be able to guide the learners in their classrooms. In the past the teacher would be the sole source of knowledge who knew the answers to everything they had to teach, while the learners would be passive receptors of such knowledge. These learners were expected to reproduce the knowledge and in assessment just had to give it back. With new technologies, not only learners are expected to make changes in processes of learning with technology; teachers must also adapt their teaching styles. Teachers who were primarily educated to work face to face in classrooms confront obstacles when teaching online.

As a result of the Covid-19 pandemic and consequent school lockdowns, many teachers were obliged to go online and had to ensure that learners could continue their lessons. This has not been an easy adjustment, and teachers needed very specific skills, knowledge and competences. Many schools were closed as a result of government measures during the Covid-19 outbreak. This necessitated the need for teachers to work online, where they had to develop classes, homework, assignments, and assessments that are appropriate for online learning. Teachers with little or no technology training had to face a significant shift in their profession. Change is generally implemented in modest phases, with the goal of determining what works and what does not, but the Covid-19 pandemic necessitated a more rapid response. In effect, the nature of teachers' work transformed dramatically virtually overnight. It ventured into uncharted areas with no established rules, as much of what works in person does not necessarily work online. Emergency Remote Teaching (ERT), not just online teaching, is how Milman (2020) characterized this teaching online reaction to the crisis. ERT, according to Hodges *et al*. (2020) is a suitable term. This transition, regardless of the terminology, would be difficult for teachers. Every single teacher was affected by the pandemic and had to adjust their teaching styles. They had to rely on technology to reach their learners through online teaching. Language teachers, as all others, were affected having to be prepared to use the available technology to reach their learners. The change also resulted in a significant change in learners' learning practices and achievement. All South African learners, of course, do not

have access to appropriate technology and home assistance, which holds learning and teaching challenges.

The changes in technologies and in classroom settings call for understanding a new educational language to better engage with the learners in the language classroom while doing activities like reading and writing. It must be pointed out that the material currently available is far more and easily accessible through multimedia. Where, in the past, learners were limited to learning through a textbook and required to work independently, they now have access to a variety of other sources through the internet. It is impossible to undertake online teaching if learners and teachers do not have access to computers and fast internet connections which are identified as external influences on the effects of using technology in education. Further, teachers' attitudes and ideas about technology use, as well as their abilities and knowledge, are all identified as internal influences. Teachers who have not had adequate technological training, will lack the required abilities. Ertmer (1999) describes these internal and external elements as 'first and second order barriers' and either of them can stymie efforts to integrate technology. To address both, effective measures are required. According to the OECD's Teaching and Learning International Survey Thomson and Hillman (2018), 40% of teachers lacked professional development in technology use, and nearly 20% recognized a significant need for additional training. Teachers who had received in-service training, as well as younger teachers, were found to use technology more frequently than their older colleagues.

The teacher must be able to access the information quickly and be able to select what is relevant. They can now work together in a collaborative way, so that they cannot just learn from the teacher, but also from each other. The learners in the language classroom are now also given the opportunity to engage with the material and are no longer passive listeners in class and totally dependent on the teacher for all new information, but are now actively involved and therefore become active explorers that lead to a better understanding of the work allowing them to analyse and create their own work. They therefore take responsibility for their own learning and become critical thinkers. These are all the outcomes that must be reached in a modern language classroom, made possible through the successful integration of technology by the language teacher.

The sources that are available to DITs must be able to put experienced language teachers who are still fearful to use technology in their classrooms at ease. Recently, more and more teachers utilize technology on a regular basis and have developed a high degree of proficiency with a variety of programs and apps. However, there are still a small percentage who lack confidence, are terrified of technology, and avoid utilizing it (Kim 2022; Glasel 2018). Despite the high level of technology use, there are still barriers.

In order to properly incorporate technology, participants need in-school instruction and assistance, as well as adequate equipment. Even though technology is mandated in the curriculum, research shows that teachers must believe in it and be willing to use it in their everyday work (Ertmer 2005; Tondeur *et al*. (2017).

4.6   Using technology for assistance in writing

The next part of the discussion will focus on Second Language or First Additional Language teacher's preparation to use available technological tools to assist them with teaching writing. Writing is one of the segments in the curriculum that needs the most attention. The writing paper is the one that counts the most marks in the assessment of both First Additional and Home Language. The writing part is often the most neglected part in the classroom as teachers focus more on literature and grammar. According to Kessler (2012) "In order to prepare teachers for the kinds of writing practices and tools that they are likely to encounter in their careers, we need to have a solid understanding of the various scholarly perspectives that exist on the role of the writing in the classroom". Kessler (2012:214) continues by saying that "we need to understand the writing practices of second language learners" and embrace the changes that are taking place in the modern language classrooms. Language teachers must therefore be aware of recent research to develop a better understanding of the nature of language teacher preparation for using technology in classrooms that incorporate writing.

In the past the language teacher would prepare written topics and expect the learners to plan and develop the written piece on their own. The emphasis was on the individual work of the learner. In today's language classroom there is a big change as according to Kessler (2012:226) "Particular emphasis is placed upon activities and practices that involve the collaborative construction of written information". Today there are many sources available that provide comprehensive and insightful guidance to prepare language teachers to use technology in

their teaching of writing skills to their learners. Kessler (2012:214) continues to say: "The following authors Raimes (1983), Kroll (1990), Reid (1993), Williams and Cui (2005), and Ferris (2003). have provided a foundation in concepts such as writing process, product, genre, context, assessment and feedback for language teachers working in composition classrooms around the world".

These are precisely the kinds of influential resources that today's language teachers in their technologically equipped classrooms need. The modern language teacher must therefore be able to adapt his teaching to fit in with the new writing contexts. Warschauer and Alexandria (1995:335) introduced a "variety of basic activities that encouraged interaction and occasionally collaborative construction of knowledge". This is of benefit to the modern second language teacher who must use the technology to offer a variety of tools that can be used in the language classroom.

For a language teacher who is struggling to adapt his teaching of writing in the classroom, it would be beneficial to go back to when computers were first introduced to the language classroom. According to Wresch (1984:3) "Early on computers in the writing classroom were seen as beneficial by many, but writing on them was still viewed as an individual act. Advantages to using them included that they helped with individualized instruction, provided help when students needed it most, provided instant feedback on certain points, saved students time, helped students understand writing as fluid and dynamic, allowed students to focus more on the meaning in their papers early in the process and not so much on form". This important advantages of the earlier use of computers in the writing classroom paved the way for where teaching with technology for writing is today. Teachers must therefore look at these earlier advantages and realize how the use of technology for writing can benefit them and their learners.

The great changes that technology has had on writing began with the transition from pen and paper to word processors. The actual writing on paper was very limited and took much longer and work had to be redone to produce a final product. With the word processor opened new ways of engaging with writing. Word processors were a fun and real-world tool which made revision and feedback more convenient and increased students' creativity and motivation. This idea is evident today when we look at the outcomes that must be reached by a current

second language learner who must be creative, work collaboratively and produce pieces of work that will allow him to take up his rightful place on the world stage. The teacher thus plays a very important role to guide these learners by using the latest available technological tools in the language classroom. The teacher must be a confidant user of the technology and it can only be done if the teacher is properly trained in the use thereof and supported by the administration at school.

Today there is a variety of different forms in which documents for the use of writing in language classrooms are presented and teachers should know what they are in able to use then in their classrooms. This is in line with what Warschauer and Healey (1998:31) predicted when they said that, "documents would mainly be written, distributed and read online and not on paper". There are indeed several new computer mediated communications contexts that are available. They are, text chats, voice chats, video chats, wikis, blogs, microblogs and social networking sites like Facebook and Myspace. The learners in the modern language classrooms use them daily and it is up to their teachers to realize what value these sites can add to the language classroom to enhance writing. Teachers therefore should be aware of the existence of these sites and use them or learn how to use them to bring the outside world into the language classroom.

4.7   Moving from a teacher-centred approach to a learner-centred approach

In the last few decades, the education industry has seen a progressive shift away from teacher-centered systems to student-centered approaches to material delivery and assessment. This transformation, however, has happened in different ways in different parts of the world. While many Western countries have begun to adopt these methods at all levels of education, much of the developing world still relies heavily on teacher-centered learning. This idea is supported by Van Wyk (2012) who believes that the change in the approach to teaching and learning in South Africa is in line with the cooperative learning and teaching strategy, which focuses on development of skills for the future in line with National Curriculum Statement (NCS) Policy of the NDE and the Curriculum and Assessment Policy (CAPS) also to enable active classroom participation among learners' achievement at school. Tresner (2010) agrees with this by stating that though the teaching and learning process has over the years changed from teacher dominance to learner-centeredness, the teacher still remains an important factor in the classroom as he/she is in a position to select teaching

strategies that would work well for the benefit of all learners. This can only be done when the teacher accepts that what works for one set of learners may not work for others. The teacher therefore needs to differentiate in order to reach all learners. It therefore makes much sense in agreeing with Brimijoin (2005) that teachers need foundational skills in differentiation to understand how each student best learns the curriculum.

To support this discussion the following scholars work will be in focus: Kessler (2012), Wah *et al.* (2015) and Williams and Cui (2005).

4.7.1 Preparing Tomorrow's Second Language Writing Teachers to Use Technology Kessler (2012)

To help language teachers make the transition from a teacher-centred approach using limited resources in their teaching to a learner-centred approach using a variety of technological tools to master writing, Kessler (2012:228) suggests the following list that teachers should consider:

Pedagogical practice/observation	Studies
General -	
The public nature of online writing contexts can motivate students	Bloch (2008)
Considering multiple literacies can enhance writing instruction	Selfe and Hawisher (2004)
Speaking Fluency can be promoted through the use of CMC writing tools	Payne and Whitney (2002)
Comfort with technology tools and writing expectations can influence students' writing.	Ware (2004)
Supporting teachers to integrate technology into their teaching is crucial.	Ware (2004)
Exposing teachers to a variety of online resources to assist students is necessary.	Ferris (2003)
Feedback -	
Feedback can be delivered in varied ways to raise student uptake.	Arnold and Ducate (2009)
Interactive feedback can help students reflect upon their writing	Ferris (2003)
Electronic feedback has improved legibility and permanence	Ferris (2003)
Peer response can be a valued and valuable means of feedback with careful implementation.	Hedgcock and Ferris (2013)
Computer-generated feedback can help students find and correct plagiarism in their writing.	Kessler and Bikowski (2010)
Collaborative writing -	
Collaborative writing may require a "reconceptualization of classroom teaching."	Storch (2005)

Collaborative writing allows students to exchange feedback.	Storch (2005)
Collaborative writing can involve varied degrees of student control and teacher intervention.	Chun, (2006), Kessler (2009), Storch (2005)
Collaborative writing promotes peer response activities.	Liang (2010)
Collaborative writing can help students develop autonomous learning abilities.	Kessler and Bikowski (2010)
Collaborative writing can complement individual writing practices	Elola and Oskoz (2010)
Collaborative writing can be less comfortable for students even when they believe it can produce better results.	Elola and Oskoz (2010)
Collaborative writing can promote varied approaches to negotiation.	Blake (2013), Lee (2002), Smith (2003)
Collaborative writing can promote complexity and lexical diversity through online planning in text chat.	Sauro and Smith (2010)
Collaborative writing can be done in groups using many-to-many tools	Kessler (2012)

The emphasis has been on writing and new ways of doing it in the language classroom. Teachers who are still feeling lost in their implementation of technology into their classroom teaching can use this valuable guide that is supported by a whole group of experts in their field. Instead of wasting time and read up on what they are saying individually, they can just refer to Kessler's list and make it part of an easy reference for when they get overwhelmed by the variety of material that is available to them for usage in their language classrooms.

What is amazing is that many people have learnt how to adapt to the available sources and started to use it right around the world. Language teachers, who are preparing their learners for life after school should embrace the available technology and use it extensively during the writing lessons in their classrooms so that these learners are optimally prepared when they are facing the outside world. The question to these teachers is then: Are the learners in your classrooms receiving the guidance and assistance that you should give them by using the latest technological tools, or are they left on their own because their teachers, maybe because of fear, do not want to take a leap of faith and explore the wonderful opportunities available to them using the technology. Teachers must also realize that writing should not be taught in isolation, but that there should be an integration of skills, and that they should be willing to learn from others and establish connections with others, in order for them to become valuable and significant players in the new direction that education with the use of technology is going.

The significance of this source is that it encourages writing teachers to think critically about their classroom practices and the role that new and emerging technologies may play. They can learn from it and use it to equip them to become better language teachers and therefore empowering their learners to become better writers.

4.7.2 Preparing Digital Immigrant teachers to teach Digital Native Learners in ESL Classrooms Wah *et al.* (2015).

The second source recommended to digital immigrant teachers to use for writing in their language classrooms is: Preparing Digital Immigrant teachers to teach Digital Native Learners in ESL Classrooms by Wah *et al.* (2015). In this publication Wah agrees with Kessler about what DIT's must know for them to successfully implement technology in their Second Language writing classrooms by stating that "Learning in the 21st century is so different from yesteryears, due in most parts to the wide availability and advancements of ICT tools, communications, information, and the way human learn and work. Given this change, education must shift to incorporate computer-based, electronic technologies integrating learning with these technologies within the context of the academic subject areas", but he brings another dimension to the argument when he suggests that they should use Digital Storytelling (DST)[8] in their writing classrooms. Wah *et al.* (2015) views DST as an instructional medium that could be used in their ESL[9] classrooms.

According to Wah *et al.* (2015), "This concept is aimed at the professional development of language teachers by giving them self-ownership experiences through the TPACK[10] lens, using the concept of digital storytelling as pedagogy and producing the output – a digital story". This idea is supported by Robin (2008), who views "DST as an effective instructional tool for teachers … to facilitate learning". Teachers thus have to strike a fine balance between technology, pedagogy and knowledge content during the creation of DST to enhance formal learning yet catering to the different learning styles of their learners.

As given in Wah *et al.* (2015), the following benefits of using DST should be noted:

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[8] DST – Digital Storytelling - is a relatively new term which describes the new practice of everyday people who use digital tools to tell their 'story'. Digital stories often present in compelling and emotionally engaging formats, and can be interactive.
[9] ESL – English Second Language or English First Additional Language (in a South African context) classroom
[10] TPACK – Technological Pedagogical Content Knowledge

- Introduction to new language item/skills
- Understanding complex ideas/concepts
- Promoting in-class discussions
- Facilitating collaborative activities in which learners can work together towards on common goal.
- Learning problem-solving and critical thinking skills
- Constructing own understanding or experience in a content area.

In conclusion, Wah recommends that teachers must be better prepared for technology integration by "having conversations about computer tools, and that "pedagogy and content needs to be extended in other academic courses".

4.7.3 Teaching Writing in Second and Foreign Language Classrooms. Williams and Cui (2005).

The third source recommended to digital immigrant teachers to use for writing in their language classrooms is: Teaching Writing in Second and Foreign Language Classrooms. Williams and Cui (2005). Williams is an experienced language teacher and researcher and gives clear guidance on what language teachers should do in order to successfully integrate technology in their classroom practice. Williams emphasizes that writing involves more than just text production and that it is also a "learning and thinking process" (p.76). This publication's aim is to assist teachers who "feel unprepared to teach L2 composition" (p.1-2) which is a writing process through and through. Writing skills among English First Additional Language (EFAL) students are reportedly deteriorating, which gives cause for concern (Akinyenye 2012; Blease and Condy 2015; Pineteh 2014). Teachers' lack of awareness of good writing procedures to positively assist writing development, especially among second language learners, has been linked to poor writing skills among learners in South Africa (Blease and Condy 2015). Many EFAL teachers have a poor understanding of writing approaches, and as a result, they employ ineffective writing strategies in their classes (Dornbrack and Atwood 2019). Even though the Curriculum and Assessment Policy Statement (CAPS) (Department of Basic Education 2012) promotes the use of the process approach to writing, instructors have had few opportunities to learn how to use it (Dornbrack and Dixon 2014). As a result, many teachers struggle to put the curriculum into reality. In addition to these educational problems, Pineteh (2014) observed that most teachers had poor writing

abilities. They are not authors. This has an impact on their attitudes toward writing and writing instruction. This could be one of the reasons why researchers such as Akinyenye (2012) or Ngubane (2018) found very few writing practices in EFAL schools.

Writing pedagogy in EFAL FET classrooms, three years before students graduate from high school and enter higher education, cannot be overlooked because it has serious implications for students' post-school writing abilities (Dornbrack and Atwood 2019). These learners must be prepared properly to give them a reasonable chance of success if they were to continue their studies at tertiary institutions. Because of weak writing preparation at school level, some learners find the transition from school to tertiary education and to the world of work extremely difficult and battle to adjust.

Teachers can also find useful instructional activities, student writing and scoring rubrics to help them in their classrooms. Teachers are given the following factors that influence teaching in the Second Language: "implicit and explicit knowledge, input, system and item learning, attention, practice and time, acquainting readers with the cognitive, sociocultural, and educational contexts for academic L2 writing. Teachers must be aware of these factors and must be willing to do some introspection into what is happening in the language classroom. A very important question that needs to be addressed is: "Is what I am teaching, preparing my learners enough to make them successful at university or when they enter the labour market?" If the answer to this question is no, then adjustments must be made so that the learners can indeed make the transition from school to university easily. Writing, according to Blease and Condy (2015), is one of the most crucial language abilities. The language classroom is a primary site for writing skills development – thus, important in language learning, but also as a skill transferable to other subject fields. Writing is a means of generating and expressing ideas. When utilized for interactive conversation, it can also help to consolidate linguistic structures (Isleem 2012). Isleem (2012) feels that writing allows students to acquire crucial abilities such as originality, creativity, and self-expression, all of which are necessary for academic achievement. Writing is also important for accountability in standardised exams throughout the schooling curriculum Akinyenye (2012).

In chapter 2 Williams considers how texts, L2 writers, and instructional processes influence language development, stressing the importance of audience awareness in teaching L2

writing. These texts can be found on the internet. It is vitally important that the language teacher knows where to find the information to guide the learner in the writing process. The idea is supported by Ahmadi (2017) who states that "one of the important elements for learning is the method that instructors use in their classes to facilitate the language learning process". The teacher guides the learner in finding the correct information for the writing process and now assumes a new role in this process as he changes from an instructor to a facilitator. A teacher's ideas and attitudes about writing, as well as his or her other knowledge about writing, learners' writing abilities and proficiency levels, curriculum, and objectives for the writing classes, all affect a teaching technique in a writing classroom (Lee 2008). As a result, effective writing pedagogy is critical to the development of effective writing skills among students. According to Escholz (1980), the product approach, followed by many older language teachers, follows a traditional approach to teaching writing by requiring students to focus as much as possible on the model, form, and repetition of the teacher's work. Teachers who use the product method, for example, place a greater emphasis on the text's grammatical elements and organization than on the text's ideas and concepts (Ngubane 2018). The teacher, who in the past, was the central figure in the language classroom, and was in control, providing examples that learners had to follow in their writing practices, must now stand back and guide the learners in producing their own work. This is contrary to the training language teachers received up until the early 2000s, therefore many find these changes difficult to implement.

However, this change should be easy when the teacher is properly trained in the use of the available technology. Technology has an important role in promoting activities for learners and has a significant effect on teachers' teaching methods. If teachers do not use technologies in their teaching they will never be able to keep up with these technologies. Thus, it is very important for teachers to have a full knowledge of these technologies in teaching language and writing skills (Pourhosein Gilakjani 2013; Solanki and Shyamlee and Phil 2012). Lee (2008) agrees with this view in the following statement: "A teacher's ideas and attitudes about writing, as well as his or her other knowledge about writing, learners' writing abilities and proficiency levels, curriculum, and objectives for the writing classes, all affect a teaching technique in a writing classroom". As a result, effective writing pedagogy is critical to the development of effective writing skills among students.

Williams and Cui (2005), Chapter 3 presents methods and techniques suitable for L2 learners at beginning, intermediate, and advanced levels. The chapter also appraises technological approaches to teaching L2 writing. This is what a teacher needs when he/she starts out using technology in the language classroom with the extra focus on how this can be used in the writing process. According to Nunan (1999) the focus of writing teaching in a process approach is on the stages involved in drafting and redrafting texts. When students write, they go through the same stages that writers do. Flower and Hayes (1981) defined these steps as: brainstorming or prewriting, writing, revising, editing, and publishing. The stages of the writing process approach is thought to empower learners by allowing them to make decisions about the direction of their work through discussions, tasks, drafts, feedback, and informed choices, allowing them to take responsibility for their own growth.

Raimes (1991) defined the following essential stages of the writing process that teachers can use in their classrooms when they use technology:

- o Planning ahead (selecting a topic and planning what to say)
- o Composing (putting a draft version on paper)
- o Making corrections (making changes to improve writing)
- o Proofreading and editing (focusing on expressiveness and punctuation)
- o Assessment (assessment of the written work)

These five steps, according to Flower and Hayes (1981), allow students to produce ideas before they start writing, revise their ideas back and forth, and edit their thoughts before the final output is published. According to Tribble (1996:220) 'the process method focuses on the learners' individual ability to write coherent texts after passing through writing tasks in phases'.

A challenge for language teachers is to be aware of these stages and to conceptualize how they would unfold in an IT-equipped classroom. Learning to develop the steps in consecutive stages and implement them in their writing skills lessons could greatly benefit the language learners.

In conclusion this book is a short, accessible text that would be useful to ESL writing teachers. It could also be seen as a resource for those interested in teaching academic literacy in foreign

languages". This book is very accessible and does an excellent job of combining theory, the latest research, and practical application. Each chapter provides several questions for discussion in pre-service programs, or for in-service teachers to monitor how they are (or should be) teaching writing in their own classrooms.

4.8 Conclusion

This chapter discussed general sources that could be useful to language teachers who are classified as "Digital Immigrants", yet are expected to use the available technology to teach "Digital Natives". The selected sources can be used to put these teachers at ease and help them in this important transition from occasionally using single media to regularly using multimedia in the language classroom. In the second part of the discussion the focus was on specific illustrative sources available to language teachers teaching and facilitating writing. These sources illustrate reflection on how language teachers can become more confident using several guides available to steer them through this uncertain and uneasy journey as they are expected to prepare their learners to acquire skills that will enable them to fit into the world of work when they exit the school system.

CHAPTER 5

Dealing with teachers' resistance to using IT in language classrooms

This chapter addresses the fourth specific question of the research project as given in 1.3.4 above, namely:

What are the kinds of problems language teachers encounter when using ICT in their classrooms or for assessment purposes?

In order to address these problems, one needs to acknowledge that there is resistance on the part of some experienced language teachers who are to use ICT in their classrooms. This discussion will firstly focus on the kinds of resistance experienced teachers experience to use ICT and secondly on the factors that influence teacher attitudes towards using the available technology in their classrooms and thirdly on the role of assessment when integrating ICT.

5.1   Kinds of resistance of experienced teachers to use IT

The education system in South Africa, like many other places elsewhere in the world, has been bombarded with new technologies and there is a huge expectation that teachers should use these technologies in their classrooms. Everyone is talking about this new way of doing education and how these new technologies can and must change the way that it (integrating technology in teaching and learning) is done. The question that must be answered is, is it really happening inside all the classrooms? Unfortunately, as not every single teacher is using it to deliver a quality education for all of our learners. The focus in this paper is to investigate why some experienced teachers are resisting the use of IT in their classroom for the teaching and assessment of learners. There has been loads of literature produced on this topic and for the purpose of this discussion it will be useful to look at the arguments produced by some researchers. In the twenty-first century, effective change implementation is still a major concern for educational leaders. Resistance to change among instructors or staff members is one of the most significant barriers to effective reform implementation, as this behaviour hinders the adoption of any educational reform. Most system failures have been determined to be caused by resistance to technology.

The use of ICT for teaching and learning is very important for the growth of South Africa and the growth of individuals. South African schools have introduced ICTs in schools and teachers

are compelled to adopt and integrate technology to improve their pedagogic activities. The expectation is that ICT's will solve the problems in our schooling system and that teachers can do this if technology is available to use in the classroom. This places a huge burden on the teaching corps as a huge percentage of teachers are digital immigrants who are fearful of using the latest technology. Very many schools are currently well resourced with ICT infrastructure to improve the quality of teaching and learning.

Information and communications technology (ICT) is an important part of most organizations nowadays. Computers began to be used in schools in the early 1980s, and some scholars suggest that ICT will be an important part of education for the next generation. Teachers are expected to integrate technology into the classroom according to policies laid out by the education department. However, this is easier said than done because not all teachers are comfortable with using the technology in class.

Some of the issues teachers can face relate to the technology itself. Others relate to student or parent expectations, or whether there is enough of the right professional development to help teachers become proficient in digital technology. Without addressing these concerns, we risk creating a generation of learners who are ill-prepared for a digital future.

Up to date technology offers many methods of enhancing classroom teaching and learning Ghavifekr *et al.* (2014); Lefebvre *et al*. (2006). Dawes (2012) stated that new technologies have the potential to upkeep education across the curriculum and deliver opportunities for efficient student-teacher communication in ways not possible before. ICT in education thus has the potential to transform teaching. In many countries the introduction of ICT into schools has been praised as the necessary (although not unproblematic) course of action for the qualitative improvement of teaching and learning methodology (OECD[11] 2001; OECD 1999; Lehtinen and Sinko 1999; Pedretti *et al.* 1999). The introduction of ICT in school is considered a necessity premised on economic, social and pedagogical rationales (OECD 2001) and many

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[11] OECD - The **Organization for Economic Cooperation and Development (OECD)** is an international economic forum that pursues cooperative approaches to common issues affecting individual members as well as the global community.

governments have launched major programs and invested substantial amounts of capital to support ICT-in-Education projects (Pelgrum 2001).

However, this potential may not easily be realized as Dawes (2012:61) underlined when he stated, "problems arise when teachers are expected to implement changes in what may well be adverse circumstances".

According to Wang *et al*. (2015) Numerous studies have indicated that ICT can improve education outcomes. The impact of ICT on education can thus be manifested by the changes related to the teaching form, teaching environment, teaching content and teacher-student interaction, greatly facilitate teaching and learning. Consequently, government and educational authorities from all over the world have invested a large amount of money into educational settings in the form of ICT aiming to transform traditional teaching. Howard, and Mozejko (2015), agree with this statement when they say the following: "These and other technology initiatives have exploded into schools but failed to revolutionise or dramatically improve student learning."

In this new era learners must be able to navigate, analyse and understand complex and changing landscapes of digital technologies and the data they mediate. They cannot do this on their own as they need their teachers to guide them on this new journey. According to Thompson, (2013), "Young people tend to use a lot of digital technologies, but they mostly engage in social networking and simple internet searches". Therefore, for students to develop sophisticated uses of digital technology, these uses need to be explicitly integrated into their learning.

Research has shown that it is the change in processes of teaching using digital technologies that result in gain in learning and not the actual technology that is used. However, in many schools classroom teaching is still dominated by traditional education characterized by textbooks, blackboards, chalk, and talk, as most teachers still do not use computer technologies in classroom teaching. Howard and Mozejko (2015) continues by making the following comment: "For significant change to happen in schools, evidence has shown that teachers need to be able to take risks and experiment with how they design different learning tasks and classroom interactions. Through this process of exploration, they begin to figure out which digital technologies can support the learning they want to see in students". Although

the use of technology in the classroom has increased significantly during the last years, there are still some educators that are struggling with it, that feel left behind, and do not know how to include it in their instruction. The worst part is that there are some educators that completely refuse to use any educational technology.

It is therefore important to focus on why teachers are reluctant to use the available educational tools provided by the schools, districts, province and the National Department of Education.

5.2 Factors influencing teacher attitudes towards using the available technology in their classroom

EXTRINSIC FACTORS[12]	INTRINSIC FACTORS[13]
computer competence	age
computer training	gender
computer anxiety	teaching experience
school support	school location
administration support	grade level of teaching
teachers' theory of teaching	computer experience
leadership	uncertainty of how to use technology
shared group vision	unwillingness to learn and use technology
technical support	pedagogical knowledge
pedagogical support	
teachers' lack of training	
security constraints	

It is very important to acknowledge that there are real fears that experienced teachers (digital non-natives) face when they are expected to integrate technology into their teaching practice. These fears must be addressed to enable these teachers to make proper use of the available educational tools in their classrooms. Only when this is done, then only the real benefits of using the technology inside the classroom can be realized, and then the most important people in the education system, the learners, will really benefit.

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[12] Extrinsic factors – controllable factors
[13] Intrinsic factors – uncontrollable factors

Overall there is evidence that ICT is assimilated into the established way of teaching without teachers making effective use of the new medium to create innovative learning experiences. "Technology use reflects traditional classroom methodology, though affording some increased attention to the individual learner. It still depends too much on highly motivated pioneering principals and teachers" (OECD 2001:67). Also "information technology in the classroom is used in an ineffective way and it has been proved difficult to integrate within traditional curriculum settings" (Van Belle and Soetaert 1998).

The focus in this part of the discussion is on the factors that contribute to experienced Digital Immigrants' inadequacy when expected to integrate technology in teaching and learning. The intrinsic factors are important to be aware of if schools want to have buy-in from all teachers. If they can be eradicated, then the training, assistance and mentoring of these teachers can take place smoothly, where after these teachers may be convinced to embrace the new technology. According to Shelly *et al.* (2011:217) "With all change comes barriers, and technology integration is no exception.

Although there are several factors included in the table, the following three factors and their role in the process of introducing ICT in the classroom will be discussed. I have selected the three factors, because, firstly, for technology to be implemented properly in a school context, the role of the principal as the driver of this process and manager of the curriculum is very important to lead the implementation process. Secondly, a clear vision statement of the process is required for all teachers to buy in to this vision and thirdly all teachers should be regularly trained in the proper use of the available technology. The regular training of teachers in the use of available technology can form part of a well-structured professional development programme.

The following three factors will be looked at in the next part of the discussion:

- Leadership of the school principal in the implementation of digital technologies in the school,
- A clear vision for teachers of how the process will and can work.
- The teachers do not know how to use it.

The first factor to be discussed is the role that the principal plays in the implementation process of technology within the school.

Leadership relates to the school principal. Research has shown that how a principal prioritizes digital technologies was the strongest contributing factor to teachers' use and related student-centred pedagogy (Law *et al.* 2008). It is therefore crucial for the school principal to be the driver of the process. If not, teachers will be left on their own and some tech-savvy teachers will use what is available and become the master in their field. A visionary principal would realize that these tech-savvy teachers can be used as mentors and motivators for those who do not feel comfortable using the available technology in their classrooms. In a study on the implementation of technology done in a few Greek schools (Demetriadis *et al.* 2003) where teacher-mentors are used to train and support their colleagues in the use of technology, they found that they were not easily accepted by regular members of school life and find necessary resources for their training efforts (considering that the whole training project was on a voluntary basis).

Teacher-mentors unequivocally agreed that the role of school principal had been very important to this aspect. There are however both positive and negative attitudes recorded regarding their behaviour. Positively acting headmasters intervened and offered solutions to problems or newly encountered situations (e.g., allocated appropriate time for training sessions, encouraged school teachers to attend, enhanced perceived importance of the project). On the other hand, some of them exhibited a bureaucratic (and even possessive) attitude in the management of school resources, especially in relation to the availability of computer laboratory and they were generally unwilling to help and facilitate teacher-mentors. The principal as the manager of the school and manager of the curriculum must play a very important role in encouraging, motivating and guiding his teachers in the use of the technological tools at school.

Through this research Demetriadis *et al.* (2003), identified three distinct attitudes in school headmasters' behaviour: (a) Supporting (mainly in Gymnasiums[14] and in Lyceums[15] with former experience in innovative programs), (b) reluctant to support (mainly in Lyceums for the reason of not disturbing school timetable and students' preparation for their examinations) (c) initially negative turning afterwards to positive (mainly in Gymnasiums).

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[14] Gymnasiums – type of secondary school in Germany
[15] Lyceums – type of school in Greece

The principal should also provide the necessary support structures for change in so far as the use of technology in education is to occur. This includes technological support for learning about and using digital technologies, as well as pedagogical support for developing and experimenting with using technologies in teaching and incorporating student-centred practices. According to Gulati (2008) and Kozma (2002) another barrier to poor countries implementing ICT in their education systems is a scarcity of qualified teachers. Qualified ICT personnel and skilled human resources are in short supply at many schools to assist and manage the integration of ICT in the learning and teaching process.

By ensuring that all teachers know that there are support structures in place for the implementation of technology in the classroom and the assurance that the principal is on board leading the process can motivate staff to successfully implement technology within the school.

The second factor influencing the use of technology in the classroom is the role of teachers in formulating this vision. An important component of this is a clear vision outlining how digital technologies are expected to be used. By knowing this, students will engage in critical analysis of texts in each subject area. These efforts are expected to foster the important educational reform that ICT based teaching can hopefully support by transforming students into active knowledge constructors, a more appropriate profile for the citizens of the Information Society. It is expected that "an educated citizen in the year 2020 will be more valuable as an employee because he or she will be able to produce more builders of theory, synthesizers, and inventors of strategy than valuable as an employee who manages facts" (Hamza and Alhalabi, 1999).

Teachers should participate in creating this vision. By participating in the creation of a 'shared vision,' teachers are more likely to feel part of the process of technology use and change, which creates a school culture of change. Change becomes a community activity and everyone feels valued. Teachers' attitudes and intrinsic resistance to change are a major impediment to their ICT usage in the classroom (Cox *et al.* 1999; Jones 2004; Schoepp 2005). Teachers, particularly those with greater experience, show reluctance to shift from a traditional text-based didactic style to a technology-based teaching method. Some teachers are either suspicious of the new methodology's success or lack trust in utilising digital

materials. This is related to the age and/or years of experience of the teachers. Teachers with more teaching experience are more reluctant to change, and those who are accustomed to the "chalk and talk" style are unmotivated to try to incorporate ICT into their classrooms.

The decision to use technology for instruction, thus rests on the classroom teacher. Educational technologists have long suggested that the use of digital technologies is more likely to lead to enhanced learning outcomes and student achievement when combined with student-centred practices (e.g., Ertmer and Ottenbreit-Leftwich (2010); Lim *et al*. (2013)), but it is often uncertain which practices or digital technologies produce these results. This uncertainty has been a significant factor in teachers' adoption of digital technologies in their practice.

The third factor influencing the use of technology in the classroom is that some teachers simply do not know how to use it. This is a big problem as teachers are expected to use the available technology without proper support and training. When they do receive some training, the training is mostly very superficial. Most teachers are far from being ICT competent. Naturally they worry about their ability to overcome possible technical problems and to handle educational software effectively which, in turn, makes them feel insecure and reluctant to implement technology in the classroom on their own. Technical support is crucial to overcome these initial drawbacks. Any lack of it may significantly decrease teachers' motivation to work with computers. Technical support may well be offered by insiders (e.g. school teachers properly trained to use the technology on site) and it should always be on time. If teachers get the support they need, they will learn. If not, they will abandon it and convince other teachers to do the same thing. By providing these teachers with proper and ongoing training and support, the school will ensure that these teachers feel valued and confident in using more technology to enhance teaching and learning.

There are many other elements identified as obstacles in the way of introducing ICT in schools. Pelgrum (2001) presents a list of ten such issues that educational practitioners perceive as serious impediments for realizing their ICT related goals. From this group of ten, the three major ones are: (1) insufficient number of computers, (2) teachers' lack of knowledge/skills, and (3) difficulty to integrate in instruction. Ely (1993) similarly distinguishes as major

conditions, relevant to ICT implementation, the following: (1) dissatisfaction with the status quo, (2) existence of knowledge and skills, and (3) availability of resources.

The two taxonomies identify the same issues: Ely's "existence of knowledge and skills" relates to Pelgrum's "teachers lack knowledge/skills". According to recent research, teachers must receive training in order to successfully integrate technology into their classrooms Hepp, *et al.* (2015). Teachers must understand how and when to use technology, which can be a valuable tool in the classroom when used properly (Hollebrands 2020). Teachers' technological abilities, as well as their ability to alter both the quality and quantity of content, are thus critical to the successful integration of technology for teaching and learning.

Also Ely's "availability of resources" is relevant to Pelgrum's concern about an "insufficient number of computers". Ely's "dissatisfaction with the status quo" is directly related to what Zhao and Cziko (2001) describe as: "discrepancies that activate the individual teacher. The issue of teachers' confidence in their ICT competence as a major factor for integrating technology in teaching is reported in other studies as well. Mooij and Smeets (2001) state that "if teachers are not confident in their ability or competence to handle computers this may hamper their willingness to introduce technology in their classroom". In an international study (Smeets *et al*. 1999 cited in Mooij and Smeets, 2001) it is also reported that the most important reason teachers mention for not using ICT, is that they are not familiar with ICT, or they feel unsure about it. This ICT competence factor is the same that Zhao and Cziko (2001) refer to as "Control Principle".

Some other important factors are also recorded as significantly influencing ICT use in schools. Teachers claiming to follow more innovative educational practices (use of inquiry, project-oriented work, hands-on activities) are more likely to use new technologies, than those who stick to the more traditional instructional approaches. Teachers frequently use technology and are highly skilled with a range of applications and tools. A minority number of teachers, nevertheless, continue to lack confidence, fear technology, and steer clear of it (Kim 2022; Glasel 2018). Technology is widely used, however there are still obstacles. Teachers require in-school training, support, and equipment in order to effectively integrate technology. Although technology is required in the curriculum, research indicates that teachers must accept it and be willing to use it in their day-to-day job (Ertmer 2005; Tondeur *et al*. 2017).

Research data indicate that the introductory step for computers in school is using them in administrative tasks and not as part of the learning process (McCannon and Crews 2000:111). There is also an indication that teachers proceed to adopt ICT in stages. (Wells and Anderson 1995 cited in Myhre 1998), report that teachers initially focus on their own interaction with the new medium and as they gradually become comfortable with the technology they start deliberating upon potential learning benefits that would result from the use of the computer. Myhre (1998) concludes that this increased familiarity with computers allows teachers to turn their interest in the pedagogical use of technology (rather than its operational issues) but also emphasizes that such change processes do not occur rapidly and are not easily achieved.

Teachers are very traditional and are used to doing things (teaching in this instance) their (old) way, with paper and pencils, creating their lessons on paper, distributing tests to students on paper, and assessing their tests. There is nothing wrong with having your own style of teaching, but you have to embrace the changes that come with evolution. According to Schlichter (2020:4) in-school assistance and support are also essential. Teachers who work online must "adjust to new pedagogical concepts and modalities of delivery of teaching for which they have not been educated". They therefore need to be guided by more experienced teachers and constant training.

These types of teachers usually think that technology cannot do a good job, they have security issues, they are worried that students can easily cheat, that automatic systems calculate grades inaccurately, and more. Basically, they do not want to be replaced with a learning platform and they are afraid of losing control over their teaching methods.

5.3   The role of assessment when integrating ICT

The next part of the discussion will focus on the role of assessment when teachers are expected to integrate technology into their teaching. Broadfoot and Black (2004) argue that assessment is an important part of the teaching-learning process and that it is a potent instrument for improving student accomplishment and supporting societal growth. Some scholars like Bransford *et al.* (2000) agree with the Broadfoot and Black (2004) as they consider assessment to be the core component for effective learning and teaching. According to Robles and Braathen (2002) technology integration into teaching has caused a change in

how assessment is done in schools. Teachers in the FET[16]-Band are more explorative and selective as to how they are using the technology. Because they are pressed for time as they are teaching to the curriculum and towards test or examination results. They use the technology after identifying which qualities and modes of use educational software that will enhance learners' learning according to the school's perspective. Innovative technologies therefore offer the potential to deliver higher-quality educational evaluations that are more valuable to teachers and are more suited to improving student learning in the twenty-first century (Koomen and Zoanetti 2018). This is precisely why it is so important that teachers can use the available technology effectively so that learners are well prepared when their schooling comes to an end. Gonski (2018) agrees, advising educators to "employ new technology not for its own sake, but to adopt more efficient and successful ways of working".

The examination system is a socially constructed assessment methodology for evaluating learners' learning acquisition and expertise development. In the South African context, it is the learners' performance at written examinations which determines in a great degree their studying at tertiary education institutions. Teachers, therefore, will firstly cover the requirements of the curriculum and later, if time allows, only then experiment with the technology. Teachers are being urged to use modern technologies in their classroom assessment procedures more and more. The promise that technology can better meet changing stakeholder expectations, fulfill new assessment purposes, be engaging for students, deliver timely and informative results, and be flexible and efficient in administration and scoring (Bennett 2011; Gonski 2018; Koomen and Zoanetti 2018), has put pressure on the industry. Teachers must realize that technology can play a much bigger role when they assess the learner's progress. By realizing the learner's strength and weaknesses and teach to that, they should be able to better prepare learners for a positive outcome by using more technology. When they realize that assessment and technology complement each other they will also see the benefits of using the two together.

Measuring learning is a necessary part of every teacher's work. Teachers must therefore check for learner understanding, and parents, learners and school management need to know how learners are doing overall in order to help them successfully prepare, not for the test or

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[16] FET – Further Education and Training band in the South African State School System.

examinations, but for life after school. In addition to supporting learning across content areas, technology-enabled assessments can help reduce the time, resources and disruption to learning required for the administration of paper assessment. According to Pellegrino and Quellmalz (2010), Assessments delivered using technology can also provide a completer and more nuanced picture of student needs, interests, and abilities that can traditional assessments, allowing educators to personalize learning. In South African Schools we have two types of assessments, namely, formative[17] and summative[18] assessment.

Through embedded assessments, educators can see evidence of learners thinking during the learning process and provide near real-time feedback so that they can act in the moment. There is the expectation that the use of technology will lead to better results. However, this is a process and teachers must first be trained in the correct use of the supplied technology before significant results can be seen. The use of technology is not a quick fix to solve the country's huge educational challenges and must be given time. Teachers are not the only ones to be held accountable for what is happening during assessment, but all other role players must play their part to provide support for the teacher in class. Parents, e.g., can be partners if they are more informed about what and how their children learn during the school day.

In the long term, educators, schools, districts and the nation can use the information to support continuous improvement and innovations in learning.

Technology-enabled tools can also support teacher evaluation and coaching. These tools capture video and other evidence of qualities of teaching such as teamwork and collaboration. They provide new avenues for self-reflection, peer reflection and feedback, and supervisor evaluation. Educators and institutions should be mindful of whether they are measuring what is easy to measure or what is most valuable to measure. Traditional assessments in schools happen after learning has occurred and with results delivered months later, usually after the work has been covered. Learning is a fluid process. It is influenced by the passage of time, and teachers count among the most powerful influencers. According to

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[17] Formative assessment - are frequent, instructionally embedded checks for understanding that provide quick and continuous snapshots of learner progress across time.

[18] Summative assessment – measure learner knowledge and skills at a specific point in time and administered in common to groups of learners.

West *et al.* (2017), teachers must master instructional competencies in order to successfully instruct students to maximize knowledge and skill acquisition.

Assessments, therefore, are more instructionally useful when they afford timely feedback.

According to Stiggins (2005), "A distinction has been made between assessments of the outcomes of learning, typically used for grading and accountability purposes (summative assessment), and assessments for learning, used to diagnose and modify the conditions of learning and instruction (formative assessments)".

Continued advances in technology will expand the use of ongoing, formative, and embedded assessments that are less disruptive and more useful for improving learning. These advances also ensure that all learners have the best opportunity to demonstrate their knowledge and skills on assessments that increasingly focus on real-world skills and complex demonstrations of understanding. According to Ruggiero and Mong (2015), students highly value the employment of technology in the classroom. Furthermore, teachers appear to value the availability of technology as a means of improving teaching and making it more real for students. In this era, when learners are exposed to technological advancements, they see it as more than simply a tool for teaching, but as a tool to assist them in their learning. Teachers are another group that has benefited from technological advancements in the classroom. This technology makes it easier for them to prepare learning materials. However, in every classroom, cautious use of technology is required. It must be used to increase students' learning and, as a result, their performance. Technology therefore should be used to assist the teacher so that learners can be prepared for assessments. They must be able to apply that knowledge that will show that they have mastered the work.

It is crucial to focus time and effort on tests that reflect the kind of instructional experiences learners need and that provide actionable insight.

As technology gives us the capability to improve on long-standing assessment approaches, our public education system has a responsibility to use the information we collect during assessment in ways that can have the greatest impact on learning. This means using assessments that ask learners to demonstrate what they have learned in meaningful ways. All learners deserve assessments that better reflect what they know and can do with that

knowledge. According to Black and Wiliam (2010), "Research has repeatedly shown the formative use of assessment to significantly benefit student achievement". They continue by stating that "Such effects depend on several classroom practice factors, including alignment of assessments with state standards, quality of feedback provided to students, involvement of students in self-reflection and action, and teachers making adjustments to their instruction based on the assessment results". According to a UNESCO 2018 report, the term "pedagogy" refers to the interactions between teachers, students, the learning environment, and the learning tasks. Teachers' pedagogical approaches in the classroom does have an impact on student learning UNESCO (2018). Effective pedagogy is dependent on the teacher's lesson development tactics, the learners' abilities, and the availability of resources. Authentic activities that bring out the best in each learner and help them improve their learning experiences are created by good teaching.

It is vitally important for teachers to ensure that by understanding how the technology works and how it can benefit the learners, they can be better prepared for their engagement with the learners in their classrooms. Technology, if used correctly, can play a meaningful role in the teaching and learning environment.

Assessment, therefore, is a very important process in the school system and should be understood and used correctly. If the focus is just on assessment, the system is failing the teacher and learner, because most time is spent on preparing the learners for the assessment tasks and periods, instead of using it for real learning. Teachers must be aware of what assessment is and how to use it properly. If they want to assess properly, they must look at the following benefits of assessment, namely that it provides real-time feedback, it leads to increased accessibility, it can be used to adapt learner ability and knowledge and that it is embedded in the learning process.

It is evident that teachers' attitude towards ICT is the main factor that affects the integration of ICT in the classroom. According to Kasim and Singh (2017) educators, therefore should equip themselves with knowledge and technological abilities, and use technology to improve the teaching and learning process. Because of the necessity of the 21st century learning environment, Kasim and Singh (2017) stressed the importance of teachers understanding how to use digital resources in the classroom.

The teacher is directly responsible to implement ICT for teaching and learning purposes and must therefore play an important role in combining ICT and education. If a teacher does not want to use ICT in the classroom, then there will be no meaningful integration and the learner therefore will be put at a disadvantage.

When learners play a more active role in the learning process, the teacher's role must change. Teachers need to make the transition from being the instructor, giving all the information, to the facilitator, who guides and lead the learning into acquiring new knowledge by engaging them in activities that allow them to construct knowledge. One of the teacher's responsibilities is to ensure that learning is successfully transferred to students. Every teacher faces a problem in incorporating technology into the delivery of a lesson as technology evolves, therefore the successful integration of technology and pedagogical processes during lesson preparation is required for effective use of ICT in the classroom Janssen *et al.* (2019).

According to Shelly (2011), for this to happen, school administrators and principals should be aware of Welliver's Instructional Transformation Model[19], which can be used to assist the "Digital Immigrant" Teachers in incorporating ICT successfully. For the benefit of this discussion and to understand the process that a teacher should follow, we take a closer look Welliver's Instructional Transformation Model.

	TERM	MEANING
1	Familiarization	Teachers become aware of technology and its potential uses.
2	Utilization	Teachers use technology but minor problems will cause them to discontinue its use.
3	Integration	Technology becomes essential for the educational process and teachers are constantly thinking of ways to use technology in their classrooms.
4	Reorientation	Teachers begin to rethink the educational goals of the classroom with the use of technology.
5	Revolution	The evolving classroom becomes completely integrated with technology in all subject areas. Technology becomes an invisible tool that is seamlessly woven into the teaching and learning process.

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[19] Welliver's Instructional model (2011) describes the five hierarchical stages for technology integration through which all teachers must progress in order to integrate technology effectively.

According to Toderascu (2016), the following possible solutions to assist teachers who are fearful of using the available technology are recommended:

- Show the teachers specific examples on how beneficial technology can be. Visiting another classroom in the school that does BYOD[20] and it is going very well. Show them results of students that use different apps or platforms on how their results have improved. They could talk to some teachers that are more familiar with the concepts and have already implemented them in their classroom. By doing the above, the teacher who is still hesitant to use the technology, can learn from others and see them actively using the technology. This is an example what Vygotsky meant when he used the term "More Knowledgeable Other" in learning.

- Getting together a group of educators that are more into educational technology and let them co-present in training workshops conducted by outside organizations. This would also show the teachers who are not comfortable with using the technology that their own colleagues know how to use the available technology and that they are just a stone throw away when things do not go as planned in the classroom when less experienced teachers are using the technology. This would surely put them at ease as they know that help is available in the next classroom. These experienced teachers can also teach the others how to use the platform. This is an example of a teacher learning from others within a community of practice and is also an example of Vygotsky's social development theory.

- Patience is another important consideration when a new system is adopted. This normally is a slow process and it is important to allocate the necessary people and time resources to have it done well. A two-hour training session to learn an entire platform will not be enough, as there need to be follow-up training to see what has been learnt and where they are having trouble. At some schools they have advisers or a technical person on site to sort out problems that may arise in the classroom or in the teacher computer facility. If teachers get the support they need, they will learn. If not, they will abandon it and convince other teachers to do the same thing. In this

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[20] BYOD – Bring your own device – system where learners bring their own devices to class for educational purposes.

regard, there are great advantages for teachers who find the new technology very challenging to know that there is someone available that will be able to guide and assist whenever help is needed. This will make the journey of mastering the correct use of technology much easier and will lead to a quicker adoption and integration of technology in the classroom.

Teachers need to be assured that no matter how much technology will be used in a classroom, the human factor will always be more important. Teachers need to know about the benefits of using technology and how it can make their teaching easier. This must be done with the biggest patience so that they are not overwhelmed by too much information. Teachers must also know that they are the most valuable resources and should be helped and supported every step of the way. Educators should therefore equip themselves with knowledge and technological abilities, and use technology to improve the teaching and learning process (Kasim and Singh 2017). The necessity of using ICT in the 21st century learning environment brought Kasim and Singh to stress the importance of teachers understanding how to use digital resources in the classroom.

5.4   Conclusion

The aim of this discussion was to identify real fears that Digital Immigrant Teachers experience when they are expected to use ICT in the classroom. Because the classroom and teaching environment has changed dramatically, teachers must adapt to these changes in order to guide the Digital Natives in their classrooms. By becoming computer literate, they will be empowered to better teach, guide and prepare these learners to become successful players on the world stage. The administrators and policy makers should realize that their role is not just to equip schools with the latest and most expensive educational tools, but to invest in the most important people, (the teachers), by properly training them in the use of these tools. The training should be ongoing and part of a well-structured staff development program. In the first part of the discussion the focus was on the factors that cause older teachers to resist using ICT in the language classroom. In the second part of the discussion the focus was on assessment and where it fits into the whole picture and how teachers can better assess with the help of technology and in the last part the focus was on how these teachers can be supported to use the available technology.

Chapter 6

Summary and Conclusion

In this study the focus broadly was on the readiness of language subject departments in schools to implement the compulsory introduction of technology to enhance teaching and learning at secondary school level.

In Chapter one the focus is on a reflection on the kinds of resources currently available to secondary school language teachers in implementing the compulsory use of technology to support the delivery of quality education in secondary schools in the Western Cape, South Africa. It will focus on the needs and realistic possibilities of introducing IT in language classrooms in a school dedicated to developing learners' practical skills with a view to employment directly after Grade 12. The thesis is organised in three chapters, each introducing an aspect relevant to the topic of this study, i.e. to the use of IT-resources in language classrooms, considering the perspective of the teachers. As this is a very wide topic, three themes have been selected: (i) the concepts of "new media" and "new literacy" and their relevance to using IT in classrooms where the learners are characterised as "digital natives", (ii) selected resources available for preparing teachers to use technology in language teaching of young secondary school learners, and (iii) the kinds of resistance experienced language teachers present to the use of IT in their classrooms.

The Western Cape Education Department (WCED) identified three key steps (Circular: 0038/2016) to create a technology-rich environment in its schools, namely to provide high speed broadband in most schools by the end of 2016, to equip schools with Wi-Fi, and to create an enabling environment in which learners, teachers and parents have access to digital resources. This action is important because teachers need to have access to the available resources for them to successfully implement this policy. They also must be trained in the effective use of the available technology.

The perceptions of the success or failure of IT implementation in language classrooms has prompted an inquiry into what kinds of materials are available in the form of printed books, articles or other materials now also in other communicative modes, as well as online in electronically accessible texts such as online publishing or websites, blogs, and the likes.

Eventually, this study aims to inform teachers and teacher trainers on academic and practical materials which they could refer to in introducing various technologies. This study is of limited scope, yet aims to be insightful for teachers implementing the South African education policy directive of integrating IT in teaching and learning in secondary schools.

In the literature review in Chapter 2 the literature for this study is embedded in three areas, firstly, the E-learning Policy for South African Schools, secondly the theory that supports the use of technology in teaching and learning, and thirdly literature on teachers' acceptance of and resistance to using IT in language teaching. The review given in this study is a brief introduction given as background against which the three following chapters are to be read.

In order to understand where teachers fit into the whole teaching and learning with technology debate, it is very useful to focus on what researchers say about what teachers need to combine technical and pedagogical skills, in order for them to create situations in which effective learning can take place.

Because of today's widespread use of the internet and smartphones in education, the focus shifted to the communication and interaction between users. This led to social-constructivism, a theory of learning that has obvious parallels with and benefits for language teaching.

Teachers are key role players in improving learning with ICT. Teachers' attitudes towards the use of technology in the teaching and learning process is one of the main factors for achieving a meaningful use of computer technology in the field of education.

In Chapter 3 the focus is on new terms like "new media", "new literacy" and their relevance in introducing more IT support and skills training in using IT in classrooms populated by 'digital native' learners. This chapter therefore explores how these terms fit into a modern classroom. Additionally, this chapter determines what solutions need to be put into place to ensure that both learners and teachers benefit from what is available to them to reach the best possible learning outcomes. In the next part of the study, the focus is on the relationships between digital natives and digital immigrants and how they differ and what needs to be done to ensure that successful teaching and learning takes place in the Language classroom.

The focus shifts to the constant and ongoing support that teachers need in their implementation of technology for teaching and learning and it can only be achieved through a well-planned, structured Professional Development Programme and ongoing training.

In Chapter 4 the focus is on resources available for preparing teachers to use technology in language teaching of young secondary school learners. Three prominent sources that could guide teachers who are not 'digital natives' towards a transition to extend IT use in language teaching are reviewed. Focus points are: Teachers discovering computers, Teaching in a digital age, A teacher's guide to using technology in the classroom, using technology for assistance in writing and Moving from a teacher-centred approach to a learner-centred approach.

In Chapter 5 the focus is on dealing with teachers' resistance to using IT in language classrooms by looking at the kinds of resistance of experienced teachers to use IT, factors that influence teacher attitudes towards using the available technology in their classroom and the role of assessment when integrating ICT.

This study has, through a selected literature overview, highlighted the kinds of considerations in play when 'digital non-native' teachers engage with 'digital native' language learners, addressing on the one hand a selection of resources that illustrate what is available to develop teacher skills, and on the other hand what kinds of resistance prevail among experienced language teachers who are sceptical of new technologies in language teaching and learning. The challenges that school face in their readiness to use the available technology in their quest to enhance teaching and learning are numerous. By focusing on what schools can (or should not) do to ensure that they are ready to start and continue with the role out, it is hoped that schools who are still planning to embark on this journey can learn from the reflections presented in this study.

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