

# **INTEGRATING NEW TECHNOLOGY IN THE LANGUAGE CLASSROOM: INNOVATIVE TEACHER IDENTITIES**

**By**

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## **DECLARATION**

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Gail Valentyn  
December 2019

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## ABSTRACT

This study reports on the recorded narratives of language teachers' giving their observations and experience of using new technologies in language classrooms. There is limited research on South African language teacher identities and their experiences in using new technologies to enhance their own teaching as well as the learning experience of those they teach.

The objective of this study is to investigate the approaches to teaching with new technologies and how these shapes the professional identity of language teachers who relate well to new technologies and have been judged to introduce them effectively in language teaching. Also, it considers how engagement with new technology in the classroom impacts teacher identities.

The Western Cape Education Department is deploying new technology to create an enabling environment at the schools under its auspices. These technologies are to be used for teaching and learning. In spite of the availability of technology in the Western Cape, there appears to be very few teachers who actively use the technologies innovatively.

This study takes a qualitative approach, using mixed methods of data collection, making use of questionnaires and semi-structured interviews. The interviews generated narratives of five teachers. Their self-reported experiences are used to determine how each participating teacher's identity, particularly in using technology successfully, is constructed. The teachers selected as participants have received awards and/or have been acknowledged by their peers as innovative for integrating technology and pedagogy.

A range of factors and elements links the teacher identity and the innovative use of technology for teaching and learning. One of the major elements that emerged in the study was that to integrate technology and pedagogy innovatively for the benefit of the student, a teacher should crucially be passionate, caring and driven. Further, the researcher found that innovative teachers are not deterred by inhibiting factors to use technologies in engaging their students and enhancing teaching and learning. Student focused teaching and learning inspires teachers to use technologies innovatively in developing the kinds of skills the 21<sup>st</sup> century demands of their students and in preparing them for the future world of work. Teachers can be mentored to use technology innovatively, but the mentee has to take ownership of the implementation and practise of integrating technology and pedagogy innovatively for teaching and learning. The researcher found that good practises can be taught, modelled and learnt but that developing internal and intrinsic motivators is much more complex and challenging.

## OPSOMMING

Hierdie tesis lewer verslag oor die narratiewe van taalonderwysers wat hulle waarneming en ervaring verwoord het rakende die gebruik van nuwe tegnologieë in taalonderrig. Daar is tot op datum min navorsing oor die professionele identiteit van Suid Afrikaanse onderwysers soos dit saamhang met hulle ervaring in die gebruik van nuwe tegnologie wat aangewend word om hulle eie onderwys asook die leerervaring van leerders in hulle klaskamers, te verryk.

Hierdie studie het ten doel om benaderings tot onderrig wat nuwe tegnologie aanwend te ondersoek, en beoog tegelykertyd om vas te stel hoe die professionele identiteit van taalonderwysers wat nuwe tegnologie positief aanwend, daardeur gevorm word. Die onderwysers wat hier deelneem, het almal spesiale erkenning gekry vir hulle effektiewe gebruik van tegnologie in taalonderrig. Die tesis oorweeg dus hoe bewuste gebruik van tegnologie in die klaskamer op deelnemers se onderwyser-identiteit 'n impak het.

Die Wes-Kaapse Onderwys Departement het begin met die uitrol van nuwe tegnologie ten einde 'n bemagtigende omgewing te skep in die skole wat onder dié departement se toesig val. Die tegnologie wat hulle beskikbaar stel, word in onderrig en leer aangewend. Ten spyte van die beskikbaarheid van gevorderde onderrigtegnologie in die Wes-Kaap, blyk dit dat 'n baie klein getal onderwysers die tegnologie aktief en innoverend gebruik.

Hierdie is kwalitatiewe navorsing wat verskillende data-insamelings-metodes, spesifiek vraelyste vir algemene inligting en semi-gestruktureerde onderhoude, gebruik. Die onderhoude het narratiewe van vyf onderwysers help genereer. Hulle self-gerapporteerde ervaring is nagegaan om vas te stel hoe elke deelnemende onderwyser se identiteit, spesifiek in die suksesvolle gebruik van tegnologie, gekonstrueer is. Die onderwysers wat vir deelname geselekteer is, het almal van hulle eweknieë toekennings en/of ander vorme van erkenning ontvang vir hoe hulle tegnologie innoverend met onderwyspraktyk geïntegreer het.

Verskeie faktore en elemente verbind onderwysersidentiteit aan die innoverende gebruik van tegnologie in onderrig en leer. Uit hierdie studie blyk dat integrasie van tegnologie en onderwyspraktyk tot studente se voordeel, grootliks afhanklik is van die passie, sorgsaamheid en gedreweheid van die onderwyser. Verder het die navorser gevind dat innoverende onderwysers nie teruggehou word deur inhiberende faktore wat hulle of hulle studente se aanwending van tegnologie strem nie. Studentgesentreerde onderrig en leer inspireer hierdie

onderwysers om tegnologie innoverend te gebruik in die ontwikkeling van die soort vaardighede wat die 21ste eeu van studente vereis in hulle voorbereiding op die werkomgewing wat vir hulle wag. Dit is moontlik om onderwysers te mentor sodat hulle tegnologie in die klaskamer begin omhels, maar die leerder-onderwyser moet ook eienaarskap neem in die implementering van praktyke wat tegnologie en onderrigmetodes op vernuwende wyse integreer. Die navorser het bevind dat goeie praktyke onderrig, gemodelleer en aangeleer kan word, maar inherente en intrinsieke motivering wat meer kompleks is, bied 'n groter uitdaging.

## **ABBREVIATIONS AND ACRONYMS**

COPs:	Communities of Practise
DoE:	South African National Department of Education
ICTs:	Information Communication Technologies
LAN:	Local Area Networks
LOLT:	language of teaching and learning
PLCs:	Professional learning communities
SAMR:	Substitution, Augmentation, Modification, and Redefinition
TAM:	Technology Acceptance Model
TI:	Teacher identity
TPACK:	Technological Pedagogical Content Knowledge
TPB:	Theory of Planned Behaviour
LTI:	Language Teacher Identity
UNESCO:	United Nations Educational, Scientific and Cultural Organization
USO:	Universal Service Obligation
VR:	Virtual Reality
WAN:	Wide Area Networks
WCED:	Western Cape Education Department

## DEFINITION OF KEY TERMS

The following are some of the key terms used in this thesis and their operational definitions:

Adoption	Acceptance, implementation, taking on of a new product or innovation. It includes physical technology, digital products, systems, services, pedagogies, teaching and learning models, approaches and frameworks. An innovation may be new to the user or new as an invention.
e-Education	The use of Information Communication Technologies for teaching and learning.
e-Content	Resources that is either static or interactive, that is accessed on a digital device or online for the purpose of teaching and learning.
e-Learning	Learning with and through the use of technology.
e-Teaching	Using technology, digital products, systems and services to teach.
ICT ICTs	Information Communication Technology Information Communication Technologies (see technologies).
Innovation	Is the use of something for aspects other than what it was intended for. It is sometimes referred to as 'creativity'.
Integration	When technologies are an integral part of learning, where the students themselves use technologies as part of their learning process as opposed to watching technologies being used by the teacher. Teachers using technology to support and enhance teaching.
Pedagogy	The method and practice of teaching in a way in which students are led to learn.
Project based learning	A teaching method in which students gain knowledge and skills by working for an extended period of time to investigate and respond to a complex question, problem or challenge
SAMR	A framework created by Dr. Ruben Puentedura categorizing the use of technologies on task design and learner engagement from "Substitution" (technology substitutes traditional tools, with no functional change) to "Augmentation" to "Modification" to "Redefinition" (technology allows for the creation of new tasks, previously not thought possible).
Technologies	Digital devices such as computers, laptops, tablets, data projectors, cellphones, document camera's, interactive whiteboards.
TPACK	A framework for understanding the set of knowledge-technological, pedagogical and content, that teachers need to teach their students.

21 <sup>st</sup> Century skills	A core set of competencies schools need to teach students to thrive in today's information age, such as communication, collaboration, critical thinking and creativity.
Fourth Industrial Revolution	A fusion of technologies that is blurring the lines between the physical, digital, and biological spheres changing the way we live and work.

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## Chapter One

# INTRODUCTION AND BACKGROUND TO THE STUDY

### 1.1 INTRODUCTION

The purpose of this research is to analyse and report on recorded narratives of language teachers who give their observations and experience on using new technologies in language classrooms for teaching and learning. It intends to provide a "thick description"<sup>1</sup> of the narratives of five teachers who have been integrating information and communication technologies (ICTs) into their language teaching enthusiastically and have at various levels received recognition for innovative use of the available technologies. The narratives of the participants will reveal factors that influenced and formed the teacher identity. Specifically, the study is interested in questions of how engagement with new ICTs in the classroom has developed among innovative teachers in the Western Cape, and then how these practices make an impact on teacher roles and identities. Conversely, the study is also interested in how teacher identities make an impact on their teaching in an age of increasing urgency to use ICTs effectively in classrooms. Particularly, this study relies on the voices of teachers themselves in reflecting on the value of ICTs in language teaching and how this relates to teacher identity.

### 1.2 BACKGROUND TO THE STUDY

This study will start by reporting on innovative uses of ICTs in language teaching and learning. The Western Cape Education Department e-Vision (2012) stated the ideal; that by 2015 every teacher and student would have instantaneous, real-time, free access to digital learning resources. To realise this vision, the Western Cape Education Department (WCED) (2004) deployed ICTs to most schools and provided training to teachers on how to integrate the ICTs with their pedagogy. Goosen (2015) states that South Africa has the strategies for using educational technologies to transform primary and secondary school teaching and learning.

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<sup>1</sup> Engelbrecht (2003) asserts that: 'A 'thick description' does more than record what a person is doing. It goes beyond mere fact and surface appearances. It presents detail, context, emotion, and the webs of social relationships that join persons to one another. Thick description evokes emotionality and self-feelings. It inserts history into experience. It establishes the significance of an experience, or the sequence of events, for the person or persons in question. In thick description, the voices, feelings, actions and meanings of interacting individuals are heard.'

Innovative teachers take advantage of the fact that they can leverage the internet to incorporate ICTs into the classroom. For most teachers, utilizing ICTs for teaching and learning has not been an easy assignment, due also to these technologies having been developed after very many had already completed their own schooling and teacher training.

The WCED provided the technology and offered training to the teachers on how to integrate new media into teaching and learning (Government, 2012). While many teachers are working with electronic rather than paper-based texts, they are not necessarily using ICTs innovatively and creatively. This thesis will do a narrative analysis of discussions with teachers who belong to the relatively small number who have adopted the new modes and means of educating in and for the 21<sup>st</sup> century. Rather than investigating methodologies, the thesis is interested in the personal experiences and identities, so-called 'teacher identities', of individual teachers who have had success in using the new technologies currently available to educators.

Following Trent and Shroff (2013) this study collected the views of selected participants in seeking to understand how the construction of their identities as teachers was shaped by their engagement with an electronic teaching portfolio. Thus, the field of teacher identity as elaborated in Barkhuizen (2017) is pertinent to this research project. Further, within the same tradition, the work will attend to narrative research methods, not only considering how to use these research methods, but also to reflect on the kind of information narratives can contribute to insight on teacher identities, and eventually through them, also to the theory and practice of using technologies innovatively in language teaching (Barkhuizen, 2013; Benson, Barkhuizen & Chik, 2013).

### **1.3 PROBLEM STATEMENT**

This study will investigate the self-reported experiences of language teachers using ICTs innovatively and creatively to promote language learning. The problem to be investigated relates not only to educators' approaches to teaching with new technologies, but also to the professional identity of language teachers who relate well to new technologies and are able to introduce them effectively in language teaching. The project seeks to find explanations not primarily on what inhibits teachers in the use of new technology, but in fact what inspires and facilitates effective use of new media in an age where learning without electronic intervention has become virtually unthinkable. Teacher identity and effective engagement with innovative teaching materials, media and methods are closely connected.

## **1.4 RESEARCH QUESTIONS**

The general objective of this research is to gain insight into innovative teacher practices and how these can be related to their identities shaped in integrating new ICTs in the language classroom.

There is limited research on South African language teachers' experiences in using new technologies to enhance their own teaching as well as the learning experience of those they teach (see e.g. Thurlings, Evers and Vermeulen, 2015). This study intends to contribute to filling this gap in the literature, specifically by considering the following research questions:

1. What are the self-reported experiences of teachers who use ICTs innovatively and creatively in promoting language learning?
2. What do teachers find inhibiting in the use of ICTs in language teaching?
3. What do teachers find inspiring and facilitative to learning in the use of ICTs in teaching language?
4. How, according to educators' own reports, do ICTs shape the professional identity of teachers?

## **1.5 RESEARCH CONTEXT**

The study examines teacher identity and how ICTs integration is used to enhance teaching and learning. To gain insight into teacher identity and how that relates to ICTs integration in language classrooms, a narrative analysis will be done of discussions with teachers who belong to the relatively small number who have adopted the new modes and means of educating in and for the 21st century.

## **1.6 METHODOLOGY**

This is a qualitative study that relies largely on interview data in order to capture the voices of expert teachers on their integration of ICTs in language teaching and to directly and indirectly gauge the shaping of teacher identity in an ICT-rich educational context. Meta-data of the participants and their professional trajectory, is collected by means of an elaborate online questionnaire. Further, this study relies on relevant literature that refers to theoretical positions and prior studies discussed in chapter two, to analyse and interpret the data.

## 1.7 SIGNIFICANCE OF THE STUDY

There is an established connection between success in achieving educational goals and teacher identity (cf. Barkhuizen, 2017). Achieving such goals in language teaching by making extensive use of new technologies, will therefore most certainly also be linked to teacher identity. For this reason, this study had taken an interest not only in the way teachers use ICTs innovatively in their teaching, but also in how they articulate their own educational philosophy in using the ICTs and developing students' digital literacy. The outcome of the study can be used to advise and encourage other teachers to adopt ICTs into their teaching practise. The Western Cape Education Department has invested more than R1.2 billion over a five year period to equip teachers and schools with technology (Government, 2015). This research provides insight into some of the critical factors involved in effective use of ICTs in language teaching. Specifically, we could gain a profile of the professional identity of a number of those already well equipped. Ideally this can be used in training teachers who currently are hesitant to fully integrate ICTs in language teaching and learning.

## 1.8 OUTLINE OF THE RESEARCH REPORT

This thesis is structured into six chapters, which besides the introduction, covers a literature review, description of the research design and methodology, the results and analysis, and a conclusion.

**Chapter one** introduces and contextualises the study by giving an overview of the research aims, questions, research method and the value of the outcomes.

**Chapter 2** presents a review of pertinent literature relating to the innovative use of technology on the one hand and of research regarding pertinent aspects of teacher identity.

**Chapter 3** will present the research design and methodology used to obtain and analyse the data for this research. It provides information regarding the participant selection, describes how data was collected, and then explains processing and interpreting procedure. The ethical issues considered in the study are also explicated in this chapter.

**Chapter 4** will present the data of the participants questionnaires and narrative summaries as guided by the research questions of the study.

**Chapter 5** in answering the set of research questions, presents a comparative analysis of the participants interviews.

**Chapter 6** brings theoretical considerations and the interpreted data together, drawing conclusions regarding the four questions outlined above. This final chapter will also provide the research limitations and make recommendations as to further study and to how this project's findings can be used practically in language teacher training as well as in language teaching.

## **1.9 SUMMARY**

This chapter has provided an introduction and background to the innovative teacher identities and how they integrate new technology in the language classroom.

It explores the use of ICTs for teaching and learning. It concludes that the study of teachers who use technologies innovatively, will provide information and research data that could assist with the professional development of teachers to integrate technology and pedagogy innovatively for teaching and learning.

## Chapter Two

# LITERATURE REVIEW

### 2.1 INTRODUCTION

In this chapter I will give an exposition of the literature relevant to answering the research questions this study will address. To address the problem stated in Section 1.3 above, and specifically to answer the questions given in Section 1.4, three kinds of prior research need to be noted. Therefore, in this chapter three research areas will be introduced, each with a discussion of information relevant to the analyses of data to be presented in chapter 4. First, this study is interested in the kinds of ICTs available to language teachers and in the ways in which such ICTs can be use in language classrooms. Second, the study focuses on the experiences of expert teachers who have been assessed as "innovative" and "creative" in their application of ICTs in language classrooms. In reporting on their experiences, teachers' identities become apparent, therefore attention will also go to a body of literature that refers specifically to the formation and expression of teacher identity. Third, as this study uses narratively produced data, this chapter will also refer to research on the collection and analysis of narrative data, focussing specifically also on professional identity construction.

### 2.2 ICTS IN EDUCATION

In today's techno-centric and -savvy world there are countless technologies available for both learning and leisure purposes. ICTs are information handling tools that are used to produce, store, process, distribute and exchange information. Some of these technologies include televisions, desktops, the Internet, interactive whiteboards, and other peripherals like CDs, DVDs, smart cards and other digital storage devices. Among these ICTs, web-enabled wireless phones (smartphones), web-enabled wireless handheld computers (tablets) and wireless laptop computers. The ICTs that are ubiquitous in today's societies, are used most frequently in the learning environment (Shin et al., 2011; Strohmeyer & Perenson, 2010; Valk, Rashid & Elder, 2010; Wai, 2008). In education the application of ICTs extends beyond their simple functions; creating the opportunity to enhance both teaching and learning (Tella, Tella, Toyobo, Adika & Adeyinka, 2007) by creating an open environment and connecting classes around the globe as well as providing more individualised instruction for students (Lei, 2010). Several researchers

(Young, 2011; Lei, 2010; Abas, Lim, & Woo, 2009) view ICTs such as smartphones and laptops as influential technologies that may affect teaching and learning outcomes. They bring forth the point that the active use of these technologies affords students the opportunity to extend learning beyond the four walls of the classroom and that the resulting learning environment would place greater focus on student-centred learning. In student-centred learning environments, with the aid of the afore-mentioned ICTs (among others) students can use ICTs for teaching and learning; engaging students both during lessons and their learning. This student-centred learning with the aid of ICTs also enable students to collaborate, use critical thinking and develop a range of generic skills such as lifelong learning skills and the ability to find alternative solutions to problems (Dewey, 1902).

Despite the advantages to the integration of ICTs into education, to achieve integration is no small feat (Weiser, 1993). Starting with infrastructure and stretching through to pedagogy, there are barriers to the effective integration of technology and pedagogy into and beyond the classroom. It is therefore important that teachers' professional development includes training to ensure they are proficient in ICT enhanced lessons, implementation policies and curricula; to improve students' results.

### **2.2.1 ICTs in South Africa**

In 2003 the South African Department of Education (DoE) goal was to ensure that "every South African learner in the General and Further Education and Training bands will be ICT capable". Their vision was to see every student use ICTs confidently and creatively to help develop the skills and knowledge they need to achieve personal goals and to be full participants in the global community by 2013.

The 2004 White Paper 7 (of Education, 2004), characterises schools that implement e-Education as institutions that have:

1. Students who utilise ICTs to enhance learning,
2. Qualified and competent leaders who use ICTs for planning and management,
3. Qualified and competent teachers who use ICTs to enhance teaching and learning,
4. Access to ICTs resources that support the curriculum and Connections to ICTs infrastructure.

The Department of Basic Education (2014) has goals to equip students to use ICTs in their learning and create an enabling environment to implement e-teaching and e-learning. Further, to improve the teacher skills and knowledge so that they are able to integrate technology and pedagogy to enhance the teaching and learning:

Goal 16 Improve the professionalism, teaching skills, subject knowledge and computer literacy of teachers through their entire careers.

Goal 20: Increase access amongst students to a wide range of media, including computers, which enrich their education.

Goal 24: Ensure that the physical infrastructure and environment of every school inspire students to want to come to school and learn, and teachers to teach.

Goal 27: Improve the frequency and quality of the monitoring and support services provided by district offices to schools, partly through better use of e-Education.

### **2.2.2 ICTs in the Western Cape**

Premier Helen Zille introduced the Western Cape Game Changers which are innovative programmes to impact people's lives and initiate change (Government, 2018). The e-Learning Game Changer aims to enhance education through the use of ICTs in the classroom over a period of five years, 2015-2019. The Western Cape Government currently provides wide area networks (WAN) among schools and Wi-Fi connectivity for almost every institution. An enabling environment is created by providing local area networks (LAN) in schools as well as bringing ICTs such as laptops, data projectors and interactive devices into the classrooms. The e-Learning Game Changer will provide support to struggling students and increase the access to quality education and online resources in disadvantaged communities. Students will be exposed to the ICTs and develop skills that can be used in the future world of work. Further to this, teacher training and professional development is also provided on an ongoing basis (Government, 2015). Teachers need to know how to integrate the provided ICTs into their teaching.

Teachers implementing their training and engaging students in the lesson through the use of ICTs, contribute to minimising the negative effects of an ever increasing student-teacher ratio. In South Africa there is an increase in student registration of almost twenty thousand students per year, which directly impacts on the effective teaching and learner participation

(Government, 2018). Recent studies in Turkey, for example, have shown a significant negative correlation between the student-teacher ratio and student achievement in cities with greater number of students per teacher (Koc & Celik, 2015). This is most likely also true of circumstances in local classrooms in South Africa. In addition, the use of ICTs narrows the gap between well-resourced and lesser resourced schools. In the South African education system, given the high student-teacher ratios, the need also arises for enhanced learning methods, quality of education and facilities between schools, to be equalized. Inequalities exist between middle class schools and schools in townships. Inequalities also exist between urban and rural areas where the rural areas have insufficient resources and infrastructure at poorer schools than the urban areas do (Government, 2018). ICTs in the classroom can be used to minimise the effects of the increased student-teacher ratio and the inequalities, by providing teachers and students with improved access to resources and materials.

The private sector and donor funding can assist in narrowing the gap and decreasing the inequalities in the education system. Telecommunication networks (MTN, Vodacom, CellC and Neotel) have ploughed back into the country by providing connectivity and related user-end technologies, such as tablets in charging trolleys, to schools across the country. The trolley and 24 tablets can be wheeled to any classroom, instantly turning the classroom into a computer lab. The project is known as the Universal Service Obligation (USO) because the telecommunication networks are under obligation to provide tablets and connectivity to schools since the country awarded and renewed the broadcasting license. The USO project contributed in placing some ICTs and devices into schools that had none.

To ensure the effective and efficient use of the USO devices, service providers in conjunction with the eLearning component of the WCED, provide teachers with training. The DoE (2007) follows three dimensions for teacher development in ICT uses:

1. **Pedagogical** - integrating technology and pedagogy to enhance teaching and learning. Teachers can use ICTs to support their traditional teaching methods by implementing different approaches to the lesson and engage the students. A learning management system can be used to manage the learning and support the students by providing digital resources.
2. **Technological** - creating the enabling environment to harness and leverage the ICTs where teachers can select and use the resources effectively. Teachers will be able to use

fixed as well as mobile devices as tools in their teaching. Furthermore, teachers can facilitate the students access to online information.

3. **Collaboration and networking** - to participate in learning community networks and community of practise. Teachers can have access to their colleagues, educator communities and citizens online. Social media and the internet can be utilized for communication, collaboration access to multimedia resources.

### 2.2.3 Integrating Technology and Pedagogy

The arrival of ICTs in the classroom has changed teaching and learning in the 21<sup>st</sup> century. The technologies require a new set of skills to integrate the technologies and pedagogy (Hennessy, Harrison & Wamakote, 2010). Skills needed for the 21<sup>st</sup> Century world of work are communication, collaboration, critical thinking and creativity (Trilling & Fadel, 2012). Students will be able to reach the higher levels of cognitive skills, critical thinking, reasoning and problem-solving as set out in Benjamin Bloom's taxonomy during the 1950's (Krathwohl, 2002).

To move from the lower to higher cognitive levels, teachers need to know how to integrate technology, pedagogy and content knowledge as set out in the TPACK model. The acronym TPACK stands for Technological, Pedagogical and Content Knowledge and is ultimately a framework to identify the knowledge teachers need to effectively teach with technology (Koehler, 2012).

The framework is fundamentally the complex interplay between three forms of knowledge (see Figure 2.1):

1. Technological Knowledge (TK)

Asking: What technology can be effectively be integrated to enhance teaching and learning.

2. Content Knowledge (CK)

Asking: What must be taught? In the South African Education System, the content is set out in the Curriculum Assessment Policy Statements (CAPS) document.

3. Pedagogical Knowledge (PK)

Asking: How will the content be taught?

But the TPACK-framework doesn't end there. It expands further still by emphasizing the forms of knowledge that lie at the intersection of these three fundamental knowledge forms (see Figure 2.1):

1. The pedagogical and Content intersection (PCK)

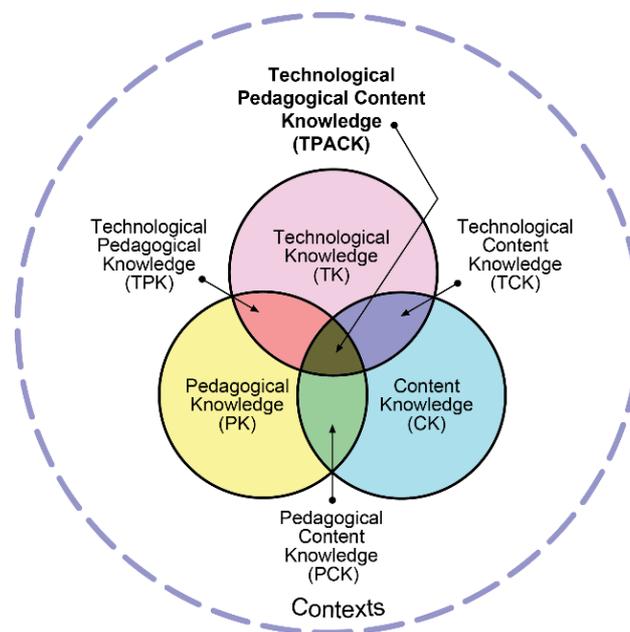
Which scaffolds for deeper understanding (Shulman, 1987). Effectively engaging the students in the learning process and accommodating the various learning styles.

2. Technological Content knowledge (TCK)

How technology is used for learning and gaining knowledge. Teaching is enhanced by manipulating digital subject content.

3. Technological Pedagogical Knowledge (TPK)

How to choose and manage the technology for teaching. The pedagogy is harnessed by the potential of technology.



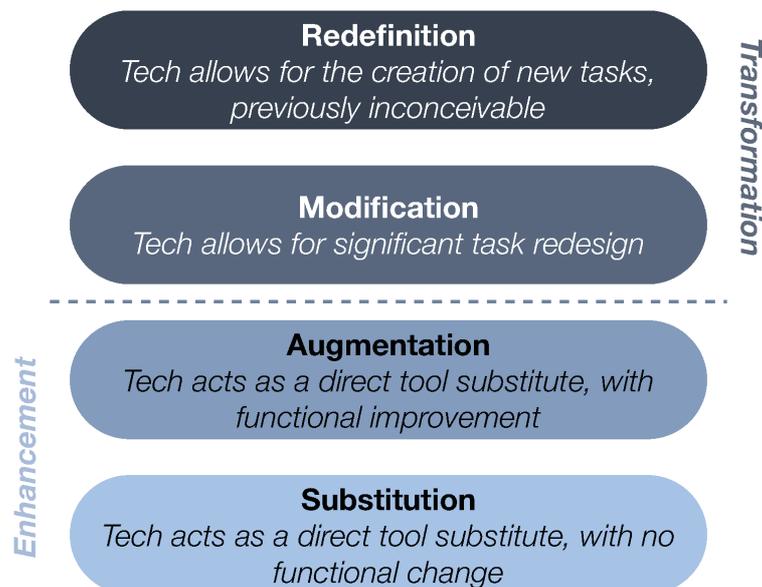
**Figure 2.1:** *Technological Pedagogical Content Knowledge (TPACK) Model (Mishra & Koehler, 2006)*

TPACK, therefore, is the integration of the technological, pedagogical and content knowledge that teachers need to better understand subject content. Despite the framework outline and guidance, planning is key to achieving learner outcome through the integration of technology and pedagogy; the right tool must be used to enhance the lesson.

Besides the TPACK model that looks at the knowledge needed to integrate technology and pedagogy, there is the SAMR model (developed and popularised by Dr. Ruben Puentedura) that analyses the impact of learning technologies on task design and learner engagement and was developed in researching how teachers use technology in the classroom (Puentedura, 2013b). Together, the TPACK and SAMR models (see Figure 2.1 and 2.2) explain how the technology can be used to enhance teaching and learning.

The SAMR summarises four educational functions of technology, as follows:

- **Substitution** – Technology acts as a direct tool substitute, with no functional change.
- **Augmentation** – Technology acts as a direct tool substitute, with functional improvement.
- **Modification** – Technology allows for significant task redesign.
- **Redefinition** – technology allows for the creation of new tasks, previously inconceivable.



**Figure 2.2: Substitution, Augmentation, Modification and Redefinition (SAMR) Model (Puentedura, 2013c)**

Teachers working at the Substitution and Augmentation levels use technology only to enhance the lesson, but there is no major difference in the outcomes of lessons and learning compared to traditional ways of teaching. At the modification level, on the other hand, teachers change

lesson designs so that rather than each student working on his/her own, they develop collaboration among several students who work in groups and share information with each other. At the Redefinition level, students connect on a global scale by sharing their work online and connecting with experts in the field of study. Thereby they use technology in ways never thought of before (Puentedura, 2013b), and ultimately transform both teaching and learning.

Teachers design, develop and integrate ICTs to lead to higher levels of student achievement never considered before. Teachers can infuse ICTs into teaching and learning to encourage student participation and interactivity within and even beyond the classroom. As teachers become more familiar with the use of ICTs in teaching and learning, they progress through the four levels explained by the SAMR model, and as their confidence in its application grows, they progressively apply the technology and become innovative. The higher the teachers move up the model, the more they are predicted to develop and design tasks using ICTs for higher order thinking skills. Teachers will design tasks that will speak to the required 21<sup>st</sup> Century skills, making lessons more engaging and interactive, while ensuring students are developing the skills and knowledge, they need to achieve personal goals and to be full participants in the global community.

According to Puentedura (2013a:35) continual re-examination of practise is necessary to make the best possible use of ICTs to enhance teaching and learning. The teachers should not be using technology for technology's sake, but rather to achieve other educational goals and outcomes. A mind shift must take place in lesson planning, teaching and learning to use technology effectively and efficiently. It is not about the tool but how it is used. Reflection on the part of the teacher is therefore necessary.

Puentedura (2013a:5) thus suggests that teachers ask the following questions:

1. What will I gain by replacing older technology with newer technology?
2. Have I added improvement to the task process that couldn't be used with the older technology at a fundamental level?
3. Does the modification fundamentally depend on the new technology?
4. How is the new task made possible by using technology?

By asking these questions, teachers are evaluating the use of the technologies and designing tasks to develop higher order thinking.

## Technology Acceptance Model

As teachers need to feel comfortable with the technology they use, the contribution of Davis (1989) is important. Davis developed the technology acceptance model (TAM) to describe individual users' acceptance of information systems. In his research Davis found two main determining factors to whether the use of ICTs are accepted or rejected. Firstly, perceived usefulness people believe that the use of ICTs will aid them in performing their job better. Secondly, the degree to which people believe that using the system would be effortless, a principle he refers to as "ease of use". These two factors influence the intention and behaviour in adopting, accepting and using technology for personal and professional use (Davis, 1989:320).

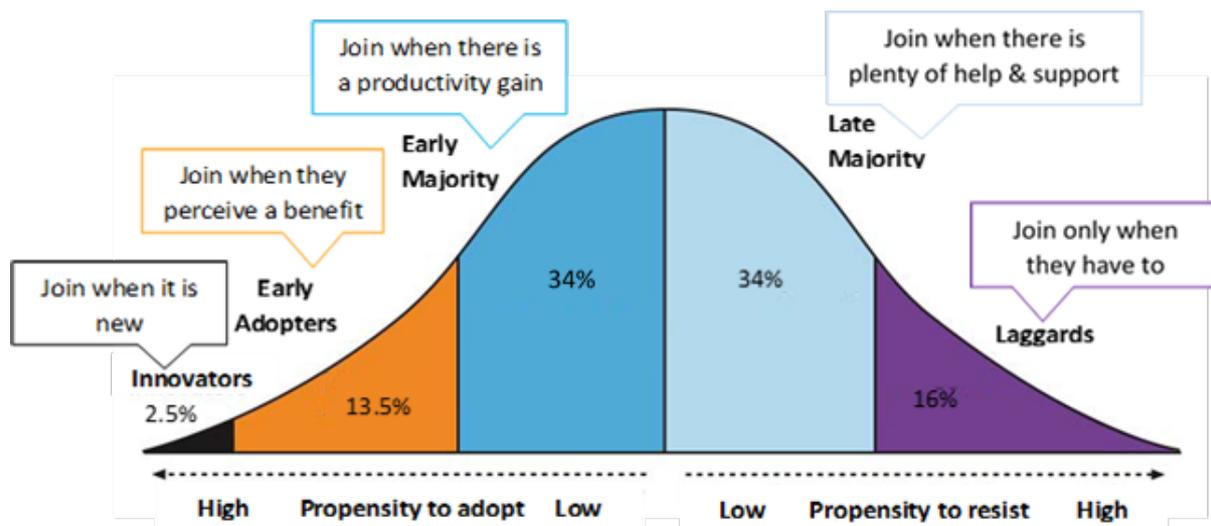
According to the Theory of Planned Behaviour (TPB) attitudes and subjective norms are often the determinant of the intention and behaviour to use technology (Ajzen, 1991). The more favourable the attitude and subjective norm with respect to behaviour, and the greater the perceived behavioural control, the stronger should be an individual's intention to perform the behaviour under consideration (Ajzen, 1991:188). Bandura's (1982) research on self-efficacy and behaviour outcomes supports this notion of perceived usefulness.

In the research done by Davis (1989), usefulness of usage is deemed more important than ease of use. Users are willing to cope with some difficulty in using ICTs if they can see its use in the performance of a specific task. A major determinant is also the intrinsic motivation (for pleasure and self-achievement) to use the technology (Davis, Bagozzi & Warshaw, 1992). Whereas the extrinsic motivational factors would be the perception that using the technology is instrumental to achieving an objective of a task at hand (Davis, 1989).

Cheung and Vogel (2013) expand on the TPB to explain the adoption behaviours of collaborative technologies for project information sharing. Today collaboratively working on a task using the internet is on the increase. The motivation moves beyond the individual to the collective to meet the outcomes of a task. Teachers are preparing students to collaborate using the various collaborative tools through the Internet; innovatively teaching and incorporating collaboration and communication skills into lessons and beyond (Bingimlas, 2009).

The question arises as to when people will be motivated to use the ICTs at their disposal. Rogers' (2003) Innovation Decision framework assists to answer this question. The classification includes innovators, early adopters, early majority, late majority and laggards (Figure 2.3). For

Rogers (2003), innovators are willing to experience new ideas. They are adventurous and willing to try something new. Because their teaching methods go against the norm, these innovators are often met with animosity by their colleagues. He further adds that they are the gatekeepers to bringing innovation into a system without guarantees of success. Often the innovators are quite *au fait* with technology. *Early Adopters*, are likely to be leaders who support the Innovators and adopt the new ideas. They are the role models whom the other members of the system will follow ultimately follow. *Early Majority* are neither the first nor the last to adopt the innovation. The early majority often are not the leaders but have good interaction with their colleagues. *Late Majority* are what Rogers refers to as "more sceptical". They are the ones who will wait until the rest have already accepted the innovation before they do. Peer pressure plays a role in the late majority eventually adopting the innovation. Then there are the *Laggards*; the ones who will wait to see if the innovation is successful before they accept it, therefore their adoption takes longer.



**Figure 2.3:** *Roger's Innovative Decision Framework. A bell curve illustrating the spread of technology adoption by various groups of people*

It is not only about when teachers adopt technology into the teaching, but also how they will use the technology to enhance their teaching and learning. How teachers use the technologies is summed up in the Teachers development Framework put forward by UNESCO in 2002 and incorporated in South African guidelines in 2007 (DoE, 2007).

The DoE (2007) Teacher development framework (Figure 2.4) refers to five levels at which teacher's ICT skills are developed and applied:

- **Entry level**

The teacher is computer literate and can use computers. However, frustrations and insecurities are common in the introduction of ICTs. At this level, teachers are likely to lack confidence. At this level the teacher has basic ICT skills.

- **Adoption level**

The teacher can use various ICTs, including computers, to support traditional management, administration, teaching and learning, and can teach students how to use ICT. At this level the teacher has basic Knowledge and skills to use ICTs.

- **Adaptation level**

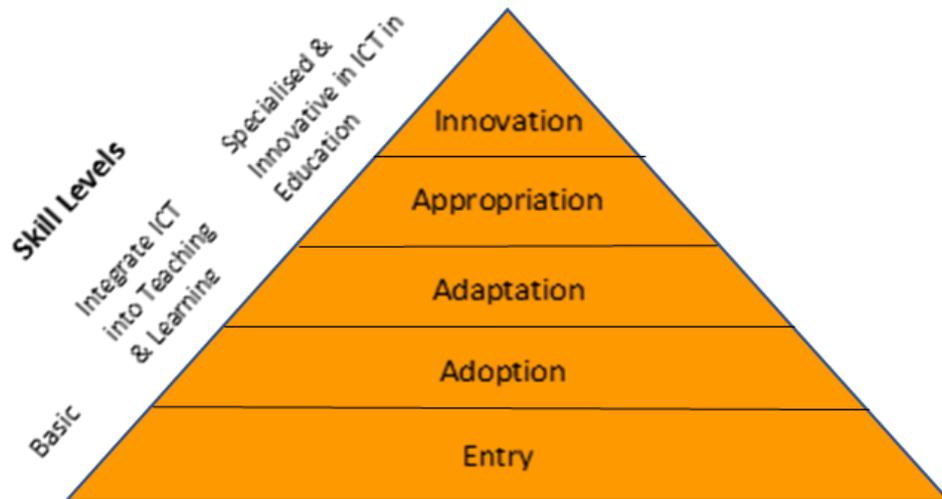
The teacher can use ICTs to support everyday classroom activities at an appropriate NCS level, assess the learning that takes place and ensure progression. He/she can reflect critically on how ICTs change the teaching and learning processes and to use ICT systems for management and administration. Productivity increases at this level. The teacher has the knowledge and skills to integrate the technology for teaching and learning.

- **Appropriation level**

The teacher has a holistic understanding of the ways in which ICTs contribute to teaching and learning. He/she understands the developing nature of ICTs, and an awareness that it is integral to the structure and purposes of the NCS. He/she has the experience and confidence to reflect on how ICTs can influence teaching and learning strategies, and to use new strategies. The teacher has the knowledge and skills to integrate the technology for teaching and learning.

- **Innovation level**

The teacher can develop entirely new learning environments that use ICTs as a flexible tool, so that learning becomes collaborative and interactive. ICTs are integrated tools for whole-school development through redefining classroom environments and creating learning experiences that leverage the power of technology (DoE, 2007). At this level the role of the teacher and the classroom environment is redefined.



*Figure 2.4: DoE Teacher Development Framework Stages (DoE, 2007)*

#### 2.2.4 A continuum of approaches to ICT development

Adoption and use of ICTs in teaching are represented as a continuum of approaches (Figure 2.5). The four approaches, termed emerging, applying, infusing, and transforming (DoE, 2007; UNESCO, 2002) illustrate the progressive use of technology by teachers and their institutions:

- **Emerging**

Teachers start using technology for administration. Approach to the curriculum is still teacher-centred. Here teachers learn the basic use of ICTs.

- **Applying**

Teachers realise that ICTs can be used for learning.

- **Infusing**

Teachers use ICTs both for personal and professional purposes. ICTs are infused in the curriculum for authentic applications.

- **Transforming**

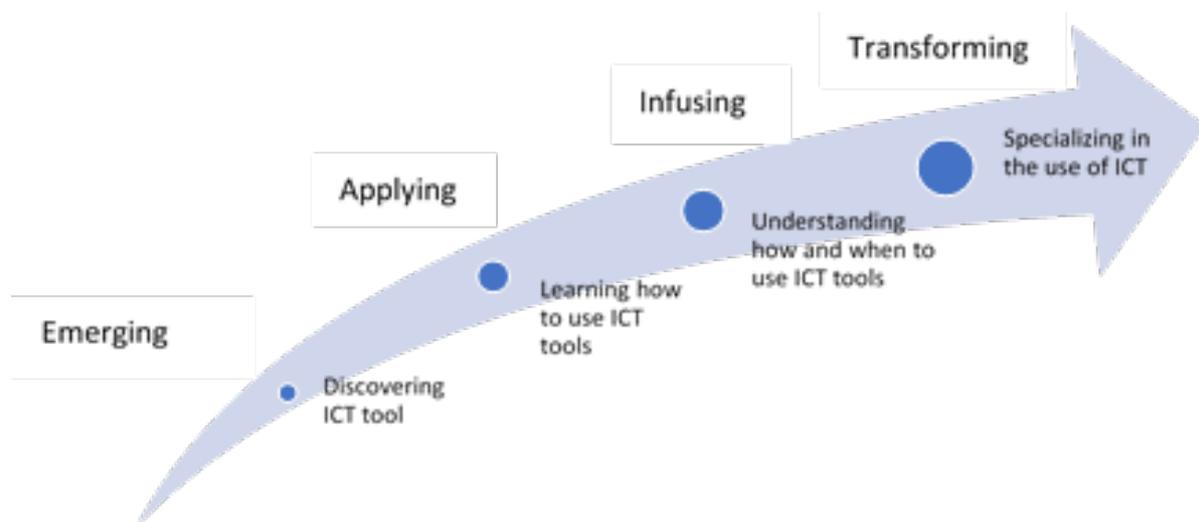
Approach to the curriculum has moved from teacher-centred to student-centred. Lessons are authentic and creative (DoE, 2007).



**Figure 2.5:** *Continuum of Progressive use of Technology (DoE, 2007)*

### 2.2.5 Stages of teaching and learning

Teacher competence and confidence in using ICTs for teaching and learning go through stages (Figure 2.6). **Discovering ICT tools**, is where they learn basic ICT skills and is at the emerging stage of ICT use. **Learning how to use ICT tools**: Teacher move forward from basic skills to application of the skills as in the applying stage of the continuum of ICT use. **Understanding how and when to use ICT tools**: Teachers have developed in their use of ICTs to the point where they can determine what tool and application to use for a particular task; operating in the infusing and transforming stages of ICT development. **Specializing in the use of ICT tools**: teachers now use technology innovatively.



**Figure 2.6:** *Continuum and the Stages of Technology Adoption*

Moving to blended, hybrid and online learning requires a much higher standard of training for faculty and instructors. It is not just a question of learning how to use a learning management system or an iPad. The use of technology needs to be combined with an understanding of how students learn, how skills are developed, how knowledge is represented through different media and then processed. How students use different senses for learning must also be understood to

teach to their learning styles. Integrating ICTs for teaching and learning mean examining different approaches to learning (Bates, 2015).

### **2.2.6 Connectivism**

In recent years, connectivism has emerged as a learning theory and is particularly relevant to a digital society. Connectivism is presently highly controversial. It is still being refined and developed with many critics (Bates, 2015).

The creation of new forms of knowledge is due to the collective connections between all the "nodes" in a network. Knowledge is not formalised by any organization but chaotic as there is a constant flow of information and access within and across nodes.

Siemens (2004) identifies the principles of connectivism as follows:

- Learning and knowledge rests in diversity of opinions.
- Learning is a process of connecting specialized nodes or information sources.
- Learning may reside in non-human appliances.
- Capacity to know more is more critical than what is currently known
- Nurturing and maintaining connections is needed to facilitate continual learning.
- Ability to see connections between fields, ideas, and concepts is a core skill.
- Currency (accurate, up-to-date knowledge) is the intent of all connectivist learning activities.
- Decision-making is itself a learning process. Choosing what to learn and the meaning of incoming information is seen through the lens of a shifting reality. While there is a right answer now, it may be wrong tomorrow due to alterations in the information climate affecting the decision.

Downes (2007), however states that connectivism: (a) seeks to describe "successful" networks (as identified by their properties, which he characterized as diversity, autonomy, openness, and connectivity) and (b) seeks to describe the practices that lead to such networks, both in the individual and in society – which he characterized as modelling and demonstration (on the part of a teacher) – and practice and reflection (on the part of a learner).

The role of a teacher in the connectivism paradigm is to connect students by providing the initial learning environment and context. Further to this, help students construct their own personal

learning environments so that they in turn can connect to "successful" networks. Thus, the focus is on the individual, the networks, the resultant flow of information and the formation of new knowledge. "Connectivists", such as Downes (2007) and Bates (2015), assumes that learning will occur through exposure to the flow of information and the individual's reflection on its meaning. Siemens states that the "know-what" and "know-how" of gaining knowledge is now supplemented by "know-where", including social media. In this case, social media is the medium used for learning and no formal institutions are needed for the construction of new knowledge. Connectivism re-examines the learning of the Internet and the explosion of new communications technologies. Siemens and Downes (n.d.) argue that the Internet has changed the nature of knowledge. Knowledge that was viewed as "important" or "valid" is now different from prior forms of knowledge. In the connectivist approach, the students need technological proficiency to access information and gain knowledge. They use internet technologies to be interconnected in collaborative environments that facilitates and enhances learning.

### **2.2.7 Teachers using ICTs**

Various longitudinal studies were undertaken to determine why teachers use ICTs for teaching and learning (Hennessy et al., 2010; Tella et al., 2007). The use of ICTs by teachers are influenced by intrinsic and extrinsic factors. They referred to intrinsic factors such as: knowledge and skills, attitude, beliefs, practice and resistance, confidence, and resistance to change. If teachers feel that they have adequate knowledge to integrate ICTs into their teaching and they believe that ICTs will enhance their teaching, they are more likely to use ICTs for teaching and learning. Hennessy et al. (2005) noted the intrinsic factors confirm the human element. On the other hand, these researchers found that teachers are resistant to incorporate ICTs if they are not confident in the use of ICTs to engage their students in the learning process. According to Buabeng-Andoh (2012) and Gong and Lai (2018) the extrinsic factors that influenced teachers use of ICTs in the classroom are access, time, support, resources, training, technical and organizational support. They found that teachers did not have the time to search for appropriate content nor create suitable e-Content themselves. Added to this, the access to and lack of resources inhibited teachers from venturing into incorporating ICTs in their teaching to develop the 21<sup>st</sup> century skills. The intrinsic and extrinsic factors determine how teachers will use ICTs for teaching and learning.

Teachers use ICTs to prepare their students for the 21<sup>st</sup> century world of work. To do that, the lessons must incorporate 21<sup>st</sup> century skills. Kivunja (2014) suggest that preparing students by

developing certain skills for the 21<sup>st</sup> century, requires a paradigm shift. The 21<sup>st</sup> century skills he refers to are communication, collaboration, critical thinking and creativity. Hennessy et al. (2010) agree and state that by incorporating these skills, the students are engaged in the lesson.

The students use ICTs to explore, find and analyse information to extend their knowledge. Any digital device is used to gather information and therefore the students must be taught skills that is not device specific. Furthermore, they add, that by using the information and knowledge gained, students can explain various thoughts, concepts, processes and content. Kivunja (2014) indicates that the students should be able to collaborate with others, be critical thinkers, problem-solvers and thereby develop the skills required for future work. The paradigm shift also occurs as there is a move away from the teachers providing the knowledge to the use of the internet to contribute to the skills such as communication and collaboration (Bates, 2015).

A 21<sup>st</sup> century classroom could be chaotic because of the plethora of different ways to communicate and collaborate. Rotherham and Willingham (2010) mention that good classroom management and experience on how to facilitate students' learning is required of the teacher. Hennessey et.al agree that teachers need to be guided in facilitating the dynamics of a 21<sup>st</sup> century classroom. Skills needed in a digital classroom are different to those in the traditional chalk-and-talk classroom (Hennessy et al., 2010). Students have access to information at any time and any place, hence learning can be autonomous. The teacher's role changes from being the fountain-of-all knowledge to be the facilitator and guide to knowledge. Lessons move from teacher-centred to student-centred and therefore students need to be taught the skills to access the knowledge. Teachers need to know how to guide students to gain the knowledge prescribed in the curriculum.

Teacher training is important to guide students in the 21<sup>st</sup> century classroom and learning. The training must include technology and pedagogical integration (Hennessy et al., 2010). The problem, however, is that there is no definite way of teaching the 21<sup>st</sup> century skills (Rotherham & Willingham, 2010). Teachers need to know how to blend the traditional and technological methods of teaching to achieve the desired 21<sup>st</sup> century skills. Rotherham and Willingham (2010) say that even though student-centred and blended learning has been proven to be effective, teachers are not using these methods effectively.

The student-centred teaching becomes demand driven looking at the learner demands and the needs of the teacher. Learning is facilitated and guided by the teacher, the content is authentic

and outcomes achievable. Autonomous, self-directed learning is possible with immediate feedback. The Demand Driven Learning Model makes use of the internet as a tool for learning, and collaboration is encouraged. The learning styles of students are kept in mind and resources and tools are chosen accordingly (MacDonald, Stodel, Farres, Breithaupt & Gabriel, 2001).

Teachers and students have different learning experiences regarding ICTs. The students are more comfortable with ICTs as they have grown up in the digital age surrounded by and using computers, videogames, digital music players, cell phones and other digital tools. Prensky (2001) refers to these students as the digital natives. On the other hand, the teachers were not born in the digital age but had to adopt and adapt to the use of ICTs. They are referred to as digital immigrants (Prensky, 2001). The digital immigrant teacher needs to realise that the digital natives learn differently today. The students think and process information differently to the digital immigrant. They receive information fast, multi-task, parallel process and prefer to be networked. The teacher therefore needs to change the methodology and incorporate ICTs into the lesson to enhance teaching and engage the students in their learning.

The innovative teacher who understands the sweet spot of TPACK where there is an integration of the technological, pedagogical and content knowledge, is more willing to use ICTs in their teaching. The ICTs are used at the modification and redefinition of the SAMR model where tasks are set in a new and previously unconceivable manner. ICTs are used to access information, for collaboration and connecting to authentic global citizens as illustrated in the connectivism theory. The innovators and early adapters see the usefulness of ICTs to enhance teaching and engage students to achieve the learning goals. Teachers at the Appropriation and Innovation level of the Teacher Development Framework stages realise that the classroom is borderless as students have online access to any content at any time. The classroom can be a virtual one where students can gather information, acquire knowledge, connect, collaborate, communicate with others by using a variety of ICTs.

### **2.2.8 Technologies used in the language classroom**

Technology, the internet, the media and virtual social networks are used today to enhance language learning. Students can download applications that are accessible at any place, anytime and on any mobile device such as a cellphone, tablet, Chromebook and laptop. The social media affords the student connection with other students as well as the teacher. Videos can be used in the language classes to assist with language construction, pronunciation and improved listening

skills (Richards, 2015). Further, Richards (2015) also refers to the advantages that gaming contributes to the introduction of various topics. Also, social media lends itself to writing skills through blogging. He mentions that Ted Talks on the other hand gives the students visual and auditory access while they follow the talks and discussions ensues. Since students can decide as to when and what they will watch and listen to the videos, it gives rise to autonomous learning. The gaming aspect appeals to the imagination of the students and makes learning fun as digital gaming appeals to the student in the 21<sup>st</sup> century. Emails can be used for communication and to improve writing.

Bates (2015) distinguishes between the broadcasting and the communicative media that is used to gain information and knowledge. Communicative media and technologies are a many-to-many form of communication which affords connecting with others without being in the same place. Examples of communicative media are the internet, online discussion forums, video conferencing, most social media, e-mail and telephone. In this way students can be working on writing projects together where there is a sharing of ideas, editing and presentation. On the other hand, he mentions broadcasting media such as print, and television is a one-to many means of communication with no possibility of interaction. The shift for teaching and learning is towards the communicative media and technologies that affords synchronous and asynchronous connectivity. The communication technologies have enabled new forms of discourse and authorship. Collaboration on the same document questions the authorship of the final product.. The collaboration, communication and creativity that result from the manner in which people use the ICTs, bears testimony to the changing nature of language learning. Language learning is now more fluid, constantly changing because of the impact of the audio and visual ICTs. Students prefer the freedom of learning what interests them, at their own pace, in their own time and place. Digital literacy is now important because students are using ICTs increasingly more often. ICTs for language learning give students unlimited access to expert language teachers and authentic audience across the globe who can provide guidance and practise in the acquisition of the language.

In the Western Cape, teachers who have been issued Smart Classroom resources (data projector, laptop, whiteboard, interactive device and printer) can use these resources to enhance their language teaching and learning. Furthermore, tablets provided by the USO projects are also used (Government, 2018). Students also have access to the computer lab programs such as word processing and presentation software for their language learning.

The environment is created to empower students to take ownership of their learning and be engaged in the lesson. ICTs used in the classroom for teaching and learning however, does not necessarily imply that the learning will improve.

### **2.2.9 Advantages of ICTs for teaching and learning**

Longitudinal studies revealed that teachers realise that there are advantages to using ICTs for teaching and learning. Some teachers find that using ICTs make teaching and learning easier (Tella et al., 2007). Modern teaching and learning make the most of new and immersive ICTs to explore the curriculum. The students today are digital natives, being comfortable with ICTs from an early age and therefore it is important to kindle their interest by incorporating ICTs for teaching and learning (Prensky, 2001).

Some teachers involved in a study by Hennessy et al. (2015) found that the use of ICTs in the class reduced absenteeism as the students were more engaged in the lessons. Absentees and missed lessons, benefit from the support of teachers via ICTs which are accessible at any time, any place, using any device. Owuor, Kogeda, Anele and Osuri (2013) add that ICTs afford students the opportunity to learn in their own time and place because they have access to a rich source of information. ICTs are also used to enhance recall of previous learning and provide new stimuli, activating the learner's response, providing systematic and steady feedback and sequencing learning appropriately. Nunan (2016) states that the use of ICTs can transform education and language teaching particularly. ICTs are ubiquitous and as such students have greater access to information and connect with others globally. Teaching practises and methodologies will be transformed to learning beyond the classroom.

The use of ICTs for teaching and learning has extended the classroom. Students have access to information at any place and at any time and this enables autonomous learning. Collaboration and communication with a wider audience is made possible. Students can engage in discussions and forums with an authentic global audience to enrich their learning experience. Through the use of ICTs, students can go on virtual reality expeditions across the world, without having to leave the classroom.

ICTs have impacted teaching methodologies. A blended approach makes use of ICTs as well as face to face teaching to enhance teaching and engage the students in the learning. A flipped classroom approach is also possible. Students can access information and complete tasks online at home and then have discussions pertaining to the work, at school. The different teaching

methodologies allow teachers to have more more time to engage with the students. Teaching has moved from being teacher centred to students centered. Using augmented reality, virtual reality and gaming for learning, make learning fun for students. Teachers will however not implement these methods if they do not know how to use it for teaching and learning.

#### **2.2.10 Barriers to ICTs in the classroom**

The lack of teacher ICTs skills and teacher confidence hinder teachers from being willing to adopt ICTs into their teaching (Buabeng-Andoh, 2012; Hennessy et al., 2010). They further add that the lack of pedagogical teacher training and support inhibit the teachers from venturing into the unknown territory of technology and pedagogy integration for teaching and learning.

Teacher training must include technology and pedagogical integration (Hennessy et al., 2010). The problem, however, is that there is no definite way of teaching the 21<sup>st</sup> century skills and how to integrate it into teaching (Rotherham & Willingham, 2010). Teachers need to know how to blend the traditional and technological methods of teaching to achieve the desired 21<sup>st</sup> century skills. Rotherham and Willingham (2010) say that even though student-centred and blended learning has been proven to be effective, teachers are not using these methods effectively.

Not knowing how to integrate technology and pedagogy, among others, contribute to the negative attitudes that teachers have toward the implementation of ICTs for teaching (Tella et al., 2007). Added to this, is the limited resources and access to ICTs including devices for the teachers as well as for students which is a source of frustration and demotivation. Owuor et al argue that limited resources and access exacerbates digital divide (Owuor et al., 2013). Often in the rural and sub-economic areas the classrooms are overcrowded and the students do not have access ICT devices. This view is supported by Richards who adds that unfavourable class-size and a test-driven curriculum is a challenge to the use of ICTs in the classroom (Richards, 2015). Hennessy et al. (2015) on the other hand, refer to the rigid structure of traditional education systems and restrictive curricula as a challenge to the use of ICTs in the classroom. ICTs are used for assessment of learning and not for learning.

Many researchers on the challenges of the use of ICTs for teaching and learning, mention time. Teachers do not have time to search for resources online, evaluate the content found, plan and prepare interactive lessons and assessments and be innovative in the delivery of a digital inclusive lesson (Hennessy et al., 2010, 2015). They also report that the lack of finances to

purchase resources and suitable educational software further exacerbates the lack of ICTs integration for teaching and learning.

Major challenges that Owuor et al. (2013) mention are bandwidth, connectivity and data. Intermittent connectivity and insufficient bandwidth lead to frustration for teachers and students alike as it impacts on the flow of the lesson and wastes time. Students are particularly affected by the lack of and expense of data. If they do not have data, they cannot connect with other students and their teacher nor have access to information. Hennessy et al. (2015) also state that in rural and sub-economic areas intermittent electricity, poverty and living far from the school have an impact on the use of ICTs in the classroom.

Hennessy et al. (2010) suggest that the negative attitudes among school leaders towards computers and the internet hinder the implementation and integration of technology and pedagogy for teaching and learning. If the school's management team does not support the use of ICTs for teaching and learning, they will not be inclined to buy the needed resources, send teachers for training nor assist in the use of ICTs to enhance teaching and learning.

#### **2.2.11 Overcoming Barriers to ICTs in the classroom**

According to Hennessy et al. (2010) affordable portable technologies such as laptops and mobile phones should be used in Sub-Saharan Africa because they are low-cost, low-energy and low-maintenance. Hennessy et al. (2010) found that having students in charge of charging the mobile devices and downloading resources when connectivity was found, mitigated some of the barriers to the use of ICTs in the classroom (Hennessy et al., 2015). Owuor et al. (2013) agree that hand held devices such as cellphones and tablets can help to alleviate the challenge of lack of resources. There is an increase in the use of ICTs for teaching, learning and administrative purposes in schools in Sub-saharan Africa. Moreover, the improvement in connectivity contributed to students and teachers' enthusiasm in using computers for teaching and learning (Hennessy et al., 2015).

Regarding time as a challenge to the use of ICTs, Hennessy et al. (2010) suggest that a solution is to collaborate with other (language) teachers and to share resources. In-house training and the sharing of best practise help alleviate the anxiousness of teachers starting to use ICTs for teaching and learning (Hennessy et al., 2015).

Belonging to professional learning communities (PLCs) helps improve the adoption and integration of ICTs to enhance lessons because teachers do not feel alone and they have support. The sharing of best practises at communities of practise (COPs) gives teachers ideas as to how to integrate ICTs to enhance their lessons and how to overcome challenges (Hennessy et al., 2015). Reflective dialogues with colleagues and mentors enabled teachers to teach interactive lessons and be innovative in overcoming challenges so that students are engaged in the lesson. Tondeur, Forkosh-Baruch, Prestridge, Albion and Edirisinghe indicate that PLCs and COPs lead to mentoring which is important for professional development and empowers teachers (Tondeur et al., 2016). These communities act as a support and mentoring platform as well as a sharing of ideas which empowers teachers in their teaching.

Owuor et al. (2013) suggest sharing and more intensive use of scarce resources in institutions and opened to the community. Voice Over IP can be a solution for the data problem. They further add that where resources are concerned, computers that are in working order and not of date, can be redistributed to those in need of resources if institutions upgrade their computers after three year (Owuor et al., 2013). This idea is supported by the Western Cape Education Department when the Computer Assisted Teaching laboratories are upgraded, the used computers are given to institutions in need of digital resources (Government, 2018).

### **2.3 TEACHER IDENTITY AND ICTS IN CLASSROOMS**

Identity is a psychological facet that has been theoretically reconstructed since its origins. The concept of identity and “self” are often used interchangeably in the literacy of teacher education (Day, Kington, Stobart & Sammons, 2006) and have both been identified as complex notions that encompass different areas of psychology, philosophy and sociology (Cooley, 1902; Mead, 1934; Goffman, 2002; Ball, 1972; Sikes, Measor & Woods, 1985; Ball & Goodson, 1985; Goodson & Hargreaves, 2006; Kelchtermans, 1993). In education, the concept of identity reflects how educators see themselves and enact their relationships within different contexts. Teacher identity (TI) thus involves construction not only from the technical dimensions of teaching – such as classroom management, lesson planning or assessment – but also from their interaction between the personal experiences of teachers and the social, cultural and institutional environment in which they function day by day.

It thus becomes clear that to view TI as merely the product of the teacher’s role within the classroom – a framework of pedagogically embedded interaction – or the institution where they

are employed (professional identity), significantly restricts the dimensionality of TI. This development has recently led to the incorporating the emotional self as a core domain in the examination of the nature of TI (Day, 2004; Hargreaves, 1998, 2001; Sutton, 2000; Van Veen & Slegers, 2006; Zembylas, 2003); arguing that teaching is fundamentally full of emotions making it impossible to construct TI solely from the technical domain they function in. For language education, TI thus involves exploration beyond the mere discovery of the skills and knowledge of language teaching; into the discovery of what it means to be a language educator.

### 2.3.1 Language Teacher Identity

The comprehensive work of Barkhuizen (2017) in the formation of a definition for Language Teacher Identity (LTI) is exhaustive. His work draws on the personal research experience of forty-one researchers exploring LTI within their area of expertise through consideration of both their conceptual understandings as well as their methodological approaches used for investigation. What becomes evident towards the end of his work is that the personal self cannot be separated from the professional self. **Knowing** where we as educators come from and hope to see future educational trends move, is “as crucial to good teaching as knowing our students and subjects”. Barkhuizen (2017) definition of the LTI provides a statement about current thinking in a wide range of considered areas that influence the formation of LTI. His definition of LTI is as compelling as it is thorough in its consideration of the contributions of various authors to the definition.

Barkhuizen (2017) provides the following outline to the definition of LTI as formed through the consideration of various other authors' work:

- LTI is cognitive, social, emotional, ideological, and historical (Norton, 2017; Donato, 2017; Hayes, 2016).
- It is formed both inside the teacher and outside in the social, material and technological world (White, 2007; Leibowitz, 2016; Cheung, Said & Park, 2014; Martel & Wang, 2015).
- As well as through being and doing, feeling and imagining and storying (Benson, Barkhuizen, Bodycott & Brown, 2013; Block, 2009).
- He describes LTI as a balance between struggling and harmony: contested and resisted, by self and others, and they are also accepted, acknowledged and valued, by self and others (Donato, Tucker & Hendry, 2015; Canagarajah, 2013; Matsuda, 2015).

- and considers LTI as core and peripheral, personal and professional, they are dynamic, multiple and hybrid, and they are foreground and background (Donato, 2017; Sfarid & Prusak, 2005; Bukor, 2011).
- Barkhuizen also brings forth Donato's argument that LTI changes short-term and over time – discursively in social interaction with teacher educators, students, teachers, administrators and the wider community,
- Donato et al. (2015) as well as Leibowitz (2016) indicate that LTI is formed in material interaction with spaces, places and objects in classrooms, institutions and online; making LTI a dynamic construct.

Of particular interest is the discussion of the contributions to the definition made by De Costa and Canagarajah (2016), who discuss the intersection of teacher identity and pedagogy. De Costa (2017) states “we shouldn't just have to read about a teacher's identity; instead, we should be able to see it come alive through instruction”. Additionally, Norton (2017) has been investigating the extent to which language teachers promote learner investment in the language practices of their classrooms and makes the case that learner investment is central to all teaching practices. Learners who see the benefits of the language they are learning, are more committed to the learning process. The benefits could be social, political or economical. However, feelings of anxiety when learning a language reduces the learner investment in the learning process. On the other hand, a positive experience of learning a language can lead to full participation and engagement in the lesson. Teachers who understand their identity, invest more time, effort and energy in their learners to engage them in the lesson.

Only a few language education scholars explored the identity or innovation interface (Trent, 2014). How do we define teacher identity (TI)? Is it how teachers perceive themselves or how they are perceived by others? In fact, it is both and so much more. Wenger (1998) states that identities are not static, but dynamic; changing as teachers reflect on who they are and what their value is.

### **2.3.2 Teacher Identity and ICTs**

TI plays a crucial role in the application and extension of ICTs into the classroom and beyond. According to Nykvist and Mukherjee (2016) there is a link between **the** teacher's beliefs, which is part of the TI, and the resultant inclusion of ICTs in classroom practise. Teachers need to understand their own identity in using ICTs to support, enhance and extend their teaching and

students learning. If the teacher understands their pedagogical and digital identity, they will allow the students to make use of ICTs for autonomous, synchronous learning.

White (2016) agrees that the classroom is now dynamic and complex. The traditional face to face form of teaching changes as technology mediated sites and practises are used for online language teaching. The use of ICTs for language learning makes distance learning possible, extending the classroom thus making it a classroom without borders. Teachers methodologies change to leverage the technologies available to them. Blended learning incorporates online and face to face teaching, flipped classrooms, distributed learning and the virtual classrooms now become the new forms of teaching and learning. These methods are being used increasingly by teachers. White (2016) also, however, states that with the boundaries of the classroom being extended, the teacher's voice is lost, and work is unseen. He further claims that with the difference between face to face and online learning, TI changes because 1) the role of the teacher changes, 2) different attributes and expertise are required, 3) The pedagogy changes, 4) greater emphasis is placed on both blended teaching and learning.

This view is supported by Nunan (2016) who states that a teacher cannot transfer the classroom **face to face** skills to the online learning environment as a different set of skills is needed. Managing learning processes such as assessments, feedback, inappropriate or unacceptable academic behaviour cannot be carried out in the same manner as **face to face**; requiring teachers to change their approaches and ultimately their established identities as educators.

- Teachers require a different set of skills, expertise and attributes which makes their mode of teaching complex and challenging (White, 2016). The transformation in teaching methodologies and practises redefines the TI and role. According to Norton (2017) the TI is expanded and extended with the use of new technologies such as the internet, mobile phones, digital cameras and other digital technologies for teaching and learning. Teachers choose different technologies for teaching and learning, and this displays their TI. Teachers need to embrace technology and devise ways to use ICTs to enhance language teaching and learning and extend their classroom.

Mobile technology is being used more and more for language learning. Immersive Virtual Reality (VR) extends the classroom and makes learning fun. Second Language students can concentrate on the content of the visual scene without the stress of decoding written language. In addition to the functional addition of this technology in teaching it also furthers the education

of less advantaged students who now have access to print text in English, travel, and technology via VR. VR is a good tool to use to reach both visual and auditory students, integrating both senses into one experience as students are engaged in the learning. VR is a technology that can and does transcend a language barrier to both deliver content and enable concept acquisition (Craddock, 2018). In addition to this expansion of the delivery of the required curriculum VR adds a dimension of fun to the learning process.

It is inevitable that Literacy and ICTs will converge in classrooms around the world. Students need to be prepared for the world of work and the access to information via ICTs to equip them to use information effectively. The information is accessed in the shortest time, used to solve problems and then communicate the solution to others (Leu & Kinzer, 2000). Students will also learn from each other via collaborative learning experiences such as cooperative group learning, internet workshops and internet projects. It must be said that a committed, knowledgeable teacher is the most instrumental factor in effective instruction, since they will facilitate the acquisition of knowledge (Leu & Kinzer, 2000). Teacher need to incorporate ICTs into the lessons to prepare students for the fourth industrial revolution.<sup>2</sup>

The fourth industrial revolution is a digital revolution which will alter the way we live, work and relate to one another because it will blur the lines between the digital, physical and biological spheres. Examples of the fourth industrial revolution will be robotic assisted surgery, robotics in agriculture, self-driving cars and autonomous drones (Schwab, 2016).

As educators we need to prepare our students for the future unknown world of work by emphasising future-ready skills to help the students thrive in jobs not yet invented. Skills such as critical thinking, complex problem solving, cognitive flexibility and creativity. The future skilling is important for the students to be able to survive the age of the unpredictable, disruptive fourth Industrial Revolution. The integration of technology and pedagogy innovatively will empower our students and enable them for the future world of work reflection on classroom practise also play a role in the formation of the language TI (Harbon, 2016).

The narrative of a Foundation Phase teacher is used to illustrate how a teacher embraced ICTs by incorporating the internet for literacy teaching and learning. Halsey (2009), not being afraid

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<sup>2</sup> Note how Schwab (2106) explains this: "The First Industrial Revolution used water and steam power to mechanize production. The Second used electric power to create mass production. The Third used electronics and information technology to automate production. Now a Fourth Industrial Revolution is building on the Third, the digital revolution that has been occurring since the middle of the last century. It is characterized by a fusion of technologies that is blurring the lines between the physical, digital, and biological spheres".

of using ICTs, shares that she used the website both for teaching and learning. Halsey implemented 21<sup>st</sup> Century skills such as collaboration, communication, creativity and critical thinking by incorporating the internet into the assignments she designed for her class. Halsey is an example of an innovative teacher designing tasks at the Modification and Redefinition stages of Puentedura's SAMR model (Puentedura, 2014). The students were digital natives and she needed a way to connect with them via a means they are familiar with. The internet tools used were podcasting, blogging, emailing and word processing.

The reasons given as to why Halsey used the internet for teaching and learning were as follows:

- Motivation
- Metacognition
- Bringing the world into our classroom
- And taking our learning out into the world.

The podcasts honed the writing, reading, listening and speaking skills of students. Collaboration and communication skills were used in the paired preparation of a podcast. Uploading the podcast onto the website provided an authentic audience and a purpose and thus a motivation to write and produce content. Vurdien (2013) agrees that when students have a specific audience in mind, they are more concerned about the interest of others. By uploading the podcast to the website, Halsey was taking the learning out into the world. Further to this, Vurdien (2013) says that blogging afforded the students the opportunity to broaden their audience, as their writings were published and thus taking their learning out into the world.

Vurdien (2013) states that the feedback received from blogging also contributes to improved writing skills. By emailing, the students connected, communicated and collaborated with other Year 2 students across New Zealand thus bringing the world into their classroom and taking them out into the world. Nykvist and Mukherjee (2016) also noted that both teachers and students found that social media plays a role for sharing, viewing and gaining knowledge.

Halsey reflected on her teaching and this led to change and the use of technology for teaching and learning. To stimulate the formation of teacher ID, some reflection on the part of the teacher is needed. Farrell (2018) emphasizes the importance of reflection, knowing yourself, your philosophies, beliefs, principles, values; being aware of who and what shaped you as an individual. Farrell (2018) further points out that teachers must reflect on their life experiences

and share their stories so that other teachers can learn from it. It is through these life experiences that a personal TI is formed. Donato (2017) agrees that it is the reflection of the teacher's core principles that will determine their TI. Oda (2014) supports this thought by stating that when teachers reflect on their experiences, they discover what is unique about themselves and so develop a unique teacher ID. Reflecting on past and present experiences, inside and outside of the classroom can become resources to be used for future development. The teachers will be able to establish their own pathway based on their experiences.

Monica is an early adopter of technology in Uganda. She uses the African Story Book to assist her students in reading (Stranger-Johannessen and Norton, 2017). A data projector, laptop and a wall were all that were needed to engage the students in the literacy lesson. Her lessons were student-centred, and her role was that of a facilitator. The stories were used cross-curricula, in that literacy can be integrated across themes and in all subjects. As Monica utilised the stories to enhance her teaching, her TI changed. She felt empowered and was willing to try new approaches to her teaching by incorporating ICTs into her lessons. The students were also more engaged in the learning process. As her confidence grew and her ability to use ICTs for teaching and learning increased, Monica started to create her own e-Content for language literacy. The e-Content she created was published online which increased her readership and extended her digital footprint. The LTI of a mentor was established as Monica assisted other teachers who were using the African Story Book. Through using the African Story book, Monica accrued social and cultural capital at her school, in the community and online. Her TI was validated, acknowledged and enhanced. Monica is an example of a teacher using ICTs at the modification and redefinition stages of Puentedura's SAMR model (Puentedura, 2014). Even though Monica illustrated the advantage of ICTs for language learning, she faced some opposition from teachers and management at school as to following the curriculum using the African Story Book. However, her success in teaching and learning motivated more teachers to experiment with seeing the curriculum as a guide to what needs to be taught, rather than how to teach it. Teachers now had the freedom to use the African Story Book in their classrooms to cover the syllabus and complete the curriculum.

A narrative study done by Abbott (2016) in Australia refers to how embracing ICTs in the classroom impacts the TI. The teachers who were part of the study agreed that ICTs are part of the 21<sup>st</sup> century classroom. For Elizabeth, a late adopter of technology, technology alone is not enough. According to her, teacher passion, confidence and expertise are also necessary. She

used the interactive whiteboard in her English lessons. Her students were engaged, and her lessons were enhanced. Blogging was another tool that was used in her teaching. Since Elizabeth had a good relationship with her students and trusted them, she could give the instruction and leave the students to produce the work required of them. Yet, Elizabeth saw her identity as outside of technology and this caused her conflict because she was at a school that wholeheartedly embraced technology for teaching and learning. Similarly, Dana, who was also part of the study felt pressurized to incorporate ICTs into her teaching and learning even though she viewed herself as a good teacher, receiving good results. Her experience, however, was that her students enjoyed the traditional methods as they were bored with ICTs being used in all classes. The traditional way was refreshing for her students and they interacted better during the lessons. The traditional view of teaching enhanced by the student interaction, cemented Dana's TI as a rationalist but plays into the importance of reflection and surroundings in the formation of TI and the inclusion of ICTs in teaching.

Norton (2017) has been investigating the extent to which language teachers promote learner investment in the language practices of their classrooms and makes the case that learner investment is central to all teaching practices. Annabel, on the other hand, used online discussion forums for her own development to empower herself to use ICTs in the classroom. Her main concern was enhancing the lessons to improve language learning. Self-efficacy was displayed as she continued to seek the new technological skills to implement in her classes. Other participants of the study acknowledged that even though they were good teachers, their low level of technological knowledge negatively impacted in the integration of technology and pedagogy. A disconnection between personal and professional identity ensued.

Uibu and Kikas (2008) narrative study of teachers in Estonia reveals the teachers' perception of the teacher's roles and thus their TI. They saw their roles as changing with the implementation of ICTs in teaching and learning. The participants in this study saw themselves as disseminators of knowledge to prepare students for assessments and the use of ICTs assisted them in this role. Further to this role, they also assumed the role of supporter as they were supporting their students' development of physical, social, mental and emotional skills. To perform this role, teachers take on the role of coaches, guides and tutors where they can focus on the individual student's abilities, skills and developmental level. ICTs can be used, but then the teacher must facilitate and support the students through responsible use of ICTs for acquisition of knowledge and the use of social media. It is important that the students learn the

skills of responsibility and acquire good working habits to prepare them for senior school and ultimately the world of work. One of the teachers stated that being a facilitator, motivator and instructor is the same whether ICTs or the traditional methods are used for teaching and learning. LTI cannot be divorced from how teachers see themselves and how they perform their duties. How teachers perform their roles reflects their TI and impacts on their teaching, based on their skills and abilities.

The Uibu and Kikas (2008) study also, however, revealed some challenges teachers face regarding their skills. Planning lessons that integrate technology and pedagogy is time consuming and that the amount of information available on the internet is vast and teachers must plough through the information to determine what is applicable for the lesson. Teachers view the change to technology to enhance teaching and learning as extra work. Moreover, the access to the ubiquitous nature of ICTs adds to teacher's tasks of assessing authenticity of material and plagiarism. Added to this, the big classes require a different style of classroom management to ensure that students are engaged in school work and not playing games or on social media for personal gain. Further to this, ICTs in the classroom puts higher demand on teachers' skills and knowledge and classroom control. Teachers are expected to have a new set of skills and perform an array of roles which may lead to teacher professional vulnerability. Added to this, the educational reform changes to integrate ICTs can leave teachers feeling deskilled, insecure and incompetent Gao (2016). South Africa is a good example of this, where there were various changes to the education system, including the present e-Learning Game Changer. It is expected of teachers to use the technology provided by the WCED to enhance their teaching. Not many of the teachers feel confident to integrate ICTs into their lessons and fear students know more about technology than they do; restricting their application of the available ICTs.

Teachers who realise that their students may have greater knowledge of new technologies are willing to change their role from the fountain of all knowledge to be a facilitator of knowledge (Leu & Kinzer, 2000; Leibowitz, 2016). Trent and Shroff (2013) make the point that modern and up-to-date teachers can use ICTs to change and enhance their teaching to be student centred and interactive. Teaching shifts from teacher-centred to student centred learning. The learning activities would include synthesis, analysis and evaluation. The internet is thus a conduit to extend the classroom to enable ubiquitous learning by students. The internet and mobile technology have extended the classroom as well as the time and place for learning, but in and

of itself it is a concept that needs to be taught to educators before they can or want to extend those applications into their teachings.

Trent and Shroff (2013) studied how the use of technology for an e-portfolio can influence teacher identity. They discovered that tensions can arise within teachers using ICTs for teaching and learning. The teachers using ICTs may see themselves as modern and forward thinking and may look down on those who are more traditional in their teaching, which could lead to social antagonism. Furthermore, there may be a difference between the professional and personal identity. However, it was found that teachers using ICTs developed a COP where they were sharing ideas and supported each other. An identity is formed by the sense of belonging as well as through the collaboration that exist between the members of the COP. The engagements among the participants of Trent and Shroff (2013) study included uploading, sharing and viewing content, being involved in online discussions and receiving feedback. Solutions to challenges experienced could be shared with the broader community of teachers.

On the other hand, Thomas and Beauchamp (2011) saw tension arising from the difference between the way the teachers saw themselves and the way others saw them. Teachers internal perception of themselves as teachers, determines how they interact with their peers and students. The interaction and comments from the teaching community such as colleagues, team leaders, managers and students were a source of reflection as to how to deal with antagonism from colleagues when they used new technologies for teaching and learning. The individuality of teachers come to the fore when looking at the different technologies they prefer to use to achieve the learning outcomes and institutions need to acknowledge this (White, 2016).

According to O'Connor (2008) teachers' emotions are not recognised by institutions and policies. It is the TI of caring that shapes and guides the teachers' professional identities. A major motivator for the teachers involved in the study was their caring for and about their students. The teachers wanted to help, motivate and inspire their students to reach their potential. Even though caring for the student is a major aspect of the TI, it is done within boundaries. The teacher-student relationship is a professional one because the teacher has a positive TI. The caring TI plays an integral part of the teacher's commitment to work and a healthy work ethic. The participants in the O'Connor (2008) study wanted to have a good relationship with their students so that they could teach effectively and engage their students actively in the lesson. Laura, a participant in the study, stated that students are more likely to work and be co-operative if the teacher has a connection with them. Christina, on the other hand

wanted to affect change through the relationship with her students whereas Michael wanted to empower his students to take ownership of their learning. In the study three aspects of caring behaviour was thus exhibited by the participants:

- **Performative**

Where behaviour is geared towards motivating students in order to reach pedagogical goals.

- **Professional**

The management and maintenance of appropriate relationships with students in order to maintain a professional role.

- **Philosophical/Humanistic**

Making the personal decision to care in adherence with a personal and individual philosophy or code of ethics.

Michael and Laura both commented that the determining factor of a teacher's success was the teacher's personality. Michael further adds kindness and enthusiasm as contributing factors. Laura, on the other hand feels that a teacher is a performer, drawing the students into the lesson and making them excited to learn. The teacher must have a clear distinction between the personal and professional self to distance themselves from the students at the end of the day. Christina, however, says that she has a real love for her students and cares about them. Christina wanted to understand the difficult lives of her students. She interacted with her students outside the classroom situation and listened to them and this strengthened her relationship with her students.

ICTs allows teachers to spend more time on the students and build good relationships with them. The caring and love that teachers have for their students often lead to them going beyond the call of duty. Teachers are committed to their teaching and their students. White (2016) maintains that teachers need to be committed, responsible and answerable to harness the affordances of technology for teaching and learning. Hayes (2016) study of teachers in Thailand and Sri Lanka revealed that the teachers are committed to the goal of student improvement both academically and socially, and therefore will do all in their power to overcome any barriers to achieving this goal. Teachers try to understand the socio-economic, cultural backgrounds of their student so that their teaching methodologies can be impactful. To this end, the students from disadvantaged backgrounds are of special concern to the teachers. Teachers make

resources available to students at school if they know the students would not have access to resources at home. Furthermore, students are also given the opportunity to work on tasks during lunch breaks and after school. Some teachers also remain after school to assist the students in need of assistance, be it academic, social or emotional.

Teachers are not only committed to the students they teach but also to the institution they teach at. Teacher commitment is strong even though they do not have a say over the curriculum or exam formats. However, the caring behaviour of the teacher can either be reinforced or constrained by the values and practices of an institution. TI is shaped by their connection to the education system, the language they teach, their classroom experiences and their students. Teachers reflect on the roles they play at the institution and adjust these in order to navigate institutional demands.

Cheung et al. (2014) says that a TI is formed when teachers question their roles and traditional teaching, are willing to move out of the comfort zone and create new and innovative methodologies in teaching. They will seek out fresh ideas and innovatively include ICTs for teaching and learning.

Freeman (2013) studied the relationship between TI and innovation and analysed the change. He believed that if teachers know and understand their identity, they are more innovative. Pre-service teachers need to understand their TI and role in the class as this can positively impact on them being innovative. For Martel and Wang (2015), innovation is extending and improving the field of language teaching. The innovative teacher will move away from the traditional teaching method which concentrate on instructional curriculum and assessment to methodologies that are more forward-thinking in approach which are content based, task-based and project-based instruction.

In her study in Uganda, Norton (2017) noted that the methodologies and pedagogies of teachers changed to include digital materials. Teachers digitized stories so that it can be downloaded, translated and adapted. The digitized stories contributed to improving the literacy of Ugandan children. Teachers are willing to change their methodologies, including a move towards the digital and technological, to assist their students to improve and encourage them to succeed (Leibowitz, 2016).

Harbon (2016) believes the student's needs and characteristics must be the focus of curriculum delivery. It is therefore important that teachers reflect on their teaching methods since methods

have changed over the years. The methods and technologies used should accommodate the various learning styles of the students. White (2016) agrees that the use of ICTs for teaching and learning cannot be seen in isolation. She says the students learning styles, perceptions and goals must be taken into consideration.

By allowing the students to leverage the affordances of the new technologies and literacies, the TI was affected. In Uganda the TI was extended and expanded due to the new literacies of digital technologies such as the internet, mobile phones, digital cameras. Both the teachers and students developed digital skills which contributed to them gaining cultural capital and social power. New opportunities presented themselves to the teachers in terms of professional advancements and studying abroad (Norton, 2017).

Canagarajah (2013) further adds that the TI is part of teaching. The knowledge, beliefs, practises and skills of teachers gives them a voice. Belonging to a COP provide teachers with social links where they can share social ideologies. A COP also contributes to the group cohesion and impacts TI (White, 2016). Adding to this view, Jill Hadfield (2017) indicates that teachers engaged with and interacting with the teacher community and broader professional community, are provided with engaging material to be used for teaching and learning. Collaboration among teachers belonging to a COP where best practises are shared, empowers teachers to be effective in enhancing their lessons by using ICTs (Rotherham & Willingham, 2010). Collaboration with peers and reflection on classroom practise also play a role in the formation of the language TI. The COP is a support structure for teachers who share the same beliefs and ideals for teaching. Besides belong to a COP, mentoring and pairing of pre-service/ novice teachers with experienced teachers, as was done in Hong Kong, strengthens the TI (Gao, 2016).

Teachers who witness the innovative methods in practise are assumed to be more inclined to put into practise what has been modelled to them. There is a direct link between learning and practise (Wenger, 2011). Teachers have been reported to form virtual communities to support one another as in the case of urban teachers supporting rural teachers (Cambridge, Kaplan & Suter, 2005). In this way, knowledge and resources are shared among teachers. Ilomäki et al. (2008) however, asserts that teachers' networking and pedagogical collaboration within their teacher community are still inadequate.

Nunan (2016) asks an interesting question: “What does teaching mean to the teacher? Is it to make learning fun, relevant or stick to the curriculum?” In analysis of various case studies, the only reasonable answer to the question is that teaching means different things to different teachers as defined by their personal TI and how they view this identity in consideration and in application of ICTs in teaching and learning. TI and ICTs are closely linked and in many places across the globe still a developing concept in the minds and lives of educators as they seek to establish their own roles as teachers and the application of ICTs in their teachings and their students’ educations.

## 2.4 NARRATIVE RESEARCH

Broadly speaking a narrative is a story being told about experiences or events as told by a narrator. Narrative research then, is the exploration of those stories (Lewis & Adeney, 2014). The approach has been influenced by ethnography, phenomenology, phenomenological hermeneutics, narrative psychology, and literary studies. Riessmann and Speedy (2012) agree that narrative study does not fit into a single scholarly field boundary but is cross-disciplinary. They further state that the ‘narrative turn’ has entered professions such as education, medicine, nursing, occupational therapy and law. It is thus evident that the term narrative may be used in different ways by various disciplines.

Lewis (2014) on the other hand distinguishes between narrative-analysis and -inquiry, stating that the latter focuses on the story and experiences whereas the former circumvents the recursive nature of a story. Riessmann and Speedy (2012) state

that sequence and consequence distinguish a narrative. They further add that narrative research explores the extended account and not only the meaning-laden moments. According to Stanley (2012) narrative inquiry is a methodology that has no pre-set techniques or methods. Narrative inquirers align themselves with Deweyan pragmatics regarding experience; the procedural ideas and concepts are rather broad and encourages responsiveness to research context. Nelson (2011) refers to this dynamic nature as critical narrative studies. According to Clandinin and Connolly (2000: 20):

*“Narrative inquiry is a way of understanding experience. It is collaboration between researcher and participants, over time, in a place or series of places, and in social interactions with milieus. An inquirer enters this matrix in the midst of living and telling, reliving and retelling, the stories of the experiences that make up people’s lives, both individual and social.”*

There is a turn in narrative research from the general to the particular to get the fine-grained information and experiences of the participants. Narrative inquiry gives a deeper and more valuable understanding of the story.

Narrative research is a qualitative research method that differs from other qualitative methods in that it pays attention to the fine, rich detail of the experiences of individuals. Barkhuizen (2011) points out that there is no clear definition for narrative inquiry or research. He prefers to use the term Narrative knowledging to refer to the meaning making, learning and knowledge construction.

Narrative knowledging is making sense of an experience through narrating, then analysing it and finally reporting on the findings (Barkhuizen, 2011). It is therefore a cognitive activity, but also a social one because the narrator, researcher and an audience is involved. The research activities of narrative knowledging includes (co)constructing narratives, then analysing them, after which the findings are reported, and the reports are read, watched or listened to. Barkhuizen (2011) asserts that the knowledge is not constant. As the narrator retells the story, different perspectives of the experience are gained. The researchers' understanding of the narrative also changes as they relook and interpret of the data.

Narratives are constructed in a context, form and content. De Fina and Georgakopoulou (2008) refer to the context of an interview or conversation, talk-in-action as examining who is speaking, when, and what is being said. Barkhuizen (2011) also adds the immediate context, such as the time of day, place, language and people involved in the narrative. He further maintains that there is a link between the narrative construction and the social practise. The focus is on how the narrative unfolds and the turns at talk are examined. De Fina and Georgakopoulou also link context to the narrative and social practises; especially socio-cultural, socio-historical and social linguistic context. The form of the narratives looks at the structure, choice of words, coherence and sequence of events. The narrative form has a beginning, middle and end (Barkhuizen, 2011). The form could also refer to plays, stories and poems (Nelson, 2011). The content of the narrative observes the who, what, when, where and why of the story. According to Clandinin and Caine (2012) narrative inquiry is a way of understanding people's experiences over time and in context. Lewis (2014) on the other hand says that the narrative is the methodology and storytelling the method. The human experiences shared in the story are the body of research literature. Thus, the authentic form of research is the stories themselves as well as the story-telling process.

Telling stories is a natural part of life (Creswell, 2015; Barkhuizen, 2013; Bell, 2002). Narrative research focuses on the lives of the participants as they make sense or meaning of their experiences. Narrative work includes autobiographies, journaling, interviews, conversation and field texts. The important connecting thread through the approaches is the stories being told (Lewis, 2014). Furthermore, it captures the normal everyday form of data, sharing it as the narrative. Telling stories help people reflect on their thoughts, actions and reactions (Ollerenshaw & Creswell, 2002). Lewis (2014) is of the opinion that narratives have a capacity for social justice when the stories of the marginalized are told and others have to listen and respond to it. Butler-Kisber (2018: 63) concurs that the silenced voices are brought to the fore and the notions of society, culture and history questioned. Barkhuizen (2011) indicates that the meaning-making continues after the narration, when the researcher analyses the data and verifies the interpretations with the narrator. According to him, the researcher plays an integral part in narrative research in that they elicit, co-construct, interpret and retell the participants story. Lewis (2014) agrees that the researcher's position is critical and intersects with that of the participants.

Lewis (2014) also points out that the researcher has to be a good listener, empathetic, work well with people, patient and flexible. Further to this, researchers have to be clear as to the role they play in the narrative inquiry. If the research question is clear, the role of how the researcher is positioned and repositioned will be as well (Lewis, 2014). He however adds that the relationship between the researcher and participant could be conflicting since it may be intense and personal. Relationality is at the centre of narrative inquiry. The researcher is privy to an array of information derived from the narratives and must therefore respect and care for the interpretation of the narrative. Furthermore, the researchers may have a bias due to their sociocultural and political backgrounds. It is therefore imperative for reflexivity and self-reflection on the part of the researcher. The space of the narrator has to be honoured. The narrator's voice has to be heard. Objectivity on the part of the researcher is important so that the results of the study can be unbiased and reliable (Pinnegar & Daynes, 2012). However, they acknowledge that a relationship develops between the researcher and the participants because knowing people and their experiences is relational. The narrative inquiry thus involves interest, caring for the participant, curiosity and change.

## 2.4.1 Narrative Research in the Classroom

### 2.4.1.1 *Teacher Narratives*

Narrative research has gained legitimacy in Social Sciences and Education (Ollerenshaw & Creswell, 2002; Bell, 2002). In education, attention is paid to what teachers know, how they think and how they make their classroom decisions. Bell (2002) maintains that teacher narratives shape and inform their practise. In this manner their narratives shed light on their stories and experiences. Emphasis is placed on the reflections and knowledge of the teacher, bringing the teacher's voice to the forefront. Narrative research can also be used to understand the assumptions of students from different cultures by gaining insight into their stories (Bell, 2002). Teachers get to know their students better since communicating in stories is less linguistically demanding. In this manner, narratives from language teachers and students help in understanding language use. Nelson (2011) uses crafted narratives of classroom life for language education research. She refers to the narratives as "crafted" because they deliberately use various forms to be evocative and engaging. The various forms that may be used are stories, poems, plays and these may be visual or auditory. By classroom life she is referring to classroom practises which includes e-Learning spaces. She maintains that narrative research may be used to benefit language education and change conceptions of knowledge. The classroom narratives may also be used to examine aspects of teaching and learning. Pedagogical practises revealed through the narrative research of classroom life may be effective or not. Nelson (2011), maintains that the narrative of reading and writing may be used as a learning tool for student and teacher development. It reveals the thinking of both the teachers and students alike. The narrative research promotes reflection amongst students, teachers and researchers.

Students are learning through the narratives and not a structured language or grammar lesson. The approach to learning is not static but fluid depending on what is revealed through the narratives of the student and the teacher. Stories being told by or to the students are used to scaffold learning as the emphasis is not placed on language learning but on understanding. The concept of the knowledge of the language changes to be practical and not just theoretical in nature. The students therefore do not feel anxious about learning the language as they are engaged in a learning process which is fun. The teacher's methodology and pedagogy for the lesson is informed by the narratives and reflections of the students and teachers alike.

### 2.4.1.2 *Young Pupil Narratives*

Clandinin, Huber, Menon, Murphy and Swanson (2015) noted that it is not common to have young children as participants of narrative research. The research must be done within institutional context, such as education, as children attend early learning programs and schools. They add that there may be views among researchers that children may not be seen as trustworthy to tell the truth of the experiences in their story. Further to this, Clandinin et al. (2015) wondered whether the reluctance to have children as research participants may be that researchers did not want to go against the image of children as apparent non-complex, happy and care-free. However, they note that there is a slow movement of narrative research of children outside institutional context. Tsai's (2012) study of 30 kindergartens during Sharing time / Life Report reveals that children do not have the space to reveal their personal narratives. He also found that the children were willing to share their stories even with strangers when given the opportunity. Kindergarten teachers respond to the narratives of the children by telling them stories and listening to and creating stories with them. It is during these sharing sessions that teachers learn more about the lives of their students. Tsai discovered that the students can distinguish between the immediate and narrated context. Further to this, they can reorganise their experiences and restructure the meaning.

### 2.4.2 **The Undergird of Narrative Studies**

Temporality, sociality and place undergird all narrative studies (Connelly & Clandinin, 2006; Clandinin & Caine, 2012; Stanley, 2012).

Temporality refers to the fact that narrative research reflects on the time of events, objects and people of in a story. Time can be reflected in sequence of the event or the past, present and future of the experience and aspects of the story. Furthermore, sociality deals with the relationship between the narrator and researcher and is a crucial part of narrative studies. The researcher must re-tell or re-story the events, and the narrator has to trust the researcher to capture the essence of the story accurately. A relationship between the narrator and researcher unfolds during the narrative inquiry approach. The narrative also reveals the emotions, thoughts and desires of the narrator and of those of the people the narrator interacts with. Finally, place refers to the location, setting and scene related to the narrative and the research. The location can be one, or various, places and may refer to the place where the narrator lives or where the story takes place.

Following on the view of temporality, sociality and place, Stanley (2012) uses the narrative frame to enable smaller stories to fit into a wider context of the larger story. Stanley (2012) and Barkhuizen (2011) refer to narrative framing as part of the story-telling. The participants complete sentences by inserting words, phrases or even paragraphs to tell their story. Barkhuizen (2011) states the frame provides guidance and support, giving structure and content to the story. Stanley (2012) also supports the view that the story is three-dimensional (temporality, sociality and place) but adds that it is also produced for an audience. She further adds that the story portrays a certain point of view and therefore can be viewed as moral or motivational. The story encourages an understanding or even empathy from the audience and as such can be used to bring about change. Lewis (2014) adds that narrative work hinges on validity in narrative research believability, authenticity, quality, power, and authority of the story.

Further to this (Creswell, 2011; Ollerenshaw & Creswell, 2002) points out common characteristics of narrative research:

1. The individual experiences of the participants are collected.
2. Chronological experiences, where the key events are sequenced, providing information on what happened in the participants life or even world events.
3. Collecting individual stories by getting the first-person account of events.
4. Re-storying, which involves the retelling the story in context, form and the content by collaborating with the participant to shape the final narrative.
5. Transcribing the narratives and coding the data. The data collected is coded in themes to add insight and depth. Coding is done through reading and re-reading field notes, to find commonalities, connections and patterns as well as for points that are unique. The report provides the granular detail of the participant's life.

Riessman and Speedy (2012) identify some criteria as hallmarks of a good narrative inquiry. A detailed transcription of the data collected, attention given to the macro-context of the narrative as well as to language. The analysis of the narrative must attend to sequence and consequence. The researcher and narrator are reflective and use critical reflexivity. An understanding of the researcher- and narrator roles and (co)construction of the narrative analysis and report.

Reporting or presenting the findings of the research depends on the ethical integrity of the researcher. Also, there is no concrete way on reporting narrative research because conclusive

findings are not the aim. Narrative inquiry and research seek for understanding and meaning (Lewis, 2014; Nelson, 2011). According to Barkhuizen (2011) by the time the researcher reports on the data collected, the actual experiences have gone through a filtering process of narrative knowledging of the participant and the reproduction of the text. It is important that the genre used to report the findings is fair and authentic. Furthermore, the publishing and printing of the narrative is where the voices of the narrators are heard. The researcher's role is to see to it the stories of their participants are represented well. Additionally, the desire of the researcher is that their interpretation and analysis of the narrative data is made known. The researcher wants to keep the focus on the narrator, the narrative and the context. Barkhuizen maintains that narrative researchers have something to re-tell and must keep their audience in mind for the re-telling. He adds that the audience or readers of the report play an integral part as they try to understand and make meaning of the report. On the other hand, Nelson (2011) conveys the tension that a researcher experiences in wanting the audience to understand the interpretation of the narrative but also reach their own conclusions and ask questions about the topic. Riessman and Speedy (2012) observe that the narrative can be used to engage and convince an audience while others can leave the audience sceptical.

### **2.4.3 Benefits of Narrative Inquiry**

Narratives reveal people's beliefs and experiences and the researcher holistically presents it fully after extrapolating the rich details (Bell, 2002). She states that the narratives do not occur in a vacuum, in that meaning is derived from the analyses of the stories. A study done by Bell (2002) emphasised that people's lives matter once she noticed the physical impact of language learning on participants. She also indicates that the researcher gets information that the participants may not be consciously aware of. As the participants **reflect on** their experiences and collaborate with the researcher, subtle nuances, assumptions and perceptions rise to the surface. Chase (2005: 656) noted that narrative researchers:

*“treat narrative, both oral or written, as a distinct form of discourse ... Unlike a chronology, which also reports events over time, a narrative communicates the narrator's point of view, including why the narrative is worth telling in the first place. In addition to describing what happened, narratives pay attention to emotions, thoughts and interpretations.”*

Nelson (2011) states that narrative research gets small nuggets of knowledge from the participants. She states that narrative research is an advantage since it highlights both the known

and unknown. What is said and left unsaid is also illuminated. Nelson underscores that narrative research can highlight aspects of classroom life that is not initially evident but can shape classroom discourse and interactions. Lewis (2014) concurs that narrative inquiry, research and analysis can have an impact on the lives of individuals and communities, in that one learns from the narratives.

#### **2.4.4 Challenges of Narrative Inquiry**

Bell (2002) reveals the temporal nature of narratives as the interpretation of experiences and the understanding of people and events may change. The stories of the participants are wrapped up in the larger narratives where the researcher is imposing meaning on the lived experiences of the participants. Detailed analysis takes time and immersion (Riessman & Speedy, 2012). Stanley (2012) agrees that analysing the data can be more time consuming than collecting the data. The authenticity, reliability and trustworthiness of the narrative inquiry is often questioned (Lewis, 2014). This happens because, as Barkhuizen (2011) asserts, the essence of the actual experience could be lost or re-shaped due to limitation of memory, the participants willingness to tell, as well as the micro- and macro-context of the story. He further adds that the relationship between the participant and the researcher, including the researcher's role in the (co)construction of the story, could be viewed as a challenge to narrative research. Nelson (2011) states that there is no conclusive academic argumentation but rather open narrative exploration. There is a moving away from using numbers to using words for the research and analysis. Words are used for what is experienced, how it is interpreted and what is meant. The narrative turn is a movement away from the objectivity of quantitative research to a focus on interpretation, understanding and meaning (Pinnegar & Daynese, 2012). Nelson (2011) further adds that in educational narrative research, the audience may not explicitly be informed whether the report refers to an individual or a collective, whether the words are reported verbatim or semi-fictionalised. According to her, this narrative smoothing for clarity and coherence could alter the narrative. How true are the stories then that we are told — whether the facts of what happened or the participants' experiences of these (i.e., the meaning they attach to them)? And what is not told? What is left out?

### 2.4.5 Ethical Issues

The question thus arises whether the stories being told are authentic or has it been embellished. If the participant is sharing a traumatic experience, the story may be reshaped in a manner to protect themselves or others (Ollerenshaw & Creswell, 2002; Barkhuizen, 2011). A further question to ask is whether the participant is gaining from the process or whether the researcher gains at the expense of the participant. On the other hand, has the researcher been true in the retelling the story, or has the participant's voice been lost? A further concern is the relationship between the researcher and the participant (Cousins & Bissar, 2012; Bell, 2002) claiming that close collaboration with participants reveal as much from the participants as it does from the researcher. Clandinin and Caine (2012) adds that researchers be attentive to the ethical tensions as well as the obligations and responsibilities of their relationship with the participants. The researcher or the participant may find it difficult to disengage since friendships develop through the narrative inquiry process. According to Pinnegar and Daynese (2012), a further question of power arises – who owns the story, who can tell it? Who can change it? They also raise concern about authority – is the version of the narrator or researcher convincing. Josselson (2012) states that participants sign a consent form to be a part of the research. The consent form assures the participants of their anonymity, privacy and confidentiality. The researcher therefore must ensure that all names are changed before reporting. The questions arise as to who has access to the data collected when the researcher is transcribing and analysing the data.

The researcher retells the story but what criteria is used to assess the narrative research? Presently there are no definitive criteria. Connelly and Clandinin (1999) summary of the issue is:

*“Narrative researchers are concerned with the representation of experience, causality, temporality and the difference between the experience of time and the telling of time, narrative form, integrity of the whole in a research document, the invitational quality of a research text, its authenticity, adequacy and plausibility. Currently in narrative inquiry, it is important for each researcher to set forth the criteria that govern the study and by which it may be judged. It is also the case that others may quite legitimately adopt other criteria in support of, or in criticism of, the work (p. 139). Nelson (2011) concurs that a methodological and theoretical rational is lacking in narrative research and analysis.”*

## Chapter Three

# RESEARCH METHODOLOGY

### 3.1 INTRODUCTION

In this chapter the research design, selection of participants, process of data collection and analyses used in this study is presented. Further, issues of ethical consideration such as permission, consent confidentiality and validity are addressed.

As has been mentioned, this research seeks to analyse and report on recorded narratives of language teachers' observations and experience when using new technologies in language classrooms. It intends to provide a "thick description" of the narratives of five teachers who have been integrating ICTs into their language teaching enthusiastically and have at various levels received recognition for innovative use of the available technologies.

This study will investigate the self-reported experiences of language teachers using ICTs innovatively and creatively to promote language learning. This will be aligned to how they characterise their personal TI and LTI, as these identities are assumed to be central in explaining their success in using new technologies in their language teaching.

### 3.2 RESEARCH DESIGN

A narrative approach in the qualitative research paradigm was used as the research method in this study. The narrative approach was chosen to gain granular insight into the narratives of teacher identity and their use of technologies for teaching and learning. According to Barkhuizen (2013) narrative research looks at the use of stories as data and then presents the findings as a means of reflecting on success in education. Clandinin and Rosiek (2007: 42) states that the "lived experience is a source of important knowledge and understanding". The approach is flexible which allows room for individual reflection on the experience and is thus dynamic rather than static.

The narrative approach gives a voice to the participants when they tell their stories. Because the participants tell the narratives themselves, they take 'ownership' of the findings. The refusal rate on requests to participate in a narrative research is therefore relatively low. The participants

have the freedom to decide how much of their experience they are prepared to share and reflect on. When using narrative inquiry as a methodology we are "... adopting a particular view of experience as phenomenon under study" (Connelly & Clandinin, 2006: 479). Creswell (2015) says that telling stories is a natural part of life. The narrative research approach captures this everyday form of data and shares the narrative.

The Process of doing narrative research (Creswell, 2011; Lewis, 2014; Clandinin & Caine, 2012; Barkhuizen 2011) is seen as:

1. Identify the phenomenon to explore and address.
2. Purposefully select the participants. The number of participants depend on the research question which will be determine if the sample will be an individual, small or larger group. How to recruit the participants will also vary. Participants could be contacted personally, telephonically, emailed or per word-of-mouth
3. Collect the stories from the participant by listening to their stories that reflect the social and personal experiences. Methods used to collect the data also varies. Interviews, conversations audio or visual recorders, digital cameras, notebooks, artwork and other artefacts are some of the ways that narrative data is collected.
4. Re-story/ retell the participants story. The data collected is read, reread and read again, analysing and re-analysing to capsulate the story to re-tell it accurately. Narratives are examined to establish commonalities and then grouping them in categories.
5. Collaborate with the participants to validate the accuracy. The researcher can also belong to a response community to provide feedback as the inquiry unfolds.
6. Write the story. The research texts are shared with the participants. The texts are negotiated with the participant to ensure that "voice" of the participant is not lost.

Barkhuizen summarizes the process as firstly, narrative knowing (knowing about narrative research). Secondly, narrative doing (the narrative methodologies and research approaches to doing narrative research). Thirdly, narrative applying (knowing how to do narrative research on a practical, procedural level) and finally, narrative feeling (responses to the narrative work)

However, a limitation of narrative inquiry, as exposed by Savin-Baden and Van Niekerk (2007), is that stories can be used to promote "truths" (e.g. institutional diktats) or control behaviour. To avoid such danger, this study refers to the personal, individual nature of the stories, that cannot be used to make generalisations. A further limitation of the narrative approach is the

small sample group which affects overall generalisation. Strong causal and structural explanations are therefore not possible.

The qualitative method using more an inductive approach was deemed suitable where the emphasis is on the participants and their narratives. No preconceived pre-set theory or explanations are imposed.

### **3.3 RESEARCH QUESTIONS**

1. What are the self-reported experiences of teachers who use ICTs innovatively and creatively in promoting language learning?
2. What do teachers find inhibiting in the use of ICTs in language teaching?
3. What do teachers find inspiring and facilitative to learning in the use of ICTs in teaching language?
4. How, according to educators' own reports, do ICTs shape the professional identity of teachers?

### **3.4 SAMPLE**

Sampling involves selecting a group of people from a larger population to conduct the study. This study used purposive sampling of participants, because it can be used with a small group of people (Merriam, 2009). He further adds that the researcher can select the participants who can provide information pertaining to the study.

A sample of five teachers in Cape Town were selected by the researcher to be part of this study. These teachers were chosen on the basis that they were acknowledged as innovative teachers by their peers and the teaching community at large. Four of the teachers were recipients of either district, provincial, national or global teacher awards. One participant was held in high regard by her peers and was often nominated for awards but refused to participate when approached. The five teachers were willing to participate and share their experiences and knowledge of using ICTs for language teaching. The sample of teachers were selected from different types of schools, the grades they taught and different language of instruction to attain variety. The participants selected were four females and one male between the ages of 30 and 59 years. The teachers all taught for more than five years. Three of the teachers are high school teachers and two teach at primary schools. Two teachers teach at schools in sub-economic social

areas, one at a private school, one at a commuter school and the fifth teacher teaches at a school for students with special educational needs.

Table 3.1 gives a summary of the sample of five participants in the study. The study used pseudonyms for participants' confidentiality.

**Table 3.1: Participant Profile Summaries**

Name	Age	Gender	School	Grade	Language
Sue Storm	50-59	Female	LSEN	1, 2	English HL
Barbara Gordon	30-39	Female	Public Primary School	4	English HL
Carol Danvers	30-39	Female	Public High School	10-12	English FAL
Diana Prince	50-59	Female	Public High School	8-12	Afrikaans
Tony Stark	30-39	Male	Private High School	7-12	English HL

The purpose of being selective in the sampling was to gain rich, granular information about teacher identity and the use of ICTs in the classroom to answer the research question. Merriam (2009:77) states that the value in purposive sampling is that a researcher gets to select the participant from whom the issues of the study can be learned.

A limitation of the purposive sampling method mentioned by scholars who do qualitative research, is that it could lead to bias because it cannot avoid the subjectivity of the researcher in relying on his/her interpretive skills.

### 3.5 RESEARCH INSTRUMENT

The research instruments used for this study were a questionnaire that was administered online (See APPENDIX A) and face to face semi-structured interviews (See APPENDIX B).

The questionnaire consisted of 30 questions. These included open-ended, yes/no and multiple choices questions. The questionnaire consisted of three sets of questions (see APPENDIX A). The first was the meta-data background section, which included questions on the teacher's age, educational trajectory and the years of experience. The second section referred to the use of ICTs in teaching which includes questions on the availability of technologies, the access to the technologies, how the technologies were used and support for teachers for ICTs use. The final section referred to the teachers' proficiency in using ICTs which include questions concerning

the confidence in using various technologies, teachers proficiency in using the various technologies, obstacles to the use of ICTs in teaching and learning, and belonging to professional communities.

Cohen, Manion and Morrison (2005:146, 248) state that conducting semi-structured interviews is popular in qualitative research. Interviews are used to ascertain what participants think, know and feel (Henning, Van Rensburg & Smit, 2004:79). A “sufficiently open-ended” schedule is prepared that allows for “digressions and expansions” and allows for “further probing”. Further, the conversation is not very structured which allows the participants to express their opinions and not answers to structured questions. According to Cohen et al. (2005:255), “open-ended responses might contain the ‘gems’ of information” that might not have been gleaned from a questionnaire. Further, the interviews aimed to elicit information pertaining to the participants’ perspective on how these technologies changed their teaching methodologies and their teacher identity when using advanced ICTs in the classroom.

### **3.6 DATA COLLECTION**

A mixed methods approach was used for this study. The mixed method incorporates qualitative as well as quantitative methods of collecting data. The qualitative method is considered inductive while the quantitative deductive. The inductive approach is driven by observation to achieve understanding while the deductive approach provides proof (Bendassolli, 2013). This researcher chose the mixed method to get the best of both approaches. The research however, was dominated by the qualitative method. Data was collected and analysed using a questionnaire and semi-structured interviews.

Participants were sent a link to an online questionnaire to be completed electronically. The questionnaire elicited biographical and demographic information, as well as some detail on participants’ personal and professional use of technologies and social networking services (SNS). Further, the questionnaire collected motivational and challenging factors in innovatively integrating technologies and pedagogy in teaching and learning.

The study used a Likert four-point scale questionnaire to collect data about classroom technology use frequencies (ranked as 1 = Never, 2 = Sometimes, 3 = Often and 4 = Always) and teacher confidence and proficiency (ranked as 1 = Not, 2 = Slightly, 3 = Moderately and 4 = extremely). The Likert scale was used because it offered the participants a quicker and easier system to use.

The Microsoft forms facility was used for the online questionnaire, since it provides automatic data coding, data input and, to some extent, data assessment, especially for the yes/no questions. The results are reader friendly. Notification of a completed questionnaire was sent automatically to the researcher. The researcher could therefore track the progress of the participants completing the questionnaire.

Following the online questionnaire phase of the data collection, **face to face** interviews were conducted. In the semi-structured interviews participants were prompted to give insight into the technologies they used, to explain why they had chosen these technologies, and what barriers and challenges they had to overcome to integrate technology and pedagogy.

The purpose of the interview was to collect the narratives of the participants to get a deeper understanding of their experiences. Attention was paid to the context, form and content of the narrative. The participants narratives would reveal the fine granular information required to illuminate the teacher identity and to give a voice to the participant.

The interviews were conducted on an agreed date, at a time and location that suited the participants and researcher. The interviews were scheduled to take place outside of the regular contact time the teachers had with students. The average duration of each interview was an hour.

The participants were encouraged to respond in the language of their choice to express themselves clearly. Eventually, all the interviews were conducted in English, although one of the participants started off in English, but then switched to Afrikaans once she was more relaxed and at ease. The researcher punctuated the interview with Afrikaans phrases to set the participant at ease.

The participants were presented with general questions pertaining to their use of ICTs to guide the narratives. The questions were open-ended and neutral which gave the participants free reign to share their experiences. During the interview, the researcher rephrased answers to gain clarity to answers and probed participants to expand on responses or substantiate their answers with examples.

Before the start of the interview, the purpose of the interview was explained. The participants were told that the interview was going to be recorded and they had to agree to this before the

interview was conducted. The participants were also assured of their anonymity. Each then signed a letter of consent to conduct an interview and use it in this research.

The interviews were audio-recorded and transcribed for systematic interpretation.

### **3.7 DATA ANALYSES**

“Data analysis is a process of making sense of the data” (Merriman, 1998:155). There is “no one neat and tidy approach to qualitative data analysis, nor even one approach” (Babbie and Mouton, 2001:490) The data collected by means of the questionnaires and interviews of each participant, were analysed and interpreted. Next, the different participants’ data were compared, to identify any similarities and contrasts.

The data contained in the questionnaires were analysed using the Microsoft Forms response analysis. This allowed for detailed insight into the personal and professional trajectory of each participant, as will be described in chapter 4.1 below. This descriptively presented information gives a biographical perspective on contextual situatedness and developmental histories of individuals would have shaped their LTI, and that may have enhanced their innovative teaching practices. In the analysis, this information is triangulated with the interview data.

Comparative analysis of the data was applied to determine logical conclusions. The analysis began with listing and counting all the combinations of variables observed in the data set. The recorded interviews were transcribed and coded to facilitate interpreting the data. Words and phrases that referred to elements of TI, as well as ones that referred to teachers’ actions indicating an expression of their personal educational philosophy, were identified. The linguistic context of such phrases was then extracted to assist in explaining the meaning a participant attached to it. These words and phrases were treated as markers of various aspects of identity, so that within each participant’s narrative, and across the five narratives, clusters of identity marking features could be grouped together and emerged as themes. Descriptive inferences were thus derived from the data. Du Plooy (2001:228) states that a thematic analysis ...” consists of a description of the main ideas in messages.” Such categorisation of TI and LTI markers were used to organise the data in a meaningful manner. The words and phrases highlighted were ones that were used by the participants repeatedly. The researcher gained relevant data through the coding and the theoretical underpinning as discussed in the literature review and these were used to address the aim of the study.

### **3.8 ETHICAL CONSIDERATION**

#### ***Permission***

The researcher had to obtain permission from the Western Cape Education Department to conduct research with participants working in this education department. The required forms were completed and submitted to the WCED for approval. A letter giving permission to do the research was issued, and is attached to the study below as APPENDIX C.

#### ***Consent***

Participants were approached and requested to be part of the research. They understood that their participation was voluntary and first gave consent verbally. Before starting to complete the questionnaire, they were again asked about their willingness to be part of the study. Before the interviews were conducted, each was informed that the interview would be audio-recorded. Once the participants agreed to the interview, they were asked to give their written consent by signing the consent form, which is attached as APPENDIX D.

#### ***Confidentiality***

The identity of the participants is protected in that their names, as well as the institutions they mention, have been anonymized. The data, both recordings and any written material or computer data, are stored securely on password protected computers and only the researcher and supervisor have access to the originals.

### **3.9 VALIDITY**

Triangulation of the collected data was used to ensure validity and credibility of this study. Triangulation was achieved by incorporating questionnaires and semi-structured interviews. The researcher uses the direct words of the participants to validate the study. Collaboration between the participants and the researcher takes place during the retelling of the story to validate the accuracy. The conventional views of validity and reliability are the concepts of credibility, transferability, dependability and conformity (Babbie & Mouton, 2006:276) To achieve credibility, the interviews were audio-recorded. The raw data from the questionnaires, the leads of the semi-structured interviews, and the transcribed interviews are made available to other researchers. If the research were to be replicated with other participants, using the same

instruments and methods, and get the same results, this is dependability, according to Babbie and Mouton (2006:278).

The study is one of minimal risk to participants. No harm and discomfort were anticipated, nor were any reported during or after the norm in daily life.

### **3.10 LIMITATIONS**

The narrative method cannot be used to make generalisations, because of the small sample size and the very limited opportunity to check contributions empirically. The researcher may be biased and subjective in eliciting information. The participants' voices could be lost in the retelling and transcribing the narrative. Also, the participants would be able to manipulate the research process to serve their own interests, telling only the good news part of their stories and obscuring some difficulties. Although, there is no way of proving that what they describe in their narrative is true and real or not. The value of personal impressions, the participants' beliefs and emotional experiences, remain valuable as points of departure in considering new forms of teaching and learning and how TI relates to the goal of using new technologies well.

### **3.11 SUMMARY**

The study took a qualitative method narrative approach to gain rich granular insights into teachers' innovative use of ICTs and how this relates to TI. Purposeful sampling was used. The sample comprised of five participants from a cross-section of public and private schools. The common criteria for selection included teachers who were Teacher Award winners and known for using technologies well in their classrooms. The research selected practising teachers in Cape Town. Data was collected through a survey questionnaire and **face to face** interviews. The data was subjected to content analysis.

## Chapter Four

# DATA PRESENTATION

### 4.1 INTRODUCTION

This chapter presents the data that was collected by means of a questionnaire and semi-structured interview as detailed in chapter 3. It provides the biographical information of each of the study participants, including their personal information as well as their personal and professional educational trajectories. [Barkhuizen \(2017\) emphasises the importance of the teacher's biography in the formation of the TI](#) This will be followed by the data presentation of the questionnaires and personal interviews of the participants.

### 4.2 PARTICIPANTS BIOGRAPHIES

This section serves to present the biographical information, i.e. the meta-data, of participants as collected from the questionnaires. Participant identities are protected and as such each of them has been given a pseudonym, have been placed in an age range rather than giving exact ages, and have had exact information pertaining to their educational and professional trajectories (i.e. school names or exact locations) anonymized.

The biographical details of the participants reveal that two of the participants are between the ages of 50-59, which makes them digital immigrants. Three of the participants are between the ages of 30-39, which places them border area between digital natives and digital immigrants. However, age is not the only determiner of the digital native and immigrant. According to Prensky (2001) being comfortable and not anxious about using ICTs, as well as the exposure to the daily use of the ICTs, also plays a role in the classification of digital native and immigrant. The five participants thus grew up during the Apartheid era of South Africa in racially segregated educational institutions at a time when ICTs were not widely distributed, and particularly less so in non-white schools, colleges or universities. Three participants home language and language of teaching and learning (LOLT) was English throughout their primary and secondary education. One participant's home language and LOLT was Afrikaans. One participant's home language and LOLT was Afrikaans during grade one to nine, however, in grades ten to twelve the LOLT was English. One participant is male, and four participants are females.

From the biographies it can be gleaned that one participant attended three different primary schools in the Eastern Cape following the House of Representatives Education system. Three participants attended the same school they registered to attend for grade one, for the duration of their primary education. Two of the participants' language of teaching and learning (LOLT) throughout primary and secondary education was Afrikaans. For their secondary schooling, one participant attended a private, Christian ethos, boys' high School, and one participant attended a private, Islamic ethos, girls' high school. Three of the participants spent their secondary education years at the same school, respectively. Two students attended different schools during their secondary education, having completed grades 8 and 9 at one school and grades 10 to 12 at another. One participant completed grades 8 and 9 at an Afrikaans medium high school, but then for grades 10 to 12 transferred to a different school where the LOLT was English. One participant had Afrikaans as the LOLT for the duration of her secondary education. Three participants whose home language was English, had English as the LOLT for the duration of their secondary education. One participant whose home language was Afrikaans, had Afrikaans as the LOLT from Grade R to Grade 9, but English for Gr 10 to 12.

It is noted that these teachers are all fluent in two of the eleven official South African languages. Further, their education across primary, secondary and tertiary studies was during the Apartheid era of South Africa which overall provided for only two official languages, English and Afrikaans. These were used in the Western Cape as media of instruction, although in other areas Bantu Education provided for use of an African language as LOLT<sup>3</sup> in the early years. Four participants, in the South African classificatory terms, identified as "coloured"<sup>4</sup> and one participant as "white",<sup>2</sup> and in accordance, are L1 speaker of either English or Afrikaans. Having been exposed to both these languages in their home communities and at school from an early age, they are proficient bilinguals who can speak and teach in both these languages. However, it is observed that at the time of this study only one participant gives instruction in English only, while the other four participants instruct in English and Afrikaans.

The teaching experience of the teachers reveals that three of the participants teach in secondary schools, Grades 8 – 12. One participant has experience teaching in the Foundation Phase,

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<sup>3</sup> No participant was an L1 African language speaker; therefore, no further attention goes to this option as it is not relevant to the participants in this study.

<sup>4</sup> These terms are often taken as offensive reminders of a divisive past, but for assuring equity in the new, post 1994, dispensation they remain in use.

Grades R – 3, including teaching at a school for students with educational needs. One participant teaches in the Intermediate Phase.

#### **4.3 META-DATA: PARTICIPANTS PERSONAL AND PROFESSIONAL BIOGRAPHIES**

Understanding the participants' personal and professional biographies will illuminate how teachers were socialised into their careers and the development of the TI (Barkhuizen 2017). Barbara Gordon is a female between the ages of 30-39 years. She attended a dual-medium (English stream) public primary school in township area of Cape Town throughout her primary school education. Barbara completed Grades 8 – 12 at a high school on the Cape Flats in the English stream of a dual-medium school. She obtained a Bachelor's degree in Education (2010) at the Cape Peninsula University of Technology. Barbara's language of learning was English and integration of technology and pedagogy was not part of the course. She has been teaching for 12 Years (2007 to present) in the General Education Training phase, (Grade 4 – 7). She taught at various Special Education Needs (LSEN) Schools and Public Schools where the languages of learning and instruction was English and Afrikaans. She has been using ICTs for teaching and learning for 7 years (2012 to present).

Overview: Barbara entered the teaching profession post-apartheid (2007) and bounced around at the beginning of her career as a substitute teacher. She spent roughly a month at a time cycling through 8 different schools across Cape Town, South Africa over a four-year period. She was first exposed to a teacher who has integrated technology and pedagogy in her 3<sup>rd</sup> year as a substitute teacher. Barbara started using ICTs when she was afforded a permanent position at a public primary school in the Southern suburbs of Cape Town (2011 – present). Teaching periods were allocated to educators in which they could take their students to the computer-lab. It was during this time that Barbara would integrate ICTs into her language and life orientation lessons. She is a provincial winner of the National Teachers Award.

Carol Danvers is a female between the ages of 30-39. She attended 2 different primary schools in sub-economic areas of Cape Town, South Africa. The 1<sup>st</sup> was a dual medium (English stream) public school and the 2<sup>nd</sup> an English medium public school. She enrolled in an Islamic ethos secondary school in the southern suburbs of Cape Town (1999-2003). Carol obtained a Bachelor's degree in English and Media (2004-2007) at the University of Cape Town, where

the language of learning was English and a postgraduate Certificate in Education Higher from UNISA (2008-2009).

At the time of the research she has been teaching for 12 Years (2007 to present) in the Secondary Phases (Grade 8 – 12). Carol taught at Islamic Ethos Private Schools as well as public Schools where the Language of instruction was English. She has been using ICTs in education for 8 years (2011 to present).

Overview: Carol entered the teaching profession in post-apartheid South Africa (2007) and taught English and Life Orientation to secondary phase pupils at two private Islamic ethos schools between 2007 and 2011. After that, Carol taught at a public school in a suburb of the Cape Flats, teaching secondary phase pupils English Home Language. She is the recipient of the National Teachers Award Winner in the Excellence in Technology-Enhanced, Teaching and Learning category.

Diana Prince is a female between the ages of 50-59 years. She attended three different Afrikaans primary schools in a small town in the Eastern Cape. All three were public primary schools. Grades 8 and 9 were spent at an Afrikaans public school in the Klein Karoo. Grades 10 – 12 were spent in a public school in the Eastern Cape, where the language of teaching and learning was Afrikaans. A Bachelor's degree was obtained in 1980 at the University of the Western Cape, where the language of learning was Afrikaans and English in bilingual classrooms. Diana obtained the Higher Diploma in Education at the University of Port Elizabeth in 1993 where the language of learning was bilingual (Afrikaans and English). At the time of the research Diana has been teaching for 33 Years (1985 to present). She taught in the Secondary Phases (Grade 8, 9 and 12) at public Schools, local and foreign where the languages of instruction were English and Afrikaans. She has been using ICTs in education for 23 years (1995 to present).

Overview: Diana entered the teaching profession in 1985 and taught at three different Secondary schools (over three years) in the Cape Flats area of Cape Town, South Africa (House of Representatives). In 1990 she moved to Namibia where she taught Afrikaans, Home Language and First additional language, Life orientation and Computer Literacy at an English medium public school (House of Assembly) for four years. In 1994 she returned to the Eastern Cape, South Africa, where she taught a public school for 9 years. Diana then moved back to Cape Town in 2004, where she taught at a Public school in Athlone until 2006 after which she

moved to a public model-C High school in Cape Town where she has been teaching since. Diana is Provincial Runner up of the National Teachers Award.

Sue Storm is a female between the ages of 50-59 years. She attended a single English-medium public primary school in Lansdowne, Cape Town throughout her primary school education. Her secondary schooling was at a dual-medium (English stream) public high school in the Southern suburbs, Cape Town. She obtained a Diploma in Education 3 in 1982 at the Roggebaai Training College. Sue has been teaching for 35 Years (1983 to present) in the Foundation Phase, grades R, 1, 2, 3. She taught at various types of schools namely, Special Education Needs (LSEN) Schools, Christian Ethos Schools as well as local and foreign schools where the languages of instruction was English and Afrikaans. She has been using ICTs in education for 23 years (1995 to present).

Overview: Sue started teaching at a school for students with special educational needs (LSEN) and spent 15 years at this school, teaching grade 1's and 2's all the foundation phase subjects. She then moved to a Christian School where she taught Grade R and Grade 1 for 20 months before moving to London. In London, Sue taught Nursery through to Grade 2, for 21 months. After that, she taught grade 1 for seven years, at a Christian school in Cape Town. From there she went to an LSEN school, teaching the Foundation Phase for seven Years. She then lectured part-time for a year at a Further Education Training College. After that she started teaching Grade 2 at an LSEN school for the deaf. Sue was nominated (and refused) various times for the National Teachers Award.

Tony Stark is a male between the ages of 30-39 years. He attended a public, single medium (Afrikaans) primary school in Cape Town city centre, South Africa. Grades 8 and 9 were spent at a public, single medium (Afrikaans) school in Cape Town. Grades 10 – 12 were spent in a private school all boys school in Cape Town, where the language of teaching and learning was English. He obtained a Bachelor's Degree in 2008, a Postgraduate Certificate in Education Higher (2014-2015) as well as a Bachelors in Education (Hons) at the University of Cape Town.

Tony has been teaching for 8 Years (2011 to present) in the General and Further Education Training phases (Grade 7 – 12). He taught at private and public schools as well as at a school with a Christian Ethos where the languages of instruction were English and Afrikaans. Tony has been using ICTs in education for 8 years, (2011 to present).

Overview: Tony entered the teaching profession straight after the completion of his BA degree. His teaching practice was completed at two different schools in Cape Town – private and public, respectively – over a one-year period (2011). Tony taught English Home Language and History.

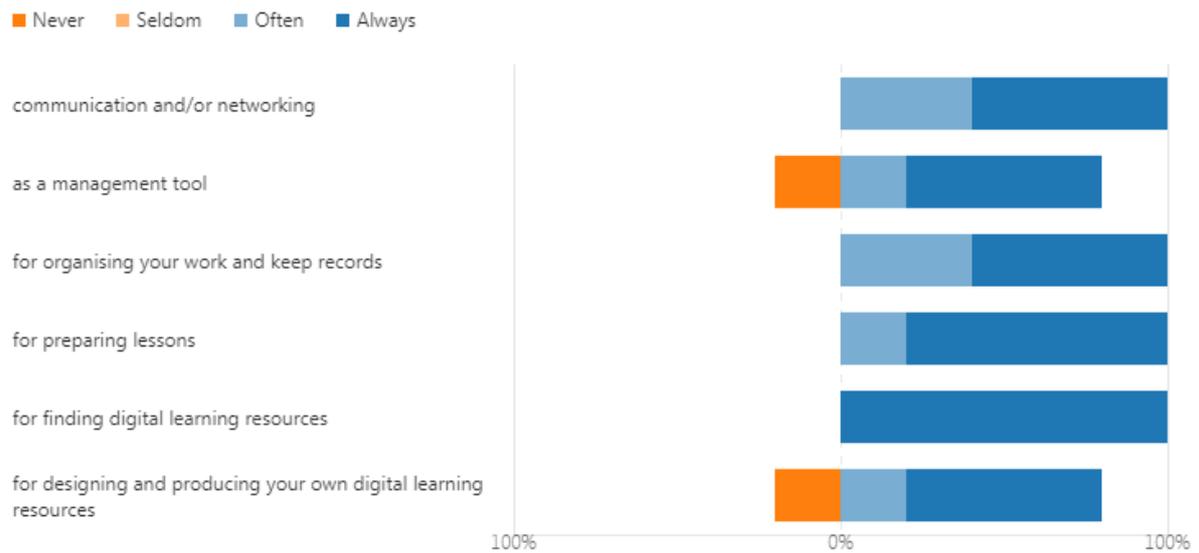
From 2012-2015 Tony taught full-time at a public high school in the Southern Suburbs of Cape Town. Here he taught English Home Language, Human and Social Sciences, History and Life Orientation. From 2016 (to present) he moved to a private school in Cape Town where it is a firm believe that ICTs should be in integrated part of educators' and students' lives. He is the recipient of the Think Ahead: Excellence in Education Award (Global Award).

#### **4.4 PRESENTATION OF THE QUESTIONNAIRE DATA**

As this study is interested in how expert teachers think about their professional identities and their work in using ICTs as integral part of language teaching, this section will refer to relevant information each participant tendered in the questionnaire. The data collected via the questionnaire was analysed in order for it to make sense (Merriman, 1998). All five participants mention that the integration of technology and pedagogy changed their teaching. They also all mention that they use technology for finding digital learning resources. Although this is a qualitative study, summarizing the questionnaire data in graph form is helpful to give an overview of how the participants feel about, make decisions on and actually make use of technologies in teaching – as will be done in the next chapter.

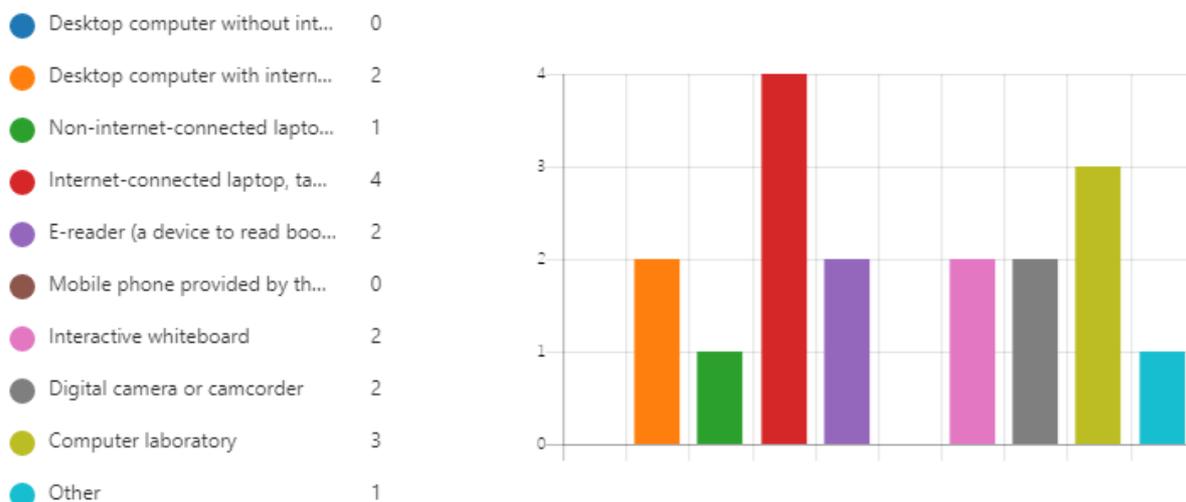
##### **4.4.1 Participants use of technology**

In response to question 13 of the questionnaire (APPENDIX A), four participants, i.e. Carol, Diane, Sue and Tony, use ICTs for the preparation of lessons, whereas three participants, i.e. Carol, Diana and Sue, use technologies for organising their work and preparing for lessons. Only Sue does not use ICTs as a management tool nor for designing and producing her own learning resources.



**Figure 4.1: Q13 The purposes and extent to which participants use technologies for administration and Teaching**

The answers received for question 16 revealed that computers and/or the internet are mostly used only occasionally, rather than consistently, despite three out of the five educators i.e. Diana, Carol and Tony openly stating that both they and their students have access to these resources in class. Besides computers and the internet there are several other technologies that the teachers divulge they actively use in class.



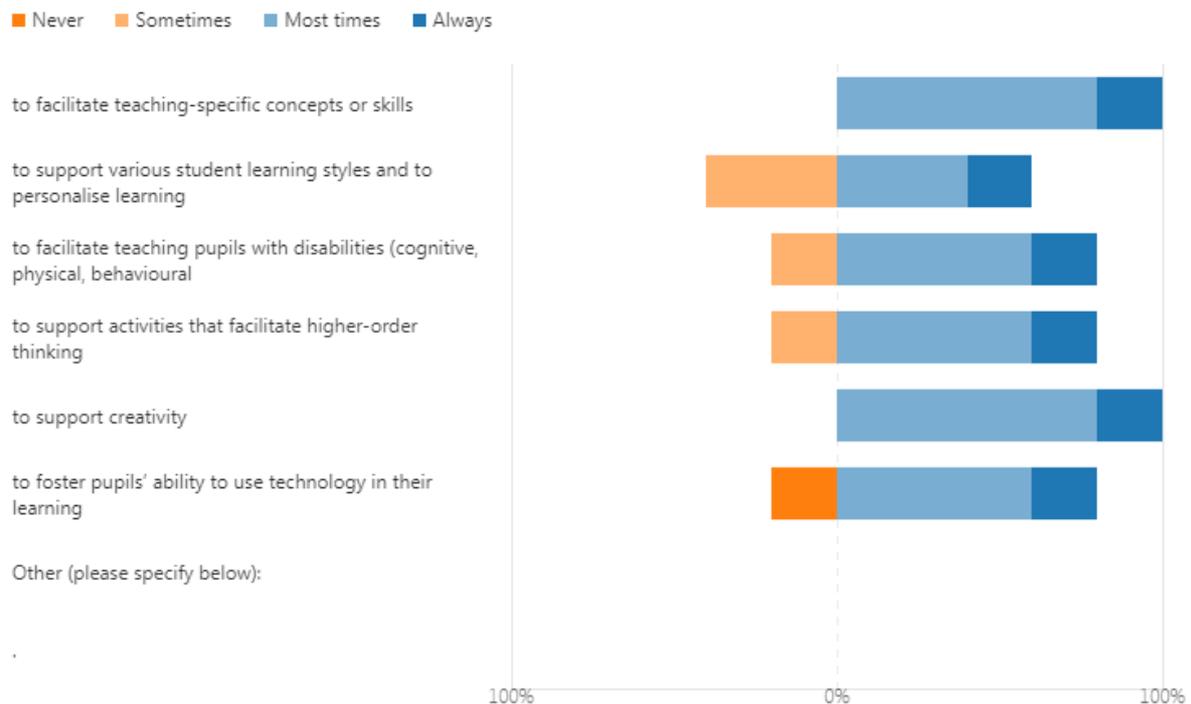
**Figure 4.2: Q16 The various technologies to which participants have access in their classrooms**

#### **4.4.2 Integrating technology and pedagogy**

It is interesting to note that only Barbara does not have her own computer or laptop in the classroom. Four participants have access to the internet via any digital device. Diana, Sue and Tony teach at schools that have a computer lab. Carol and Tony are able to take photos or record their students because they have access to a digital camera or camcorder. However, it is worth noting that none of the participants teach at schools that provide digital resources to students for their own use.

Answers to question 19 reveal that Barbara and Tony report receiving training and fellow language teacher sharing their experiences as support for ICTs use. However, Diana and Sue added that they also receive support from the Education Department, Melanie received support from training, fellow language teachers' experiences as well as from the Education Department. Carol indicates training as the only support received for the use ICTs.

The participants integrate technology and pedagogy in various degrees for teaching and learning as revealed by the answers to question 20. Only Carol always integrates technology and pedagogy to foster the pupil's ability to use technology in their learning whereas Diana, Sue and Barbara do so most times. It is interesting to note that only Tony does not integrate technology and pedagogy to foster pupil's ability to use technology in their learning but rather to facilitate teaching of skills. Only Carol always integrates technology and pedagogy for teaching and learning whereas Diana, Sue, Barbara and Tony use technology most times to support creativity and facilitate teaching specific concepts and skills.

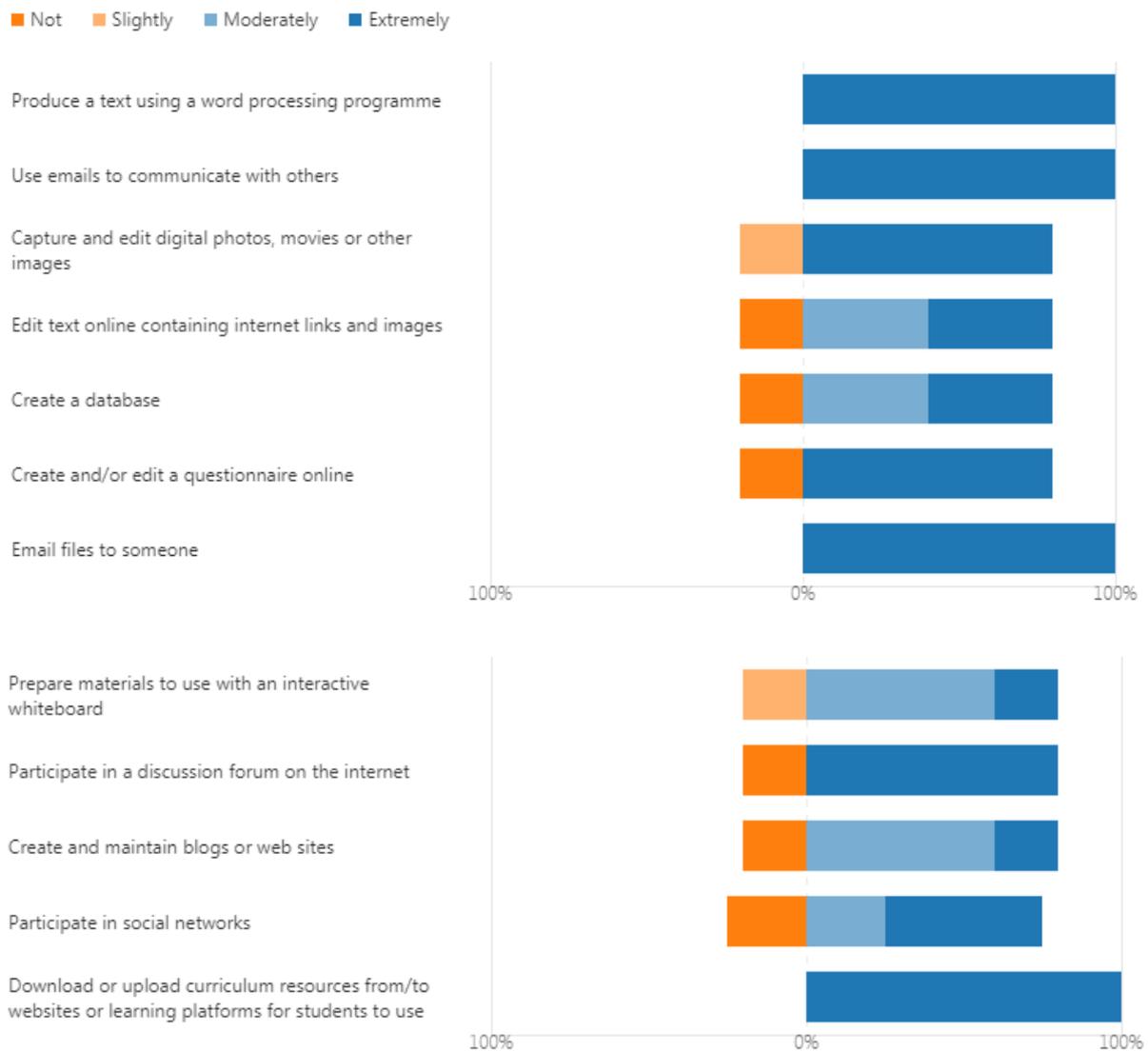


**Figure 4.3:** *Q20 The extent to which Technology and Pedagogy are Integrated*

#### 4.5 COMFORTABILITY IN USING TECHNOLOGY

Diana, Barbara, Carol and Tony indicate being extremely comfortable using technology in the classroom for language teaching and learning. However, Sue expresses being only moderately comfortable in the use of technology for language teaching and learning. The exact same results are seen for using technology at home as an extension of teaching.

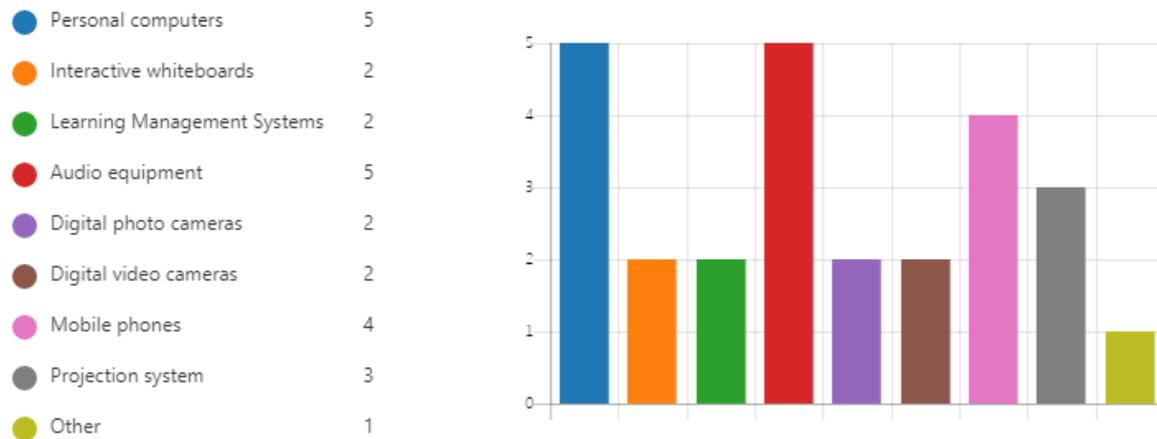
The participants also show a variety of responses to how comfortable they are with the use of other technologies or performing tasks using them as seen in question 23.



**Figure 4.4:** *Q23 The Extent to which teachers are comfortable with different technologies and technological tasks*

#### 4.5.1 Confidence in using technology

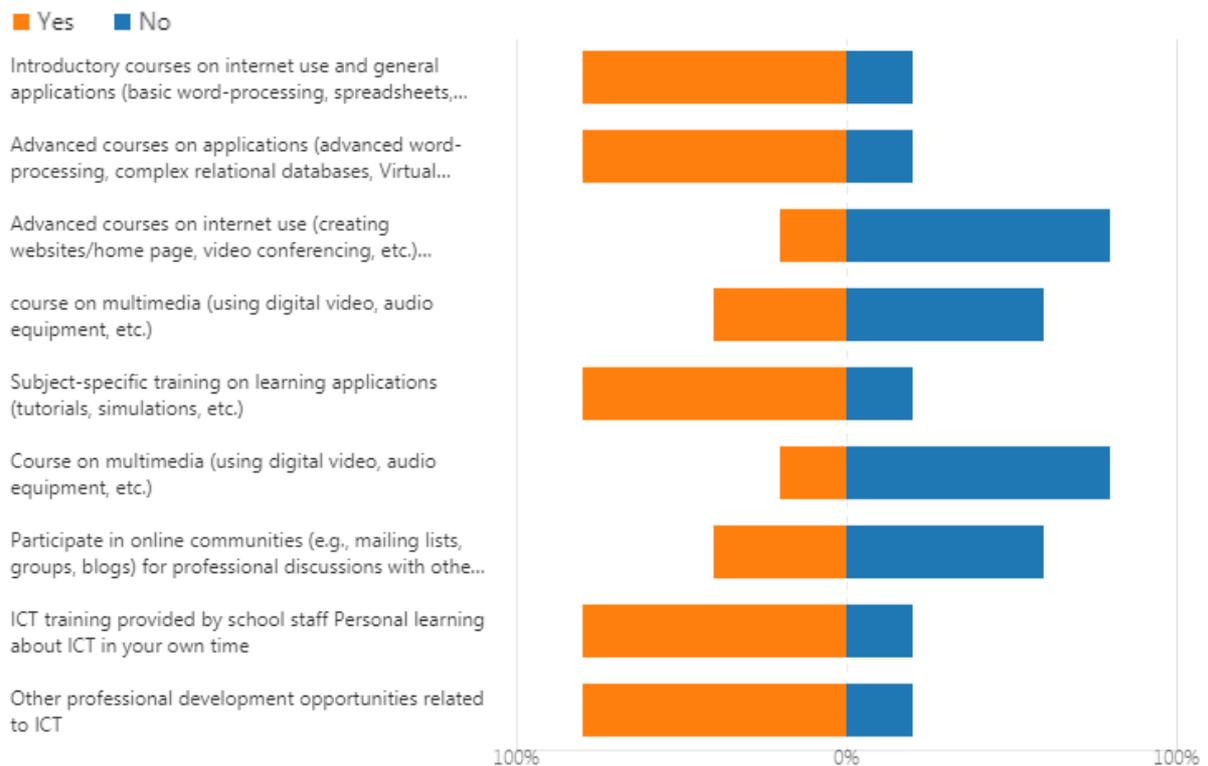
All of the participants' express being extremely confident in producing a text using a word processing programme, use emails to communicate with others and to email files to someone. Diana, Barbara, Carol and Tony reveal that they are extremely confident in capturing and editing digital photos, movies or other images, whereas Sue was only slightly confident.



**Figure 4.5:** *Q25 Technologies participants have access to in their classrooms*

#### 4.5.2 Professional Development

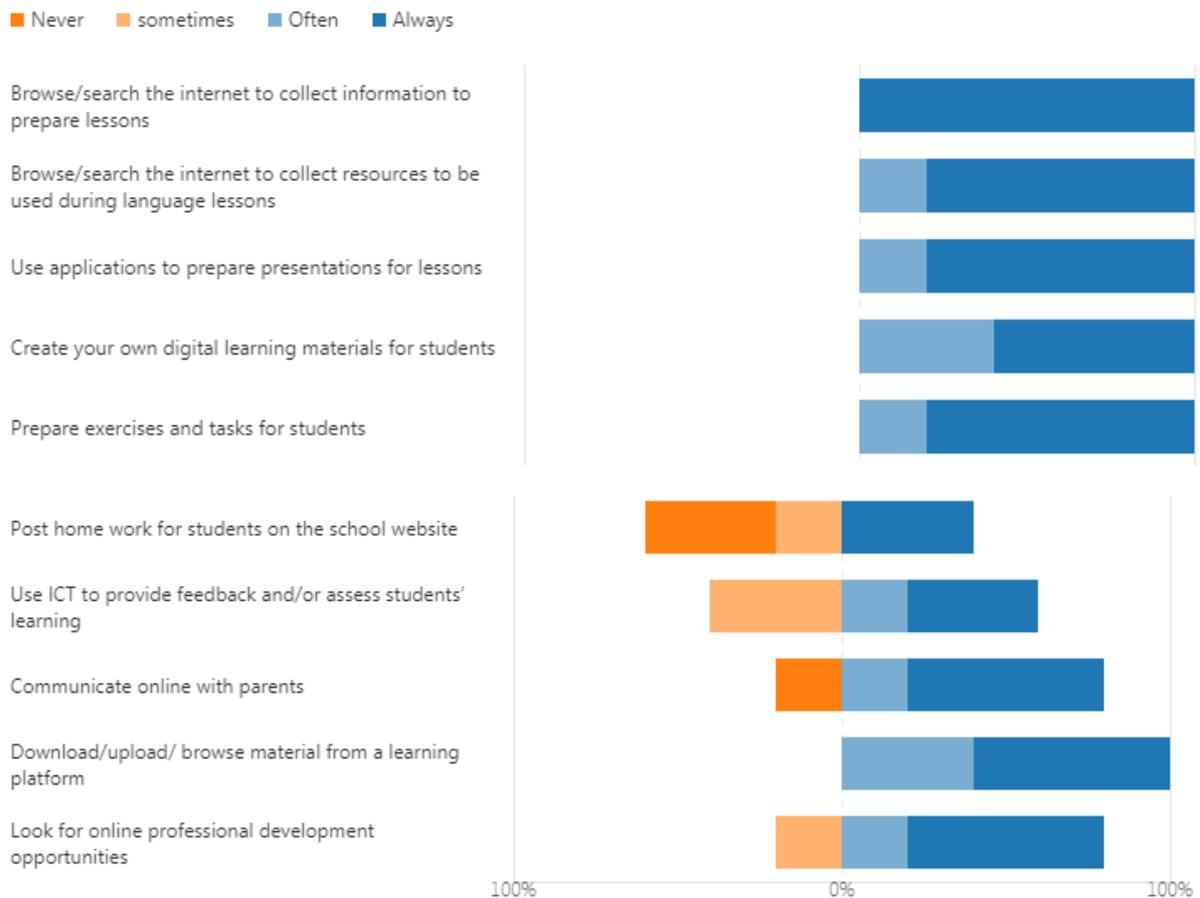
Answers to question 26 reveal that Diana, Sue, Barbara and Tony engaged in introductory courses on internet use and general applications for professional development as well as advanced courses on applications. Only Tony received training in advanced courses on internet use and equipment-specific training. Only Carol received professional development regarding courses on multimedia using digital video, audio equipment, etc. However, Diana, Sue, Barbara and Carol received ICT training provided by school staff and personal learning about ICTs in their own time. Only Sue did not receive subject-specific training on learning applications. Diana, Carol and Tony participate in online communities for professional discussions with other teachers and only Sue does not belong to any professional community where teachers share best practises (Q26 Figure).



**Figure 4.6:** *Q26 Areas in which Professional Development has been undertaken*

### 4.5.3 The extent of Technological Activity Application for teaching and learning

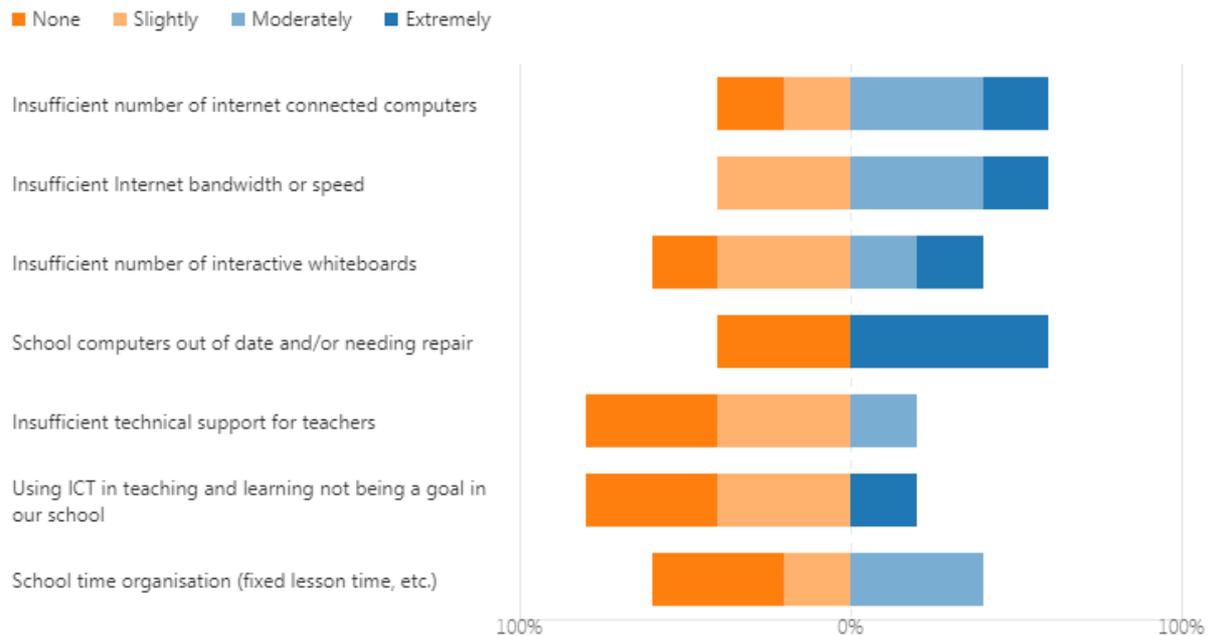
The computer programs used in the language lessons by Carol’s students are as follows: embedded videos, word processor, educational games, story writing programs, grammar exercise programs, cross-curricular programs, and language testing. Diana’s students only used the word processor in the language lesson. Sue and Barbara’s students used spelling programs and Barbara used programs for special needs students. Vocabulary programs were only used by Sue’s students. The above responses were for question 29 of the questionnaire.



**Figure 4.7:** Q29 The extent of Technological Activity Application for Teaching and Learning

#### 4.5.4 Factors affecting the use of ICTs for teaching and learning in the classroom

Question 30 addressed some challenges of using technology for teaching and learning. Various factors affect the use of ICTs in the classroom for teaching and learning. Diana, Barbara and Carol report that school computers that are out of date and/or needing repairs impact the use of ICTs for teaching and learning. However, insufficient technical support for teachers does not affect the use of ICTs to large degree as only Carol report being moderately affected by it. On the other hand, all the participants reveal that the insufficient Internet bandwidth or speed, plays a role in the use of ICTs in the classroom. Even though the participants want to use ICTs in their classrooms, Diana and Sue reveal that using ICTs for teaching and learning is not a goal at their school. Sue acknowledges that the insufficient number of internet connected computers does not affect teaching and learning in her classroom, whereas Tony's teaching and learning is not affected by insufficient interactive whiteboards. The organisation of school time to use ICTs in the classroom impacts Barbara, Carol and Tony's classes.



**Figure 4.8:** *Q30 The extent to which problems affect the use of ICTs on teaching and learning in classrooms*

## 4.6 INTERVIEW DATA PRESENTATION

Given the narrative nature of this part of the study, and the limited and diverse set of participants, I have decided to provide a narrative summary of each interview. To achieve this, I employed two methods. First, each interview was narratively summarised to give a broad overview of each innovative educator. Second, a comparative analysis was done on broad themes that arose from the narrative summaries of the interviews. I did this by identifying pertinent and regularly used words and phrases, counting how many times such specific key words or terms were mentioned with respect to certain themes, as an indication of topic relevance or importance to each educator.

### 4.6.1 Narrative Summaries

#### 4.6.1.1 *Barbara Gordon – A provincial winner of the National Teachers Award*

ICT integration lessons were modelled to Barbara when she was a student teacher, by a teacher who used ICTs for teaching and learning. Barbara now teaches in sub-economic communities with little resources. At the time of the interview, the school had just received an upgrade of the computer lab. However, they were experiencing log-on problems as well as problems with connectivity. These problems prevented the teachers from using the computer lab. Besides

institutional access to the hardware and the software, expensive data is another challenge Barbara must contend with. A restrictive cell phone policy hampers the use of the students' cellphones for teaching and learning as well as for developing relationships with her students and among the students themselves.

For Barbara, having a good relationship with her students is important. The teacher with a caring TI will nurture teacher-student relationship is to connect with the students (O'Connor, 2008). Because she teaches in a sub-economic area, she also wants to be available to her students after school. Her relationship with her students goes beyond just academic work: she gets to know her students better on a personal level as well. She uses WhatsApp groups to keep in contact with her students and their parents. She sets the boundaries and teaches her students responsible use of social media. Neither the students nor the parents abuse this privilege of having her phone number. If a student posts inappropriate content on the WhatsApp group, the other students will reprimand that student.

“I have a relationship with the kids, a very good relationship with them ... I'm very in touch with them, I know about their home life.”

“Before I'm going to teach you, I need to know who you are ... and ... what soccer team you support, or whatever ...”

The sentiments of the relationship between the teacher and student having a positive effect on teaching and learning are also shared by O'Connor (2008). Barbara's lessons are student-centred in that she tries to make her lessons fun and interesting. Student engagement in the lesson is important to her. Technology is used to enhance her lessons and stimulate thinking.

“I've seen a bigger, a better result when I've played a clip for them or when I've engaged them more with what the cell phone or ... let them listen to some music or see a picture ..., I think they are creatively stimulated.”

“... partners or group work or whatever, as long as there's interaction, I want it ... I don't want it just to be me speaking all the time or I'm the only one. I want them involved in the lesson all the time.”

It is important that her students must be excited about learning and look forward to her classes and desire to attend school.

“... it’s (technology) worked very well for me ‘cause my kids are excited to come to school.”

She utilizes live-videos in collaboration with a teacher at a different school, to bring in a different element in her lesson and extend her classroom. Technology is used for pre-, during and post-lesson. The availability of the computer, access to the internet, TV, videos and her cellphone and tablet, changes the way she prepares for a lesson in that she wants to integrate ICTs into her lesson to ensure student engagement.

“It definitely influenced my lesson planning, because I’ve had to change it. I’ve had to change the resources I was using.”

Barbara puts in lots of time and effort to prepare her lessons. She often uses her own finances to buy resources for her class. She also uses her own equipment such as cellphone (including a spare one), television and Tablet, because she knows neither the school, nor the students can afford it. Quality education for her students is important to her.

She is eager to implement new ideas she receives via networking with teachers and social media, especially Pinterest. After receiving the award, she feels that her colleagues’ attitude towards her changed. They no longer view her ICT integrated lessons with suspicion. The impression was that her students were playing irrelevant games and that the videos they were watching were frivolous, non-educational and not related to the lesson. Now, teachers approach her to assist them to integrate technology and pedagogy for teaching and learning. She not only assists teachers at her school but also mentors other teachers in an informal Professional Learning Network and Community of Practise.

Barbara did not have formal training in using ICTs and learnt various computer skills mainly through exploring on her own. She believes the WCED supports teachers in integrating technology and pedagogy for teaching and learning by organising workshops and e-Learning conferences. The presenters share best practises and ideas and teachers who attend the workshops and conferences feel empowered. On the other hand, she feels that the tertiary institutions can do more to prepare pre-service teachers in the use of ICTs for teaching and learning.

There is an awareness of the technological society her students are growing up in and therefore she feels that we cannot use the same methods of teaching as before nor the way she was taught

as a student. The world is changing and as teachers we must incorporate ICTs into our teaching to prepare our students for the world of work of the 21<sup>st</sup> Century.

“I would definitely say that they (teachers) need to start thinking about the world ... the world that we are living in and the kids that we are teaching, because it’s evolving. It’s constantly evolving and we cannot be teaching them the same way that they ... we were taught, because they are different kids in a different world and I would definitely say that uhm, preparing is key.”

In considering Barbara’s narrative as an indicator on her teacher identity, it is helpful to refer to the work of Rogers (2003) to describe her as early adopter. She uses technology at a modification level as described by Puentedura (2013b) and infuses technology for professional and personal purposes. She uses social media to support her students learning and building a relationship with them which confirms Nykvist and Mukherjee (2016) who noted the role of social media by both teachers and students for sharing, viewing and gaining knowledge. For Barbara, her students are her key focus and her preparation and pedagogies are geared towards their progress which is supported by Norton (2017) who states the learner investment is central to all teaching practices. In order to be current and use ICTs effectively for teaching and learning, Barbara’s training was self-initiated, and this attitude is referred to by Norton (2017), who accentuates teachers empowering themselves to be relevant in their teaching. Barbara’s **TI** of caring for her students and wanting to have a good relationship with them so that she could teach effectively and engage her students actively in the lesson, is confirmed by O’Connor (2008) study. Her beliefs, attitudes, knowledge and skills motivate her to incorporate ICTs into her lesson. Nykvist and Mukherjee (2016) and Hennessy et al. (2005) support the intrinsic factors influencing the integration of ICTs into teaching and learning. Barbara understands her teacher identity and is not afraid to infuse ICTs innovatively into her teaching and students learning. Freeman (2013) corroborates the relationship between teacher identity and innovation.

#### 4.6.1.2 *Carol Danvers – A National Teachers Award winner*

In Carol’s opinion she did not have very good English teachers while at school. They were not innovative, and their lessons were very textbook orientated. Her sister inculcated the love of English in her. She linked English to how it influenced our society and contemporary culture. Carol wants her students to understand that language is universal and not a text.

Her first teaching post was at a private Muslim school in a sub-economic area. Her focus was the social well-being of her students and improving them as human beings and never about just teaching literature.

“The human factor – that was a very important aspect for me.”

Because she was young and close to the age of her students, she had to get her students to trust her abilities as a teacher and speak to their human side. She pushed the curriculum aside, speaking to them about life and slowly brought literature into what she was saying. She needed to prepare the grade 12 students for the external Matric examinations and only had four months to do so. Because she managed to win her students’ confidence in her abilities, they were prepared to stay after school and attend holiday English camp to complete the syllabus in preparation for the examinations. Carol wants her lessons to be relevant to her students.

“... it’s crucial for us to teach them on a level, that if you are exposed to this, how would you react to those things, and making it relevant for them, because you’ll never reach anything or anyone if it’s not relevant to them.”

To make her lessons relevant, she used the poetry of Tupac Shakur to bring her students to an understanding of literature and involve them in poetry. Her students started to write rap poems because they were engaged and enjoyed the lesson. She also took her students out the classroom to make the poetry lessons interesting. ICTs were used as an accessible tool because it is what her students needed at the time. She recorded poetry and replayed it to her students. She proved herself as a teacher, and thus was instructed to teach English to the grades 8 to 12s.

Carol then went on to teach at a private school in a more affluent area. Her approach with these students **was** more conversational because they were more into their devices. The students were also prejudiced because of their higher social class status. Once again, she spoke to the universal factor of being human and enriching her students on a personal level. She read to them from Roomey and ‘Warriors of light’ by Paulo Coehlo and a discussion would pursue. To help her students with their social issues, she started a motivational club, ‘Inspire’ – Inside People Is Real Education. Poetry, art and music were the mediums used by the students to express themselves. She also started a blog where the students could upload their music, songs and images.

After that, Carol taught at a public school in a sub-economic area. The classes were large and many of the students she taught were repeating the year. She also had to contend with the problem of a high absentee rate. She started a blog because she wanted to be accessible to her students and reach them even though they did not attend her classes.

“This was not about them per se, at that time, it was about access to me. Because I didn’t make the absenteeism the issue. I made the fact that they weren’t receiving the notes the issue.”

She bought her own laptop and projector because the school had limited resources. She also brought her own cables and extensions from home. She used her own connectivity, using her cellphone as a hotspot in the classroom. Carol even bought two cheap devices-tablets, to be used as extra resources. These resources were all bought out of her own pocket. The students realised that she was doing all this for them and appreciated that she trusted them to work with her equipment. The result was that the students started to attend classes more often because they realised that the lessons were interesting and that they were missing out on the opportunity to work with the technologies at school.

The following year Carol concentrated on creating her own content bearing the different learning styles in mind. The students needed to know that the content was created for them and their learning.

“... when I’m teaching, it was very important that my students needed to understand that I created that for you, understand what you require as a learner.”

To circumvent the challenge of a shortage of textbooks, she read and recorded the setwork books, chapter by chapter for her students to listen to when they are at home. It was a helpful tool for examination purposes. Her passion, interest and work with ICTs was noticed, and she was moved into the classroom that had Apple computers in it. Now that the students had their own laptops, she would upload the content she created on the laptops individually.

Carol used various technologies to make her lessons interesting. She would buy different versions of videos of the Shakespearian play the student had to study so that they can analyse it and gain a broader understanding of the play. She used videos to enhance her lessons and engaged the students by embedding questions, images and audio into it. She also went against the schools cellphone policy and allowed the students to bring their cellphones to school so that

they can use it for teaching and learning. Her blog changed, to be more conversational with downloadable content. Besides the blog, she also used Instagram so that her students can understand visualisation, and Twitter to see world affairs. She however felt that Facebook was not a way for the students to gauge or navigate their learning. PowerPoints were used often in her classes. She used social media to also be accessible to her pupils afterhours.

Carol also taught her students ICT skills and ran mini workshops to empower them. Her students became autonomous students. The students created their own movie which required them to work collaboratively on the content, writing the script, storyboarding and video editing. The 21<sup>st</sup> century skills were evident in the ‘mash-up’ movie project. A selfie project to depict a scene or aspect of a scene or poem was done monthly. The lessons were fun, and the students enjoyed it.

Some challenges that Carol had to contend with was the lack of connectivity and limited classroom space because of the overcrowded classes. She mentions time to create quality content and searching for appropriate online content was also a challenge.

She did not have formal training in the use of ICTs and she developed her skills by exploring and teaching herself. Carol mentored teachers at her school in her subject, sharing best practise and assisting them to integrate technology and pedagogy. She also created a site for the English teachers at her school, where they could work collaboratively and communicate with each other.

Advice that Carol gives teachers is to not lose sight of why they are doing what they are doing. Expose the students to more, teach to the learning styles of the student and utilize ICTs to enhance a lesson and engage the students.

Carol describes herself as innovative, personable with her students, whimsical, a risk-taker with her students, and unafraid to be herself and make them understand that she is human. Her lessons are innovative, collaborative, interactive, expansive, explorative and stimulating. What she covered in the lesson had to be relevant. She is seen by others to be enthusiastic, creative, innovative a go-getter and someone who puts a lot of time and effort into her work.

Carol felt a bit defeated and demotivated at times by the responses she received from other teachers, yet, she was not deterred from being the teacher she wants to be. She wants her teaching to be relevant to her students, teaching to their learning styles. Learning is a process

and fun. She wants her students to realise that failure was not bad. She is not perturbed that her students see her fail. It isn't about the success alone but about the process.

ICTs are used as enhancing tools, bringing the outside world into the classroom. She wants her students to be global citizens being able to apply what they are learning.

Knowing what she is teaching and why, is important to Carol. It is important that her teaching and the tools she uses are what her students need at the time. All that she does is very intentional.

“... because I knew what I was doing and why I was doing it. Everything had intention ... in a sense that there were so many, so many of the twenty first century skills taught through what I am teaching and how I am teaching and the fact that the teaching was so autonomous and personalised to a large extent for my students.”

By reflecting on Carol's narrative, it can be seen that she uses ICTs at the modification and redefinition stages of the SAMR model of Puentedura (2013b). She is definitely an innovator and early adopter according to Rogers (2003) and understands how to innovatively infuse her technological, pedagogical and content knowledge. Carol fully understands her teacher identity and therefore is able to integrate technology and pedagogy innovatively as corroborated by Freeman (2013).

Her lessons are student-centred, and her role is one of facilitator and guide as she steers her students in acquiring information and knowledge. She is not afraid to learn from her students. The teacher identity of facilitator, guide and unafraid to try new methods, as displayed by Carol, is confirmed by Nunan (2016) and Leibowitz (2016) Carol allows her students to make use of ICTs for autonomous, synchronous learning and these methods of learning are supported by Nykvist and Mukherjee (2016). She also digitized the literature and poetry for her students so that they can download it for ubiquitous learning and this aspect of teacher identity is confirmed by literature (Norton, 2017) Her identity is further demonstrated where she assists her students to improve and encourage them to succeed and this is supported by literature (Leibowitz, 2016). Her students' needs and characteristics is paramount in her lesson preparation and delivery, and this is in agreement with the literature (Harbon, 2016). As she engaged the students in her lessons, their high absentee rate decreased and this phenomenon is confirmed by Hennessy et al. (2015) Carol did not allow any extrinsic factors such as limited access to technology and resources, time to create e-content and lack of support deter her from incorporating ICTs into her teaching and learning. This is contrary to the reviewed literature, where Buabeng-Andoh

(2012) and Gong and Lai (2018) state that extrinsic factors can inhibit the use of ICTs in the classroom.

#### *4.6.1.3 Diana Prince – Runner up for National Teachers Award*

Diana's lessons are student focussed. She sees herself as being here to educate and equip the students with skills that is important for the 21<sup>st</sup> Century. She will not let any challenges deter her from doing her best for her students. She has the desire to bring about change and narrow the gap between the privileged and less-privileged students. She wants her students to be global citizens. Her passion, innovation, creativity and drive contribute to her being viewed as a worthy contender for the National Teachers Award. Her initial years of teaching were during the Apartheid era of South Africa.

During her schooling, no ICTs were used in the class. She recalls using her imagination to visualise the lesson and feels that doing so, may be more interesting than using technology. It was during her first teaching post that she was introduced to technology for teaching. A fellow colleague used ICTs for teaching and made it seem easy, but Diana felt that she would not be able to use ICTs effectively.

Diana was disillusioned by colleagues that did not try to make lessons interesting and bring the content home to the students. She felt that the teachers did not motivate or stimulate critical thinking in her students.

Her brother was the trigger in the use of ICTs because he refused to do work for her. He preferred to teach her the skills so that she could use the computer herself. Diana's sister bought her a computer and she started using it to do her assignments and creative worksheets. When her colleagues saw the work she was producing, they were encouraged and inspired to explore the use of the computer for themselves.

Her first teaching post was in Namibia where they used the so called 'White' education system of The House of Assembly and not the so called 'Coloured' system of The House of Representatives' The 'White' education system had better resources and was of a higher standard. Because of her computer skills, she was assigned to do the marksheets of the school and be the administrator of various computer programs.

After completing her teachers Diploma, she taught in South Africa in the so called 'coloured' educational system of The House of Representatives. At this school she also used ICTs in her

class. The ICTs she used were emails, a laptop, overhead projector, video camera and social media. She was one of a handful of teachers who used the Interactive whiteboard and the computer lab at the school. Diana recorded some of her lessons and student practicals. Using the video camera contributed to her students being more interested in the lesson. Diana would do recordings of the students practicals and orals at school then do the assessment at home. By doing this, she had more time during the lesson to interact with her students and extended her classroom. The recordings were later used for revision. She did not only use digital material in her lessons but also incorporated non-digital resources such as newspapers, magazines and the textbooks.

Diana observed the difference between the rural and urban student. Her experience was that the urban students were unruly, disrespectful and misbehaves. However, she notes that the use of ICTs in her lessons had a positive impact on their behaviour. Students wanted to attend her classes and were better behaved and more controlled. She had no discipline problems in her classes and eventually she could do her lessons outside of the classroom.

“... and saw the wonder again. I didn't have to tell any person to keep quiet while I explained.”

“And things in that class in particular changed so much that I could actually take them outside to do a practical.”

She also noticed that the use of ICTs for teaching and learning contributed to the students asking questions and becoming critical thinkers.

Diana knew the type of teacher she wanted to be and was not deterred by the lack of resources nor by the negative comments of her colleagues. She bought her own resources such as a laptop and data card. When her colleagues saw how she was incorporating ICTs into her lessons, they were inspired to try it as well. She mentored teachers at her school who were teaching the same subjects as her, as well as other teachers who were interested in technology integration in teaching. In this manner she had an informal professional learning network and community of practise where she could share her best practises with other teachers. However, Diana felt frustrated because she felt that she had very little impact on the teachers and teaching at large.

Diana realises that her students are tech-savvy and started to develop their digital literacies by teaching them how to use the laptop and programs that can be used for their learning. She feels

that her students need to learn how to use ICTs so that they can fit in with the present-day expectations of using ICTs as well as being prepared to use it in the future. Her goal is that her students will be able to apply their knowledge in and outside of the class and for the future world of work.

“So when my child leaves my classroom, and go out into the world, he or she will be able to use what, uhm, they’ve learned from me.”

Diana was approached to teach at private schools but refused. She also got prompted to publish and sell her worksheets and content she created, but also refused. Her thoughts were always about helping students in public schools in the disadvantaged sub-economic communities as well as helping teachers who may not have access to her work, if they must pay for to it.

Diana had very little formal training in the use of technology and explored on her own to discover what can be done with ICTs to create creative and innovative lessons. She offered up her time, even family time, to create interesting lessons. She attended a WebQuest course which planted the seed that students can create their own content and productions. When she explored this further, and the students created content for formal assessment, the subject advisor did not accept it. This frustrated Diana as she sees the advantage of using ICTs for assessment.

She used social media, especially WhatsApp for teaching and learning. Nykvist and Mukherjee (2016) views social media as a means to share and gain knowledge. Diana created WhatsApp groups for her students and teachers. She also made use of blogging and Dropbox. The WhatsApp groups are a means by which she is available to her students after hours, academically and emotionally. The WhatsApp groups contributed to developing better relationships with her students as well as students with each other. She also uses WhatsApp to communicate with the parents. She did not pursue blogging because there were students who could not access it because they did not have computers or Smartphones. Diana did a survey on the students preferred method of teaching and learning. The survey revealed that her students who did not have access to resources preferred the non-digital methods of teaching and learning. This prompted Diana to approach the school to install computers in her classroom.

Diana feels frustrated because teachers do not see the advantages of incorporating ICTs into their teaching. She feels that teachers do not realise that the students are growing up in a tech-savvy world. Teachers need to have a mind-shift change and move with the times and use a medium that the students enjoy.

“... the type of child that you are working with, is a totally different child, you know, and I’m saying to you again, it’s almost like a plea from my heart, you need to change your methodology. You need to, leave that old ways of thinking behind.”

Diana uses ICTs to stimulate thinking and develop the 21<sup>st</sup> century skills of communication, collaboration, critical thinking and creativity. She also teaches her students to evaluate online information to distinguish between good and bad information. She sees the impact of technology integrated lessons on the students results which has improved since they were exposed to ICTs in teaching and learning. It is frustrating for her that some students do not have access to Smartphones, connectivity and data.

Diana went against the cellphone policy of the school and allowed the students to bring their phones to school to be use in class for research, orals, recordings and informal assessments. She uses WhatsApp to send voice notes, videos, documents, PowerPoints and images relating to the lesson, to her students. The students were also teaching and learning from each other via the WhatsApp groups. However, it is a problem when the students need to project their work during the lesson, using the school’s projector, because the necessary cables to connect the cellphone and projector may not be available.

She wants to make her lessons interesting and engaging and is looking for other programs to achieve this goal. She uses classical music playing in the background while her students are working, to contribute to the atmosphere in her class.

“Dit kan ek vir jou sê, die gebruik van tegnologie het gemaak dat my klaskamer ‘n plek is waar kinders wil wees. My kinders kyk uit (na die les) ... ek is nie bang om te waag nie.”

*[“I can tell you that using technology has made my classroom a place where children want to be. My children look forward to (to the lesson) ... I’m not afraid to venture.”]*

She is not afraid to explore and try new tools and methodologies for teaching and learning. Diana is also not afraid to ask her students for assistance. She feels this is important because it encourages her students to explore if they see their teacher is not afraid of failure and is willing to ask for assistance.

Diana refers to some benefits and some challenges regarding the use of ICTs for teaching and learning. According to Diana, the benefits of using ICTs in her lessons improves her student's memory, retention and understanding of content better. However, she maintains that ICTs impede certain faculties of the brain such as creativity and imagination. It is therefore important to blend ICTs with the traditional methods and scaffold the ICTs for teaching to let students use their imagination.

She asserts that ICTs must be used to enhance the lesson and engage the students. The focus is taken off from the teacher, and students gather information and knowledge by themselves. The teacher's role is to guide the students to evaluate the information available online. In this manner the classroom is extended beyond the four walls of the classroom.

By reviewing Diana's narrative, it is apparent that she takes on the role of facilitator, guide and tutor to teach her students the responsible use of ICTs for acquisition of knowledge and the use of social media. The role of supporting her students' mentally, emotionally and socially and focusing on their abilities, skills and developmental level, in order to develop them holistically, is confirmed in literature by Uibu and Kikas (2008). Her concern and care for the students from the sub-economic group forms part of her teacher identity as she inspires and motivates them to reach their potential, is supported by O'Connor (2008). Diana's identity of being available to her students in order to understand their backgrounds so that her lessons can be impactful is confirmed by Hayes (2016). Her relationship with her students is important and was strengthened as she listened to them and was accessible after school via social media and this is in agreement with literature (O'Connor,2008). She is committed to her teaching, and her students and this commitment and passion is corroborated by the literature (White, 2016; Leu and Kinzer, 2000; Hayes, 2016) Leu and Kinzer (2000) and Leibowitz (2016) supports Diana's acceptance that her students may have greater knowledge of the ICTs than she does and thus, she is not afraid of asking them to assist her.

She experienced some tension from her colleagues who did not understand her technology integration, and this tension is also confirmed by Trent and Shroff (2013). Kivunja (2014) supports Diana's notion that teachers need a paradigm shift in teaching in order to integrate technology and pedagogy innovatively to enhance a lesson and engage the students.

#### 4.6.1.4 Sue Storm – Nominee for National Teachers Award

Sue was nominated numerous times for the National teachers Award but always declined. She taught at different types of schools namely, public, private, Special Needs, local and international. She is a dedicated teacher and enjoys the WOW moments of teaching and seeing the Foundation Phase students develop and progress. For her language is not just grammar, but universal.

“Maths is language, life skills lesson, it’s language. Everything is all about language.”

Sue wants what is best for her students and to get them to meet their potential.

“... it’s just all about the children ... and what’s best for them and wanting them to develop, to the best of their ability and to develop, to their own potential.”

She would try different methods to get the lesson across. Her lessons are student-centred and must centre around meeting the different learning styles of students. She is a passionate teacher who puts her all into her teaching and being there for her students, doing what is best for them. She wants her students to enjoy learning, have fun in a happy environment irrespective of their socio-economic conditions.

“I was always wanting to try and use different ways of, of ... means of getting across my lessons more interesting to the children, and also different children have different learning styles ... making learning as attractive to children as possible ... for them to learn in a happy environment.”

Her initial ICT training was self-initiated and skills self-taught. She wanted to discover how to use the computer and to improve her skills. In South Africa, the WCED provides training and the trainers present the workshops. However, she feels that the training should be tailor-made for specific Phases and grades. Furthermore, training should be offered by the WCED when new ICT resources are deployed to schools. For her, pre-service training to use ICTs and integrating it into teaching and learning is important and is lacking at the colleges and universities.

While teaching in London, Sue witnessed how the pre-primary students were using the computers and that they are computer literate while she was not. This was a watershed

experience for her. In London she was provided with a laptop and allowed to take it home. However, in South Africa she taught at schools that had limited resources, and teachers were not issued with laptops that they could take home. Also, the students in South Africa did not have access to computers as freely as the students in London had. This resulted in her making sacrifices to save her money so that she could purchase her own resources.

“If the school will not provide, I will purchase my own”.

Teaching in a sub-economic area with limited resources, teachers are encouraged to share resources. One such resource is the Interactive Whiteboard, as only a limited number of classes are equipped with one. Teachers are to arrange with each other to swop classes so that they have the opportunity to use the Interactive Whiteboard. In Sue’s experience, this does not work. Not all teachers are confident in using the Interactive Whiteboard. Sue feels that teachers must be open to embrace ICTs for teaching and learning and empower themselves to use ICTs to enhance their lessons by attending various courses. She realises that times are changing, and as a teacher you need to move with the times.

“And so, I mean one really felt the need as a teacher you need to move with the times, and if the children can benefit from it then that’s the way you need to go.”

Learning from your peers and networking is therefore important. She mentors teachers at her school who teaches in her Phase as well as novice teachers she knows.

“... like from your peers you learn so much because like just sitting, I would ask my friend now, “How did you do that and she’ll explain to me ... if you need help, you know, share. Uhm Share with a younger teacher, new teacher, with older teachers ...”

A challenge she experiences is access to resources, as some teachers want to control the ICTs at the school, create a position for themselves and control the access of the resources to the rest of the staff. To circumvent this problem, she recommends that a resident ICT assistant or technician be employed at the school. Another challenge is connectivity to the internet and online resources.

In the sub-economic area, it is difficult for the students to work at home as they may not have access to a computer or the internet. Because it is all about the student, Sue would use her connectivity at home to download material that she can use in her lesson. She spends lots of

time searching for suitable, appropriate material and content online. Preparation is key. She is of the opinion that searching for the ideal image or video should not be done during a lesson as it would waste valuable time. At school, students can be taken to the computer lab, if it is available. Her observation is that the students enjoy working on the computers. Educational programs can be used to enhance the lesson and for revision. However, the schools may not have the finances to buy the programs. She feels that if schools see the benefit and need for the educational programs they will raise the funds to purchase the programs and pay annual fees if needs be. Sue enjoys creating her own content, worksheets and games that are relevant and applicable.

“I would do work sheets, I create my own games ... I would use technology to make my own puppets.”

She presents her lessons in such a manner that learning is fun and attractive. Sue mainly uses ICTs to prepare content for her lessons. Although, she would use her cellphone to record or video the students if it ties in with the lesson and the story. Yet, she feels that technology has its place. Foundation Phase students need the hands-on experience to develop the fine and gross motor skills.

“... the technology has its place, especially in the Foundation phase ... children need to be busy with concrete things.”

Further, she believes that students need to be able to use their imagination, and ICTs may not be helping in this regard. Also, time is needed to develop memory. She feels that students struggle to concentrate as they are so use to the ICTs. As a teacher you need to develop the whole child, including factors such as posture. The different learning styles of the students also need to be considered and kept in mind when preparing lessons. Foundation phase students need to be taught from the concrete, to the semi-concrete to the abstract.

Technology should be used wisely. A balance between technology and face to face teaching must be maintained. A balance between digital and non-digital.

The narrative reveals that Sue is a committed, knowledgeable teacher who effectively facilitates the acquisition of knowledge in her students and this commitment by a teacher is confirmed in literature (Leu & Kinzer, 2000; White 2016). For Sue, it is all about the learner, their needs, learning styles and enjoyment of learning, perceptions and goals which must be taken into

consideration and should direct the teaching. The learner investment is supported by literature (Norton, 2017; White, 2016; Harbon, 2016).

Her teacher identity is further shaped by her caring for her students as well as her passion, confidence and expertise as a teacher. Abbott (2016) and O'Connor (2008) confirms these qualities as part of the teacher identity. She empowers herself to use ICTs effectively in the classroom by attending training and this notion of self-empowerment is supported by Norton (2017).

As a grade one teacher, Sue sees herself as disseminator of knowledge to lay the foundations for learning for her students. She used ICTs to gain ideas to make the learning fun. Uibu and Kikas (2008) study of teachers, confirms this role, as a contributor to the formation of teacher identity. Sue, however, finds the planning and search for suitable content time consuming, yet she is not deterred by it because she wants what is best for her students. The time factor as a deterrent to creating innovative lessons and searching online for suitable content, is supported by Uibu and Kikas (2008).

Sue believes in sharing and supporting her colleagues and this characteristic of mentoring is confirmed by the literature (Gao, 2016).

#### *4.6.1.5 Tony Stark – Winner of the 'Think Ahead' global teacher's award*

Tony comes from a family of teachers. He enjoys taking students on an educational journey and wants them to enjoy coming to class, love learning and be curious about the world. He enjoys seeing students develop and therefore makes his lessons and learning relevant.

“I kind of fell in love with the ... the experience of uhm, taking kids like along a, along an educational kind of path.”

For him it is important to treat students as humans with potential and opinions. Connecting with people and being collaboration focussed is important for him. Tony is an energetic teacher who challenges student out of their comfort zones. He is a teacher who is not afraid of the new and different. He taught at different types of schools – rural, urban, Ex-Model C and private.

Knowledge, information and technology has always been an interest of his. As a student at secondary school, he used a laptop in class and to do his assignments. Yet, he did not enjoy school, finding it too constrictive. He wanted to work with or in disadvantaged communities,

wanting to make a difference, a change from the inside out. His teaching had to be relevant to his students.

“I try and make all learning relevant for the students. I try and make it ... I try and bring it home, I try and match it to something that they already know about uhm yeah whether it’s their own individual personal lives, whether it’s their community in context ... Yeah, I try and make what it is that they’re learning ... directly relevant to their, their lives.”

He taught at a school where teachers where not interested in integrating ICTs into their lessons and therefore investing in ICTs was not a priority or focus at the school. The result is that students did not receive the digital literacy skills that is needed for the future. Colleagues at this school, in his opinion were bad, unmotivated, not willing to improve and prejudiced. It was a depressing feeling for him to be working alone and difficult to remain individually motivated and continue to integrate ICTs into his lessons. ICTs that were available to him was the data projector and laptop. He used videos, digital images, Google forms and slides in his lessons. In his opinion the Interactive Whiteboard is not useful in a language class.

Connectivity and limited resources were some of the challenges he had to contend with at this school. Data is expensive and not all students could afford it. Because he would not exclude any student, he did not use content that requires data in his lessons.

Tony left this school to teach at a school that embraces technology. Resources are readily available, and connectivity and data is not an issue. Professional development ensued where he developed technical skills to integrate ICTs into his teaching. He was motivated to explore new approaches and incorporate various ICTs for teaching and learning. 3D Printing, virtual reality expeditions, project-based learning, Google slides with embedded videos and questions, were the ICTs used in his class. Tony’s students produced their own content where they worked collaboratively to produce an essay or google slides. He feels that the use of technology stimulates thinking and sparks ideas.

“... my planning is more project based ... with VR, where you can go anywhere, so they went to uhm, to like the Taj Mahal ... 3D-print their own statues ... some of the lessons would also be collaborative work on something like google slides.”

He says that technology should be used appropriately. The technological affordances must match the goals and objectives of the lesson. The use of ICTs must be informed by pedagogical theory and the integration of technology and pedagogy is done to enhance the lesson.

“... technology was there to enable the pedagogy and not the other way around.”

Yet, he questions the use of technology as there are no measurable outcomes. He maintains that good lessons do not necessarily need technology. Do not use technology as a substitution.

“... is it worth really using technology or are you just busy substituting the technology with something that you could actually do using pen and paper.”

He suggests that the use of technology may contribute to students paying less attention in class because the information can be accessed later at home.

ICTs should be used in the class and the students must be exposed to it so that they are prepared for the 21<sup>st</sup> century world of work.

“For me, I want to expose kids to things like 3D printing and VR, not because it’s relevant right now, but because I want them to walk into the, into a company ten fifteen years from now and go, ‘Oh, I’m familiar with this. This doesn’t freak me out, this doesn’t ... I don’t feel alienated by this technology’.”

Students are part of the new technological society therefore teachers need to implement ICTs in the class. Technology has created a new context for learning and gaining knowledge and information. Students need to be taught the skills to distinguish the good online information from the bad. He also states that teachers must incorporate the 21<sup>st</sup> century skills for teaching and learning and create the space for autonomous learning.

“... some kind of students are able to pay attention in class, some students need to go back and revise, being able to create a digital repository of content, really helps for those students who missed it in class.”

Tony feels that it is important that an institution values the experience and technical skills of their teachers. He also suggests that a supportive community at the institution is important. Tony asserts that teachers will then develop a feeling of being valued and a sense of belonging which makes them more confident to use their skills and explore and develop others.

“... a place that values creativity and implementing new solutions and value in technological skills, yeah it just makes you more confident, makes you feel more yeah, feeling, feeling valued, I think. It’s an incredibly, incredibly important thing. People grow into the rolls that, people grow into what people see in them as well.”

Tony maintains that teacher collaboration is important. It was the collaborative working with a group of colleagues that contributed to them being the recipients of the global teachers’ award.

“I would say teacher collaboration is maybe, maybe right at the top of what makes high quality large-scale projects feasible. Very, very hard to do on your own.”

He mentors teachers at his school and shared his best practises and experiences at an eLearning conference, various Google educator Group and Apple workshops. Tony used the social media of Twitter for professional development where finding like-minded educators was inspiring and motivational. He however does not like using social media for teaching and learning but would use it only as an engagement tool, in a very specific way.

Tony’s teacher identity was expanded and extended as he used the new technologies to enhance his lessons and engage his students and this is in agreement with the literature, Norton (2017). It is his desire to prepare his students for the future world of work, referred to as the fourth industrial revolution, where ICTs blend into all spheres of life. Schwab (2016) confirms the preparation for the fourth industrial revolution. His teacher identity is further illustrated in that he questions the traditional pedagogies and is willing to create new and innovative methodologies in teaching and this is supported in the literature, Cheung et al. (2014). Tony understands that technological, pedagogical and content knowledge has to be integrated and thus can use technology in ways never thought of before as confirmed by Koehler (2012) and Puentedura (2013). His innovative approach to teaching is forward thinking in that it is task and project based and this approach is confirmed by Martel and Wang (2015). His lessons are authentic and creative placing him at the transforming level of the teacher development framework (UNESCO, 2002).

Tony has a clear understanding of his desire to learn, prepare his students for the future as well as being reflective as to the role of ICTs for teaching and learning, and this teacher identity is supported by Farrell (2018) Donato (2017) Oda (2014) who emphasize the importance of reflection, knowing yourself, your philosophies, beliefs, principles and values. For Tony,

teacher collaboration is important and connecting with teachers in a COP where there is a sharing of ideas and an identity of belonging, is confirmed by Trent and Shroff (2013).

In all, this chapter presented the data collected via the questionnaire and gave a summary of the narratives. The following chapter will present an analysis and interpretation of the semi-structured interviews.

## Chapter Five

# ANALYSIS AND INTERPRETATION

### 5.1 INTRODUCTION

This chapter will, after scrutiny of the raw data, present an analysis and interpretation of the most prominent themes that emerged in relation to the research questions. It will attend to what is semantically given in the language teachers' own words, as voiced in the semi-structured interviews, as well as to what is latent in that participants also indirectly communicated certain perspectives. The identified themes pertain specifically to the topics of TI and the innovative use of ICTs for language teaching and learning.

### 5.2 COMPARATIVE ANALYSIS

The following table summarizes the words and phrases as they were used by the various participants.

**Table 5.1: Interview results: count of theme-specific words and phrases**

	Barbara	Carol	Diana	Sue	Tony
<b>Defiance</b>					
<b>Do it anyway</b>					
Policies	2	2	1	0	0
Peers	1	1	1	1	1
<b>Resources</b>					
Buy	5	7	4	4	0
<b>Knowledge</b>					
Figure out	1	1	1	1	1
<b>Roles</b>					
<b>Collaborator</b>	0	13	8	6	6
<b>Mentor</b>	1	0	0	1	3
<b>Nurturer</b>	7	3	5	3	4
<b>Teacher</b>	0	7	0	0	0
<b>Pedagogy</b>					
<b>Teach</b>	2	22	6	7	0
<b>Learning Style</b>	0	3	3	2	1
<b>Student centred</b>	2	3	1	1	1
Collaborate	13	5	9	4	12

	<b>Barbara</b>	<b>Carol</b>	<b>Diana</b>	<b>Sue</b>	<b>Tony</b>
Critical Thinking	1	0	4	1	1
Communicate	2	6	5	1	0
Interactive	2	0	1	1	0
<b>Enjoyment</b>					
Excite	10	6	1	5	5
Engaging	8	1	2	0	2
Relevant	0	0	3	0	5
Enhance Learning	3	1	0	0	1
<b>Ubiquitous Learning</b>	0	4	6	0	2
<b>Technologies</b>					
<b>Immovable</b>					
Computer	20	5	23	18	5
White Board	3	2	5	9	2
<b>Mobile</b>					
Laptop	6	12	9	8	4
Cellphone	28	10	3	2	2
Audio Recording	0	5	0	0	0
Digital Recording	6	9	10	3	2
Tablet	6	2	0	0	0
<b>Social media</b>					
Pinterest	6	0	0	0	0
Instagram	0	3	0	0	0
Facebook	0	2	3	0	0
Blogs	0	33	4	0	0
Twitter	0	3	0	0	7
WhatsApp	7	0	12	0	0
<b>Google</b>	3	2	3	1	12
<b>Future</b>					
3D Printing	0	0	0	0	2
VR	0	0	0	0	4
<b>Time</b>					
<b>Searching</b>	2	1	2	4	0
<b>Creating</b>	1	2	4	4	0
<b>Evaluating</b>	0	0	2	1	1
<b>Training</b>	3	2	0	3	3
<b>Waste</b>	5	0	0	2	0

### 5.3 THEME 1: DEFIANCE

Defiance, open resistance, bold disobedience. Though considered a negative quality by a number of societies across the globe, South Africans are well known to be a defiant society, filled with people who refuse to get caught up in systems that oppress or deny them opportunities to grow. Our nation stands proud of that fact, having taken the long walk to freedom through the Apartheid era and still showing remarkable defiance to give in to lack of resources and hardships. It is a quality that has driven positivity, entrepreneurship and change, and when used it this thesis refers not to insolent disobedience but a drive and passion to be better and it was fascinating to see this quality measurably show up throughout accounts given during the interviews.

#### 5.3.1 Policies

Many of today's digital natives have their cell phones attached to their hands or firmly tucked away in an easy to reach location. It is a resource that many of them already have access to, especially in middle- and upper-class schools where smartphones are abundant. Despite the wide-spread potential of this already available resource many of South Africa's schools abide by the no "cell phone policy" but innovative educators have started realising that this is a resource that can be utilised and that children are comfortable with using their cell phones in innovative and creative manners as mentioned by the Prensky (2001) when referring to today's students as digital natives. Three out of the five participants specifically made reference to this scenario a number of times (Table 5.1), stating that they had to go against policy to engage their students in tech-savvy education.

**Barbara:** "So then I would use my cell phone, or my tab, or computer, and even though the school cell phone policy said that they can't really have a cell phone at school."

"I did it anyway, because I could see ... the effect."

**Carol:** "the school had a ohm, anti-cell phone policy."

"I went a little bit ... against the school's policy around that, where I had my students actually bring their devices, cell phones and tablets, if they had, to school."

**Diana:** "Ons gebruik die selfone in die klas, onse skool het 'n geen selfoon beleid, maar ek gebruik dit in my klas ..."

*["We use the cell phones in the classroom, our school has a no cell phone policy, but I use it in my class ..."]*

Tony, teaching at a school where the integration of ICTs is encouraged, resultantly makes no mention of having to fight against, or ignoring, school policy. Sue, being a foundation phase educator has very few students who actually own cell phones and as result her technological innovation falls into a different sphere, where cell phone policies need not be challenged.

### 5.3.2 Resources

As might be expected, many of South Africa's schools aren't fortunate enough to have access to digital resources. This is as result of a combination of factors ranging from tight financial budgets to dangers faced when technologies in less fortunate schools poses risk of burglary, to simply having other needs such as hunger schemes that require more financial and mental input that providing those students with technology. Hennessy et al. (2010, 2015) confirms that the lack of finances to purchase digital resources is an influencing factor preventing the effective integration of technology and pedagogy. Contrary to Buabeng-Andoh (2012) and Gong and Lai (2018) who states that the lack of resources inhibit teachers from incorporating ICTs into their teaching, the innovative teacher is not demotivated and deterred but rather find ways and means to acquire the resources themselves. Interestingly, this hurdle in the provision of resources at schools seems to drive educators to simply obtain these resources and the responsibilities of using and keeping them, themselves.

This was true for each of the educators except for Tony who, teaching at a technologically affluent school, states the "school provided [them] with a laptop" (pg.5). For the remaining teachers, the lack of resources to adequately prepare their students for the future world of work was a frustration that motivated them to take it upon themselves to obtain the necessary resources (Table 5.1: Resources). They were not going to allow their students to be left behind because the schools could not afford to provide. Owuor et al. (2013) corroborates that the limited resources and access, could exacerbate the digital divide.

**Carol:** "I'm the type that if I want to do something and I know that there's a technology that's going to help me, I will buy that for myself. I'm not gonna depend on the school to get it for me ..."

"I used my bonus to go buy myself a second-hand projector."

"And because resources and all of those things were very limited, I was very much doing these things on my own."

"I used my own internet connectivity when it was needed ... A lot of things was out of my own pocket."

**Barbara:** "... my own time and effort, (laughing) ... money and data."

"My own laptop, my own tab."

**Diana:** "Vir myself, moes ek finansiële opoffering maak om uhm, die tegnologie te kon kry. Die beste tegnologie te kon kry, wat my beperkte salaris my sou toelaat." (pg. 30)

*[“For myself, I had to make financial sacrifices to get the technology, the best technology to get, which my limited salary would allow.” (pg. 30)]*

"... data is so expensive, but we can find ways."

**Sue:** "You would have to go and buy it yourself."

"... it wasn't about money I knew really, that's what I needed for my class."

### 5.3.3 School Culture and Peers

Each of the educators brought up school culture and peer resistance in their interviews. Each of them experienced negativity within school culture or peers being indifferent to change and innovation or simply unwilling to invest for betterment. Hennessy et al. (2010) notes that if the school management team do not see the advantages of using ICTs for teaching and learning, they will not be inclined to purchase the needed digital resources. What came through very strongly was the resolve of these innovative teachers to not be discouraged or to give in and join the rest.

For Barbara, her school tried making her stop using technology (Smartboard) because it was eating into her teaching time. The Smartboard was limited to a single class and she had to move her students to that class, which would take time out of lessons. Barbara, however, pushed back and insisted on the importance of technology integration and the school is now setting up a defined room and organised timetables for educators to use that room and the technologies available in it for lessons.

**Barbara:** "They will organise a time table."

Carol's experience of school culture was different to that of Barbara in that nobody at the school where she was teaching was even interested in whether she was wasting her time or doing something new.

**Carol:** "It was more like you do your thing." ... [if you want to waste time on extra nonsense, that's your worries].

"... even if they knew that the scope of the technology could improve their lessons, ohm, they were not open to having to put in that time."

While the school culture and peers in Carol's school did not resist her innovation, they were indifferent, and this environment is often just as discouraging as one where people try to block innovation. As Edmund Burke said, "The only thing necessary for the triumph of evil was that good men should do nothing." Carol, however ignored the indifference of the school culture and made it her mission to not be deterred due to lack of support.

**Carol:** "... [laughing] I did it anyways."

Diana, having built herself up into a rather astute user of computers in a time when they were very new to the world, was treated rather badly by colleagues; meeting her with disdain and estrangements for her eagerness to learn to use new technologies, rather than support and encouragement. Trent and Shroff (2013) confirms that tensions arise between teachers who use ICTs for teaching and learning and those who do not.

**Diana:** "... it made us into computer boffins. So people were very, very uhm, I would even say nasty."

People treated Diana negatively because she was more au fait with technologies. The literature review supports the finding that an innovator will experience animosity by colleagues (Roger, 2003). The culture of seeing technology and its benefits was negative around her but she could see the benefits and kept learning and growing despite it.

**Diana:** "This is the kind of teacher I want to be, and I'm not going to allow people to stop me ..."

Sue's environment was one where the value of technological resources was recognised but instead of being in an environment of growth and sharing of valuable resources she had to face one where "you couldn't really develop yourself or use the resources fully because it was controlled in a certain way." At her school, a few select colleagues managed the access to the technology available for use at school and felt the need to maintain those resources under their control as a power card in the work environment. Rather than be put off, Sue went 180 degree in the opposite direction and tried to foster sharing and collaboration with novice teachers and colleagues. Gao (2016) supports the mentoring of experienced teachers with novice teachers. Hennessy et al. (2015) also confirms that sharing of best practise assists teachers to overcome challenges.

**Sue:** "I try to share my uhm whatever I had, with others."

Tony, though currently in a school that supports the use of ICTs in education, initially taught in an environment where the focus of education with the aid of technologies wasn't a priority, or even an afterthought. Unlike the other educators, who fought back within their respectively difficult environments, Tony's defiance of this mind-set drove him to leave that environment and seek one where support was abundant. He refused to be run down by negativity.

**Tony:** "that community ... very close community in your school institution, that supportive community is very essential."

"I take the institution that values experience."

#### 5.3.4 Knowledge

Contrary to Buabeng-Andoh (2012) and Hennessy et al. (2010), who states that the lack of training inhibits ICT integration, innovative teachers will empower themselves to learn how to integrate ICTs into their teaching and learning. Besides Tony and Sue, the other three educators strongly advocated their insistence to train themselves, to teach themselves, when nobody else was there to offer guidance. Much like buying resources from their own pockets these educators had to take time out of their personal lives to develop the skills needed to use the technologies they wished to have their students experience and become comfortable with.

**Barbara:** "... just trying to figure out what ... I don't think it was professionally, uhm, I didn't ... I didn't, I wasn't professionally trained ..."

**Carol:** "... it was all self-learn. I didn't have training in things."

**Diana:** "... ek moes ure voor die rekenaar spandeer om myself vertrouwd te maak met dit wat ek wou gebruik."  
 ["... *I had to spend hours in front of the computer to familiarize myself with what I wanted to use.*"]

Sue, instead of opting for teaching herself actually decided that she required training and took that self-initiated step to obtain it.

**Sue:** "I think ... before ... I went over to London, then computers were just newly introduced into South Africa, you know I think ... many people felt the need of wanting to learn to be able to use ... the computer ... And then I did a course ..."

What was interesting to note from the interviews was the stark difference in the drive behind wanting to learn how to use new technologies between the other four participants and Tony. For the other four their internal drive to learn stemmed from the need to be able to use the technology to teach, to be able to apply modern technology to education and stay attuned with

the needs of their students. They learnt new tools so that their students could use those tools for learning purposes. Hennessy et al. (2005) confirms that teachers are more likely use ICTs if they believe it will enhance their teaching and learning, What latently emerges from Tony's interview is his drive to seek out and understand new things for the fact that they are new things to master; he chases knowledge to learn and to apply it for his own usage, he wants to learn for the sake of learning and then only considers how it could be used.

**Tony:** "I enjoy learning new things, I enjoy challenging myself so uh when I get exposed to a new tool my attitude it's never like oh, I don't want that. My attitude is always interesting, is this useful, how do I learn to use this, can I employ this."

## **5.4 THEME 2: ROLES**

Teachers are described as fulfilling many roles both inside the classroom and extended outside of the classroom. The traditional role of the teacher is seen as the "providers of information", where they lecture a subject through lessons that build on the prior knowledge of their students and moves them towards a deeper understanding of the subject at hand. But the truth of the matter is that educators' roles extend far beyond simple dissemination of further information built on the foundations of previous teachings. Teachers often act as surrogate parents, assessors of growth and progress, strong planners, resource developers and much more. This section sought to investigate which roles the innovative teachers that participated in this study saw themselves fulfilling as teachers; which roles formed part of their TI.

### **5.4.1 Developers**

The role that resonated strongly with 80% of the participants was that of "Developers". All the participants, except Barbara, made numerous mentions of "creation" and "collaboration" in the context of resources; creating new things for their students and colleagues to utilise.

Taking Carol as the first example; she created resources for her students to use. She mentioned the creation of resources for the benefit of her students over thirteen times throughout the progression of the interview (Table 5.1). What is interesting about Carol is that she emphasised numerous times that she creates not to "share" knowledge (be a simple "provider of information", though that is an ad hoc aim) but rather to show care and consideration for her students. Similar caring for students was reported by O'Connor (2008) who identifies it as part of the teacher identity. She creates for them, for their needs, for their growth and not simply so there are more resources for them to have or be exposed to."

**Carol:** “... our students are understanding that this was created by my teacher for me.”

Part of her identity as a teacher is grounded in the fact that she sees her main role as being a supporter; she is there to develop resources, to show care, affection and dedication to her students. This agrees with reviewed literature (Uibu & Kikas, 2008) where a teacher identity of supporter is for the development of the student. She wants her students to receive resources and understand they are receiving them and being provided for because she cares about and for their individual development as people.

Carol’s role as a developer is rooted in her identity as a teacher who needs to care and provide support for her students. Her role is thus nearly three-fold but being expressed as a developer of resources. Carol stands a good example of the “freeing” of educators from the role and responsibility of primary information providers. The reviewed literature confirms that using ICTs make teaching and learning easier (Tella et al., 2007).

ICTs allow information to be accessed with greater ease, permitting teachers to have more time to spend working on one-on-one interaction or in small groups of students. This “freeing” from the primary role of knowledge dissemination grants educators the opportunity to fulfil other essential roles that influence students’ educational success.

This role as a nurturing teacher that creates because she needs her students to understand they are cared for and connected with is markedly different from the other educators. Diana for example, the next biggest mentioner of resource creation (Table 5.1), creates new resources and learning experiences for her students because she feels not that they need to understand they are important, but rather because she feels how information is presented to them to learn with should be relevant to their lives and times.

**Diana:** “... because I was driven to create ... to make my lessons relevant for the children.”

For Diana, the creation of new resources is about keeping students up to date with the outside world, taking education beyond the walls of the classroom and information dissemination. Nunan (2016) supports learning beyond the classroom. Diana’s drive for the creation of resources is less rooted in her role as a nurturer and more strongly grounded in her TI as a builder of “future minds”. Taking note of the fact that Diana is a driven individual who, as mentioned earlier, is defiant to being left behind and willing to teach herself new skills to ensure that her students stay “with the times”; her drive for the creation of relevant resources for her

students to use during teaching and learning fits. Diana's role as a creator is grounded in her role as a teacher who is building the minds of tomorrow.

For Sue and Tony, who mention creation and collaboration slightly less during their interviews compared to Carol and Diana, their focus on these roles as creators and collaborators is seen to change from being student-orientated to being peer-orientated. Where they mention creation of resources it is nearly immediately followed with reference to the need for these resources to be shared among peers. For them both, the focus of creation lies not merely in the application of the resources for the dissemination of information and relevance of the resources to students but beyond that, into the need for sharing to stimulate growth among peers and ultimately spreading wealth and good resources and practices beyond their own classrooms.

**Sue:** "... if you need help, you know, share. Uhm Share with a younger teacher."

**Tony:** "I've been involved with professional development."

"... collaboration is maybe right at the top of what makes high quality large-scale projects feasible."

For Sue and Tony, it can be argued that their roles as teachers have developed to extended beyond the sole focus of being student-cantered into the realisation that for growth to truly extend as far as possible in the education system and affect as many students as possible their roles also need to focus on being peer-orientated. It is a cyclical duality to their roles and identities as educators in the teaching and learning environment; creation of resources for students coupled with the need to collaborate and share these resources with peers to affect greater impact.

Sue and Tony's focus on creating resources and developing skills, not only for their own students but for their peers as well, is again highlighted in their mention of mentoring. In both cases, and Barbara's, the mention of mentoring was only ever made with reference to colleagues. Their roles as developers extend beyond the creation of digital resources into the development of their peers.

**Barbara:** "There is the new teacher that's in grade four; I'm kind 'a ... I'm mentoring her ..."

**Tony:** "I've mentored teachers uhm yeah. It's fun; teacher training is something I'm very interested in" ... "I've been involved with professional development."

### 5.4.2 Nurturers

What became evident upon more thorough review of the interviews was that each of the educators played fundamental roles as nurturers. All the participants expressed various forms of the nurturing role, ranging from pure care and consideration of their students' needs, to motivation and work facilitation at school.

For Barbara and Sue, their nurturing roles as educators were predominantly expressed in the form care; in doing what is best for their students, building relationships and staying connected with them as individuals and a class.

**Barbara:** "... the thing that I think that maybe stood out besides the work is the fact that I have a relationship with the kids, a very good relationship with them".

**Sue:** "... being there for the children and doing what's best for them."

They both emphasise the importance of having strong relationships with students as the foundation for teaching them anything. To Barbara and Sue, their roles as a teacher, in the strict sense of being a "disseminator of knowledge", can only be fulfilled when there is care, consideration and active relationships with their students.

To Diana, the role of nurturer is grounded in her desire to inspire her students. A large part of nurturing revolves around encouragement and promotion and those factors can be stimulated through leading by example. As mentioned earlier, Diana has always pushed to learn new technologies and try new methods to ensure her lessons are relevant to her students and to show them that they are important and can do the same things in their lives to improve themselves. To Diana, inspiration is a driving role as an educator and she remembers times where her students not only appreciated her efforts and hard work but actively acknowledged her work and how it inspires them.

**Diana:** "Juffrou, jy't ons nou so geïnspireer."  
[Teacher, you've inspired us now.]

"... hulle is nie bang om te waag nie, want hulle het gesien hulle juffrou is nie bang om te waag nie."  
[ "... they're not afraid to dare, because they saw their teacher's not afraid to dare." ]

To Carol the nurturing role is expressed in a balanced manner. Though she never directly mentions any of the attributes to fulfil the role of a nurturer she refers to many deeds and

instances of actively caring, motivating and simply acting as a mediator to their acquisition of knowledge.

**Carol:** “I started a group at my school ... at the school called *Inspire* ... ‘a motivational coffee club kind of group’.”

“I knew kids were more mediated, so I thought the best way to give validation was to mediate what they are doing.”

Of all the participants Tony’s form of nurturing was the most indirect, never mentioning motivation or care as a fundamental. To Tony nurturing the minds of the future lies solely in facilitation. To Tony, guiding his students into critical thinking, collaboration and creativity is the way to show care. He cares for each of his students to be independent, strong thinkers and he believes that to foster such minds requires him to guide their learning of these 21<sup>st</sup> century qualities and skills through exposure instead of active teaching.

**Tony:** “... implement[s] technology in the classroom in order to prepare students for the future.”

“Cause we have to prepare our students for, for the world of work and some of the jobs that they’re gonna be doing, may not even be existing now.”

### 5.4.3 Teachers

What was notable from the interviews was that none of the educators, except for Carol, identified their role to be that of a “teacher”. Carol on the other hand mentioned numerous times that she sees herself as a teacher.

**Carol:** “I decided to be a teacher, particularly an English teacher, is because I did not have very good English teachers.”

“It’s about their social well-being; it’s always about making them understand that my role as a teacher, even as an English teacher, is to make ... to teach you ohm, the universal language of life through my subject.”

Carol, unlike the other educators strongly binds her TI to the role of a teacher. For Carol, her primary role is grounded in being a teacher, being a good teacher; the teacher she never had. To Carol her role as a teacher, however, extends beyond her own subject and the skills that should be bound to her teachings. She aims to teach beyond the borders of being a language teacher.

## 5.5 THEME 3: PEDAGOGY

Pedagogy centres around teaching methods, the aims of education and the methods used to achieve those aims. Pedagogy encompasses scientific theories of learning and to some extent the philosophy of education (Peel, 2019). Pedagogy was of interest in this exploration of innovative educators and how they integrate ICTs into their language teaching. To properly understand how engagement with new technology in the classroom makes an impact on teacher identities and conversely how teacher identities make an impact on their teaching each of the participants' respective pedagogies had to be explored.

### 5.5.1 Teaching

Despite only Carol truly coining herself as a “teacher”, as the word is traditionally used, 80% of the teachers in this study specifically aim to teach their students information. They might not identify their primary roles as disseminators of knowledge, but they do acknowledge and emphasise their teaching of information. What was interesting to see arise from the interviews was, once again, the different motivators behind their teachings and how they sought to teach.

**Barbara:** “I teach all the learning. We don't have subject teachings ...”

Barbara teaches so her students may learn but sees herself teaching skills and knowledge that extends beyond the confines of subject-based learning. Carol would, for example, teach the use of formal writing skills with the applicatory knowledge of business interaction and why learning how to communicate in a formal manner would be beneficial to business success. She would, for example, teach that language extends beyond formal words, crossing into body language and confidence; effectively teaching social sciences, business skills and life orientation during her English lessons as well. To Barbara teaching isn't subject based and shouldn't be bound within subject knowledge. She teaches her students, so they may learn holistically.

Carol mentions that she wants to teach and be taught. Despite her strong self-identification as a teacher Carol does not view teaching as a one-directional transfer of knowledge, automatically extending her definition of herself as a “teacher”. As mentioned earlier, Carol sees her roles as an educator both as a nurturer and a collaborator or creator. She has a strong sense of identity in her ability to teach, but at the same time care for and grow the minds of her students. She views the passage of teaching as a two-way process and is unafraid of learning from her students as much as she teaches them. Her philosophy on teaching is that it is a never-ending process, much like learning and that to continuously be able to teach effectively she must be willing to

continuously learn; breaking free from the traditional outlook on what makes a good teacher and effective teaching. Carol refers to teaching the most out of all five of the participating teachers of this study (Table 5.1) and mentions teaching herself, teaching her students and being taught by others.

**Carol:** “I needed to teach matrices ... I want them to teach me.”

Diana feels you cannot just teach to teach information. As an educator she feels you need to teach so students understand and learn. To her teaching information is to train a parrot to repeat words when instead teaching should be building and training a mind so that it can absorb and apply knowledge in a variety of thoughtful contexts.

**Diana:** “... teachers just teaching. I was so disillusioned, you know, like teachers just teaching and not making any effort to bring the content home to the children.”

To Diana teaching is more than being a teacher and distributing knowledge; it’s about thoughtful consideration of what a child’s mind needs for it to truly comprehend the information at hand and use it effectively.

Sue repeatedly emphasised teaching specifically when she spoke about foundation learning. She drives home the need for teaching and the capture of information and knowledge at these early stages of education, where education is often less focused on broad learning and ingenuity, and more about having to teach so that students remember and learn to repeat so they may read, write and count. Sue emphasises that at foundation phase there is a greater call for traditional teaching; where students have to know their ABC’s and 123’s, rather than understand where those concepts come from or how they work.

In an interesting turn, Tony never refers to teaching, much as he never identified his role as being that of a teacher, the only participant to do so. For Barbara, Diana and Sue teaching is mentioned several times, by each, despite their lack of identifying their individual roles as being “teachers” of information. This is likely due to their understandings and motivations behind teaching being beyond the simple process of knowledge dissemination, raising the question of how Tony identifies his role as an educator; seeing as he doesn’t, even once, commit a Freudian slip with regards to his role as an educator being that of a “teacher”.

### 5.5.2 Learning Styles and Blended Learning

Traditional “talk-and-chalk” (lecture-based) teaching methods favour certain learning styles. This means that teaching arranged in this manner would leave some pupils deprived of teaching reflecting their own personal learning style. By taking advantage of technologies and the possibilities of organizing education in more modern and exciting manners education can be catered to pay attention to students’ individual tastes and necessities. As such it was interesting to investigate whether the acknowledged innovative educators who participated in this study referred to using ICTs to cater for different learning styles and blended learning techniques using technologies. Teaching to the learning styles of the students is supported by White (2016) and Harbon (2016).

To no surprise, 80% of the educators referred to learning styles and 40% of them specifically mentioned the need for blended learning in the classroom environment and how ICTs help them achieve blended learning or gives them the opportunity to cater for every sort of learning style that might be present among the students in their classrooms (Table 5.1).

**Carol:** “Understanding, the pedagogical aspects to the, to their personality traits, even, also their learning styles, it’s very important, learning styles, very important to me.”

**Diana:** “So I realised more and more, technology has got a huge impact that if the kids could see and hear at the same time, you know ... something happens.”

### 5.5.3 Student-Centred Learning

The shift away from the traditional teacher-centred instruction towards student-centred instruction presents the opportunity to learn in more cooperative, collaborative and community-orientated manners. With student-centred learning, students are encouraged to direct their own learning and to work with other students on research assignments and projects that are both socially and culturally relevant to them. Students are encouraged to become self-directed, proactive and self-confident. Creating student-centred learning environments requires the promotion of student engagement, sharing instruction responsibilities, creating unique inquiry-based or discovery orientated curriculum and encouraging a community of students both within and beyond the walls of the classroom.

All the participants show clear indication of strongly student-centred learning. Each of the educators make distinct mention of collaboration, both among students and peers. Barbara and

Tony, however, mention the importance of collaboration far more than the other educators (13 and 12 times, respectively: Table 5.1).

**Barbara:** “... my class is divided usually into four groups ...”

Barbara incorporates group work into social media apps such as WhatsApp, having the class create chat groups for personal and educational support purposes.

**Barbara:** “... we have various WhatsApp groups.”

“We have girl WhatsApp groups, we have boy WhatsApp, we have class WhatsApp.”

“in the one group, that ... which is the class group, we don’t chat. That group is just for information or wishing someone happy birthday over the holidays, but it is not for them to really chat in.”

She stimulates safe spaces for information inquiry or support. In this sense, Barbara is effectively creating unique inquiry-based learning and initiating cooperative learning groups where there is a strong sense of having students lead discussion groups. Barbara is promoting greater opportunity to learn in more cooperative, collaborative and community-orientated manners.

**Tony:** “... some of the lessons would also be collaborative work on something like google slides” ... “collaborative essay writing on google docs.”

Tony, while focused on collaboration among his students, places greater emphasis on collaboration among educators. Tony ascribes his award for being an innovative educator to his drive to collaborate with peers. He feels this extension of learning beyond students and into the realm of peers is what sets him aside from other educators. Tony is very focused on learning for the sake of learning, for the sake of understanding more, being exposed to more. He learns because there is something new to challenge the mind and discover. This internal drive to learn for the sake of learning as opposed to being able to answer a test or write an essay is what sets Tony’s collaboration outlook apart from the other educators in this study; Tony seeks to collaborate so that there is more to learn from and with.

**Tony:** “I would say teacher collaboration is maybe, maybe right at the top of.”

“I believe more to be connection focused and collaboration focused, and learner focused.”

Carol is the other equal mentioner of both educator and peer-collaboration, though did mention collaboration less often than Barbara and Tony. She gives mention to creating both student and peer groups for collaboration and support.

**Carol:** “I created actually a ah, a site, a communication site, collaboration site for the English teachers in the group.”

“I started this group ... a motivational coffee club kind of group.”

Carol, is perhaps the middle-grounder in terms of collaboration, placing stock in both her role as a nurturer of young minds and a developer of resources. She places stock in community and that extends both into her student and peer relationships. Tony more starkly extends his collaboration attempts into that of peer-collaboration. He does, however, still teach lessons in a collaborative manner and exposes his students to collaborative platforms; effectively integrating ICTs into student-collaboration while integrating resource sharing and skill building into peer-collaboration.

Diana and Sue, like Barbara, are more learner-centred in their focus on collaboration. To them, the need to stimulate collaboration is likely more focused on students because their roles as educators revolve more around nurture and care for students.

**Diana:** “... hulle is nou geleer om ... die ‘responsibility’ te vat en mekaar die ... die, die pad te wys. Of hulle lewer kommentaar, hulle kritiseer of hulle, hulle ... 'Instagram' op daai groep met mekaar ‘youtube’ videos of watter ‘website’ ookal hulle ander ... hulle verder kan gaan kyk of om die, om, om die les ... hulle leer mekaar op daai groep.”

*[“... they are now taught to ... take the ‘responsibility’ and show each other the ... the, the way. Or they comment, they criticize or they, they ... they share on the group the youtube or whatever website they can search for further, concerning the lesson ... they teach each other on that group.”]*

**Sue:** “... if you’re doing oral and you have this picture and they’re looking at it, you can divide them of course into little groups, and they can discuss it in groups and somebody can come and report back ...”

But as mentioned in the opening paragraphs of this section, there is more to student-centred learning than sheer creation and encouragement of collaborative work and platforms. Student-centred learning is also about stimulating critical thinking, encouraging communication and creating interaction.

All the educators in this study realise at least one of these points in terms of pedagogical application. 80% of the educators make mention for the need and personal desire to stimulate

critical thinking (Table 5.1), with Diana mentioning the need stimulating critical thinking in 4 different instances (Table 5.1), while the other educators mention it only once.

**Diana:** “I can see that critical thinking skills, really, develop in our students. And then make them, instead of just being sheep that are following, they now can stand and form their own ...”

Carol and Diana both mention the need for collaboration for communication over 5 times each while Barbara mentions the need for interaction during lesson the most out of any of the other educators (Table 5.1).

**Barbara:** “... as long as there’s interaction, I want it ... I don’t want it just to be me speaking all the time or I’m the only one. I want them involved in the lesson all the time.”

“I always plan my lesson that way, because, even if it is going to be to, if it’s going to be partners or group work or whatever, as long as there’s interaction”.

Despite the distributed factors to which each of these educators are paying attention to encourage student-centred learning, the fact that they are focusing on at least one of these aspects clearly indicates a strong move towards student-centred learning where ICTs are integrated into education. Each of these educators shows strong consideration for self-driven and inspired teaching both in their personal lives and those of their students. They expose themselves to ICTs to make collaboration, learning and uniform growth not only easier but more fun, more modern and more thought stimulating; teaching students to learn new methods, new information, team work and the importance of community all in one. What became evident from the interviews is a new shift to the consideration of peer-centred learning as well; teaching other educators how to gain skills, share work and work together for their own good and that of their, and other educators’ students.

#### 5.5.4 Enjoyment

Fun while learning has a positive effect on motivational levels, determining what is learnt and how much of this learnt information is retained both short- and long-term. Learning thus requires repetition and dedication. Knowing learning needs an element of dedication and returned attention and revision; if the experience is fun, students would stay curious and keep coming back for more.

Where learning isn’t fun, it won’t be effective. Studies such as Garner (2006) have found that students recall statistics lectures with greater ease when the lecturer added jokes about relevant topics. Neurologists have for example also found that fun experiences increase dopamine levels,

endorphins and oxygen intake – all things that promote learning activities and experiences (Willis, 2006). In a study for the Journal of Vocational Behaviour, Tews, Michel and Noe (2017) found that employees are more likely to try new things if their work environment is fun. These are but three of thousands of studies surrounding the benefits of adding fun into learning and what is amazing was to see that this factor was highly important and emphasised by all the educators in this study. Fun, enjoyment, pleasure, excitement – refer to it as you may, the essential ingredient in teaching and learning would thus be relevance and engagement; a factor all these teachers recognise and actively employ.

**Sue:** “... need to do thing sometimes over and over again in a more fun way.”

Sue, being a foundation-phase educator, is seen to emphasise repetition, but in the same mindset recognises the need for fun to maintain attention and interest. She realises children need to commit information to memory because they need to know (learn and memorise). She, however, realises that sometimes for content to sink into minds, the content needs to be taught in a fun manner. Small children remember what they like.

**Tony:** “I try and make all learning relevant for the students.”

Tony uses technology in his teachings because it is an element that most of today’s children enjoy and use in a variety of context; thus, using it in class for educational purposes immediately relaxes students because they know the device and applications they are using, sometimes more so than the educators themselves. In this manner, making the teaching relevant generates greater engagement and enjoyment, ultimately stimulating better learning and retention of information.

**Barbara:** “I think that the advantages [of using technology] definitely outweigh the disadvantages, because I like it when the kids are engaged, and they are excited, and they are creative.”

What these educators bring to the fore-front with their insistence for enjoyable learning is that if educators don’t spend the time to make the learning experience a compelling and enjoyable one, it can’t be expected of students to spend any time on the work, and as an educator you need to facilitate the path to encouraging student-centred learning. All five of these innovative users of ICTs in the classroom exemplify the fact that unlocking engagement in a learning environment is not some dark art known only to mystics and seers – it’s a lot simpler, sometimes as simple as letting children use the technologies they know to learn with or providing them with resources that are engaging or create a sense of excitement.

What needs to be noted is that the teachers, despite realising that using ICTs to teach can enhance learning, it does not automatically equate to improved education and that teaching the students to use the ICTs should be done in conjunction with teaching them to use it responsibly.

**Tony:** “I don’t actually see technology as necessarily automatically improving uhm education.”

Tony, for example, wants improved learning for his students but clearly states technology is not necessarily an improved manner for students to learn, simply a new way, a different alternative to the old.

### 5.5.5 Ubiquitous Learning

Only 60% of the educators in this study made mention to the importance of ubiquitous learning; the understanding that education needs to extend beyond the walls of the classroom, be this by bringing the world in or taking your students out into the world. For those who mentioned ubiquitous learning, it was always mentioned in conjunction with the use of social media, technology. They use technology so that children might understand their own broader context, and that of technology and social, across the globe and how this might affect them in the future.

**Carol:** “I wanted them to see world affairs, particularly Twitter was used to see world affairs, hash tags, how to particularly use hash tags, ohm 11 Instagram was a way for them to understand visualisations and also understand that they are part of a visual society.”

**Diana:** “I wanted to bring the world into my classroom ... So when my child leaves my classroom, and go out into the world, he or she will be able to use what, uhm, they’ve learned from me.”

**Tony:** “we have to implement technology in the classroom in order to prepare students for the future. It’s not, it’s not making learning better or not, I think. I think I’m maybe a bit cynical now, but I’d actually just created a new, a new context book in which students have to learn new skills and if they don’t, they will be left behind.”

## 5.6 THEME 4: TECHNOLOGIES

Teachers use mobile and immovable ICTs in their teaching and learning. Contrary to Tella et al. (2007) who state that the barriers to using ICTs in the classroom contribute to teachers having a negative attitude to ICT integration, the innovative teachers do not have a bad attitude towards integration of technology and pedagogy but rather embrace the integration into their teaching and learning.

### 5.6.1 Immovable Technologies

In this section only, those technologies that are immovable; meaning they are bound to use in the area where they have been set up, will be discussed. For the purposes of this thesis, those technologies include Desktop Computers, Projectors and Interactive White Boards.

Computers allow for teaching- and learning-software of greater functionality to be loaded on. This is due to computers having larger storage and faster processing speeds. Computers are always plugged into a wall and receive a continuous power supply. In a class where students have access to computers, learning management systems, such as Moodle, ChalkBoard and Vula can be implemented. This introduces the ability for students to download learning material as well as complete and upload assessments online, adding to student- and teacher proficiency, a functional concept already being very successfully employed in South African and globally. It has, however, been realised that many students in South Africa come from backgrounds where they may have had access to mobile phones, but never a computer.

**Diana:** “Doesn’t matter in which way you do it because if you look at the masses, they’re coming from ... they’ve never seen a computer, so for me, it was important here to take the child to the computer, let the child switch the computer on, and learn how to use the computer and pre ... present his own ... you know ... produce his own work.”

For South African students especially, learning computer-skills at school is now an invaluable lesson as nearly all jobs involve clerical or technical exposure to computers. Besides the fact that students will require these invaluable computer skills in the work place, teachers also need computers to research, create and collate teaching- and learning-materials. Being able to use technologies such as computers, making teachers and students comfortable with these immovable technologies generates a sense of capability, creativity and connection.

**Diana:** “It was almost as if my creative side was ... I, I’ll almost ... I’ll use the word ... unleashed.”

Having access to computers and feeling comfortable with using them, and the applications on them, allows teachers to create, re-create, expand and constantly change resources. Diana, for example, was able to take pre-existing question papers she obtained during her teaching years from the House of Representatives and alter them to better suit an inclusive South Africa. She could take the old and re-purpose and update teaching and learning materials.

All the teachers in this study actively mentioned the use of computers for teaching their students (Table 5.1), with Diana and Barbara placing the greatest emphasis on their usage. For Diana, who fell head-over-heels in love with computers when she was eventually forced to learn how to create her own resources on them, the use of computers in her teaching dominates over every other technology (Table 5.1). She saw the use of computers rise very quickly throughout her life time and knows how essential computers are in any working person's skill-set. Diana is now considered an innovative educator and stands as evidence that where there is a little curiosity, the provision of resources (and training) technological innovation in teaching can be sparked, and where a teacher is passionate, students often follow suite.

Interactive White boards are a stationery technology form, which can be used in a static manner; where information is displayed on the screen, or in an interactive manner; where students are able to go up the board and complete tasks on the white board both in a real world physical- and digital manners. White boards, even with only the simple fact that they are slightly more interactive than traditional chalk boards, captivate students and keep their attention on the teaching at hand for extended time frames.

**Diana:** “I didn't have to tell any person to keep quiet while I explained [the work on the interactive white board].”

Carol, despite only mentioning the Interactive White board twice (Table 5.1) can be argued to understand the value of this interactive tool the most. She mentions using a 360-laptop and projector together as her interactive makeshift “White Board”. She realised the impact of interactive technology and sought to use the technologies available to her to generate her own form of interactive technology; showing that once technology is available to educators – even basic stationery technologies such as projectors – and those educators are aware of their students and the benefits to teaching and learning that technology can have, creativity and ingenuity can be sparked in educators. And once again, if this change in mindset can occur in older generation educators, it can stimulate the same and perhaps even greater results in the yet unbound minds of their students as well. Providing even the basic space-bound, un-interactive technologies such as computers and projectors, and even basic space-bound interactive technologies such as Interactive White Boards to classrooms, can generate creativity, innovation and better teaching and learning practices and materials.

## 5.6.2 Mobile Technologies

Mobile Technologies, though playing on the term “mobile phones”, will refer to the use of movable technologies such as laptops, cell phones (predominantly smart phones) and tablets both inside and outside of the classroom. Being personal assets, as opposed to necessarily being school property, these are assets that are purchased by schools, students and teachers alike. These portable technologies thus offer schools, students and teachers the opportunity to stay connected, updated and involved in teaching and learning beyond the physical confines of the classroom.

The mention of laptops among the educators in this study is far more equitable than computers (Table 5.1); with Carol mentioning their use the most (twelve times), and Tony the least (four times). The more uniform distribution of the mention of laptop use can be linked to the fact that the teachers only ever mention the use of laptops when they refer to themselves buying, being provided with and using laptops to generate material and present lessons with. While all the teachers mention their use of the mobile technology what is interesting to note about the difference in the number of times, they use it is that it can be linked to which other innovative technologies and applications they are using in their classrooms for teaching and learning purposes. Carol, for example, is a strong promoter of social media, specifically blogging and has created several Blogs for both her students and peers to use, blogs she would have to manage in her free time and would thus be more likely to access from her laptop after school hours and outside the school itself. Tony on the other hand is more concerned with technologies of the future and though he does use laptops, they are not the focus technology or innovation in the fore-front of his mind to mention in terms of education. To Tony the technologies of the future, such as Google application, 3D printers and Virtual Reality are what needs mention, no longer the devices that connect you to these applications.

Smartphones are widely used today; having far transcended the cell phones of the 1990's and 2000's. Smart phones now have integrated computers and colour screens and can run applications that were previously only available to the elite few people who could afford a desktop or laptop computer. Besides being able to fulfil most of the roles computers and laptops can, they are far more mobile and have cameras and microphones to rival some of the best commercial cameras on the market. As mentioned under the “Defiance” theme, all the educators that participated in this study promote and mention their promotion towards the use of cell

phones for educational purposes because the positive effects on the students were outweighing the possible negatives.

Despite all five educators stating they use audio equipment in the questionnaires, only Carol actively mentioned audio recording pupils during lessons (Table 5.1). Video recording was however mentioned in each of the interviews, and in more than one instance (Table 5.1). From combined examination of the questionnaires and interviews it became apparent that both digital hand-held camera devices and smartphone cameras were employed by educators to make video recordings.

**Diana:** “I used the video camera to record.”

**Carol:** “... used video recorders, we used cell phones in order also to record.”

Tablets are small portable computers that accept input directly on to its screen rather than via a keyboard or mouse. They usually have a substantially larger battery life than smartphones, as well as the advantage of a larger screen; which laptops usually offer. Tablets are also less personal than using smart phones in class. All these factors make tablets more interactive and visual. Despite their superior capabilities for group activities, few of the teachers own and use tablets in their classrooms (Table 5.1).

### 5.6.3 Social Media and Search Engines

Each of the educators in this study make use of social media for teaching and learning, though be it with very different functional applications in each case. Owuor et al. (2013) agrees that handheld devices can alleviate the challenges of limited resources.

As mentioned earlier, Carol heavily focuses on Blogging in her teachings. She uses this platform as more than a manner to put her story out to the world. She uses blogs to connect with her students, to keep them up to date and interested in the work she was teaching them during lessons and finally to connect educators to one another.

**Carol:** “I’ve started this blog because they were writing, they were singing ... And I uploaded their music, their songs to their blog.”

“... the kids received such validation for their work [knowing they were going to be placed on the blog].”

“I started a teaching blog.”

What was interesting to find was that Diana was achieving the same objectives with her students but was using a completely different social media platform to do so; mentioning the use of WhatsApp, more than any other teacher. With the use of WhatsApp groups and personal WhatsApp chats Diana found she could keep her students connected, extend her classroom and ultimately care for the overall well-being of her students; something she would not be able to do without extending teaching beyond the walls of the classroom.

**Diana:** “... students were speaking to me privately, it opened up a whole new level of ... or a whole new level of our relationships.”

Though mentioned less times (7 times: Table 5.1), Barbara uses WhatsApp in the same manner and to achieve the same goals as Diana.

The comments made with reference to social media platforms such as Twitter and Facebook were revealing. Tony brings up the well-known fact that children often hide behind social media fronts and this allows the use of these social media platforms to change the children using them. Carol, specifically mentioned that she doesn't use Facebook in her classroom for this exact reason (Table 5.1). Tony on the other-hand opted to use this dissociative power that social media seems to have over users to his advantage.

**Tony:** “I think it's too personal. Students aren't themselves if you use social media in class. I've done things like use fake profiles, so I've asked students like to create a Twitter profile for a Shakespeare character, for example.”

In having students generate fake profiles for characters they were handling in class, he promoted the full embodiment of the characters the students were creating a Twitter profile for. He used the negatives aspects of the social media platform to the full advantage of his teachings.

The only other two social media platforms that were mentioned were Pinterest and Instagram, both of which were used by Barbara and Carol, respectively, as mere search engine tools for creative teaching concepts and resources. These two social media platforms were not used for innovative teaching and learning but were rather innovatively employed for resource creation.

Another platform that was mentioned in the use of searching for ideas and resources – as well as sharing them – was Google. All the educators use Google for one or more functions. Carol and Sue (mentioning Google the least out of the participants) mention using google as a search engine to look for ideas, information and resources. Barbara and Diana, each mentioning the use of Google three times (Table 5.1), mention it with reference to searching for information

and resources, sharing resources with peers and students via Gmail and using Google Applications such as Google Sheets in collaborative group assignments. Tony refers to using Google and its applications the most out of all the participant educators (12 times: Table 5.1). He mentions the use of these applications specifically with reference to group collaborative projects and states he uses these applications because they are “low on data”, meaning he can encourage their use even if children would be forced to use their personal smart phones and data to complete school tasks.

#### 5.6.4 Future Technologies

An interesting observation that needs to be mentioned is the use of technologies that are not highly influential to the public right now. Only Tony mentioned the use of such technologies in teaching and learning at school level, namely 3D printing and Virtual Reality (Table 5.1).

Tony can arguably be considered the only teacher among those who participated in the study to be exposing his students to the technologies of tomorrow instead of focusing on teaching with the technologies that are the hype of current social standing.

Virtual Reality is something that is only now reaching use to the general public with Museums creating virtual tours for prized possessions that would normally be kept from the public eye for preservation purposes and gaming devices such as PlayStation starting to integrate VR-Headsets into gaming. 3D-Printing is, similarly, a tool that is not currently popular for public and private use but is quickly catching momentum in fields such as engineering and architecture. Both digital technologies will, like the computer did roughly 20 years ago, infiltrate the work and personal lives of people in the future and as such Tony finds greater purpose in teaching his students about and with these future tools.

**Tony:** “... so what I’m trying to say is that it’s almost hard to know how your use of technology might benefit the learner, ten twenty, thirty years from now. For me, I want to expose kids to things like 3D printing and VR, not because it’s relevant right now, but because I want them to walk into the, into a company ten fifteen years from now and go, ‘Oh, I’m familiar with this. This doesn’t freak me out, this doesn’t ... I don’t feel alienated by this technology ...”

This notion of preparing the minds of today for the world of tomorrow falls deeply into discussions of preparing students for what has been coined as the “fourth industrial revolution”. The technological world as we know it today is yet again on the precipice of change. Technological advancements are moving towards artificial intelligence, Automation,

ubiquitous mobile super-computing, robotics, self-driving cars, neuro-technological brain enhancements, genetic editing, virtual reality and much more. The evidence for dramatic change is on the horizon. But while anything that can be measured or is based on rules will likely be done better through machines and automation in the future, all is not lost and teaching students about these technologies and how to use them creatively might very well save them the burden of being unemployed in the future.

An article published by Brown-Martin (2018), brings to light three crucial areas where humans beat machines that are key to future job creation:

- **Creative endeavours**

Encompassing everything from scientific discovery to creative writing and entrepreneurship.

- **Social interaction**

Robots simply do not have yet have the emotional intelligence humans do. Jobs in social science fields and possibly new fields such as Human and Robot Relations Management in Business will still have to be done by humans.

- **Physical dexterity and mobility**

Millennia of hiking mountains, swimming in lakes, rivers and oceans, and dancing practice has provided humans with extraordinary agility and physical dexterity. There will always be physical jobs that require range of motion and strength along with the ability to make split second decisions that robots simply are not capable of performing.

Brown-Martin (2018) also states that “It’s beyond doubt that education is at the heart of preparing present and future generations to thrive. As a result, it’s vital that we have an education that develops human potential rather than pits it against machines. An education system designed for an industrial economy that is now being automated requires transformation, from a system based on facts and procedures to one that actively applies that knowledge to collaborative problem solving.”

## 5.7 THEME 5: TIME

Time was an unexpected theme that arose from further analysis of the interviews. Time was mentioned with regards to five different aspects of technology-usage for teaching and learning purposes.

80% of the teachers mentioned having to spend time to search and create resources (Table 5.1). The literature review confirms that preparing lessons that incorporates technology and pedagogy is time consuming (Uibu & Kikas, 2008). Barbara and Sue, for example, spends “a lot of time” sourcing information to generate creative lesson plans and find creative multimedia to engage students during lessons.

**Barbara:** “I find a lot of things, like I’ll find an activity, or I’ll find a clip for adjectives or for adverbs for language learning, then I’ll extract.”

**Sue:** “... so I would go onto the internet like spend many, many hours being on the internet and just googling things.”

“I just would spend hours and hours and holidays and long nights just uhm looking for ... things that you know I could use in my class.”

“... it takes a lot of time.”

**Carol:** “I realised I spent so much time now trying to build content, or trying to work around ohm, creating the space online for them.” (pg. 24)

For Diana, the time taken to develop the resources needed to teach and learn effectively with the integration of technology has cost her dearly at times.

**Diana:** “I felt so ... so bad because I remembered sitting up, you know, I could see my child standing in the door saying, ‘Mummy must you really work on a Saturday? Mummy must you really do this now, because I was driven to create this thing ...’”

Despite the initial time cost involved in the search for and creation of new tech-savvy resources, Carol made a statement that shows this is but an initial trend.

**Carol:** “I admit it took a lot of time, but I also know that, look in that five years I created so many lessons that I was able to re-use and re-work.”

Carol realised early on in her career that time well spent on searching for and developing resources would later result in time well spent with student. Her statement also brings to light the realisation that collaboration and sharing, advantages offered to those who can use ICTs and are connected to the internet, could decrease the amount of time it would take new teachers to find and develop resources to use for teaching and learning with technologies.

Tony is the only educator who does not mention the amount of time spent looking for and developing resources. He does however, in conjunction with Diana and Sue, refer to the fact that time needs to be taken to evaluate the relevance and appropriateness of using certain technologies and resources for teaching and learning purposes. Hennessy et al. (2015) confirms that the sharing of best practises gives teachers ideas as to how to integrate ICTs to enhance their lessons and how to overcome challenges.

**Diana:** “You need to be able to sift that and separate the wheat from the chaff ...”

**Sue:** “... it’s not just seeing something and taking it and downloading it. You’ve got to see that its age appropriate.”

**Tony:** “I want to expose kids to things like 3D printing and VR, not because it’s relevant right now, but because I want them to walk into the, into a company ten fifteen years from now and go, “Oh, I’m familiar with this. This doesn’t freak me out, this doesn’t ... I don’t feel alienated by this technology”, so, so it’s hard to know what exposure for what kind of technology does actually have long-term benefits.”

“... it’s not making learning better. BUT technology is a new context book in which students have to learn new skills and if they don’t, they will be left behind.”

These sentiments are supported by the literature review (Brown-Martin, 2018) stating that transformation in education is important to prepare the students for the future economy that is being automated and applies knowledge to collaborative problem solving. Kivunja (2014) suggest that a paradigm shift is important to prepare students for the future world of work by developing certain skills for the 21<sup>st</sup> century.

Time was also mentioned with reference to training (Table 5.1) both themselves and their peers and yet was mentioned with positivity and willingness in each instance. Barbara offers up her own time to attend workshops and conferences as well mentoring future award nominees. She spends time investing in her own growth and those of her colleagues; seeing the time as well spent.

**Carol:** “I used to sit with her for hours to show her what I was doing.”

Carol also mentions that time was a factor that had to be considered for using technology when there was limited time to prepare students for assessment when they had gaps in their education.

**Carol:** “It was a bit difficult to even infuse technology at that point in time because of the required time ... to adjust.”

She realised it takes time to get people comfortable enough to use a new tool, even before they use it to learn something from it, and this must be considered when trying to use ICTs in a school where the children might be completely unfamiliar with the technologies planned for teaching and learning purposes.

Like Barbara, Sue gives of her time freely to share with colleagues. She also knows the value of having not only training but technicians who can sort out technological glitches faster and more effectively, so that educators can focus on using the tools at hand rather than trying to make them function as they should. “logging in problems” were brought up in Barbara’s interview.

**Sue:** “... then Noah will come. Then I’ll just say, “Noah, my internet is not working and then he will sort it out.”

The mentioning of this finer detail is quite an important one. It extends the need for training into support and goes to show that even where educators are technologically innovative, teaching time can be wasted on system errors that are beyond the understanding and importance of the educators. This quote shows the need for training and support if the resources are to be used with timeous efficiency.

There were only two instances in which the use of ICTs in teaching and learning were mentioned to be a waste of time. The first instance was mentioned by Barbara. Barbara initially had to walk her students to a different class to use technological resources. This need to move her students from her own classroom to the one where there were technologies for her to utilise as she saw fit that consumed her effective teaching time. In this manner it was not the use of the technology itself that wasted time but rather the lack of easy and organisable access to technology at her school that wasted effective teaching time. The second instance was mentioned by Sue.

**Sue:** “Because I couldn’t see myself wasting time, then the board doesn’t work, then, then the electricity switched off you know, or things like that.” (pg.10)

Sue mentioned how planning lesson with the use of technology could turn into a wasted lesson when for instance unexpected power failures or load shedding would affect the school. She also mentioned the waste of time associated with functional aspects of the technology not working; which as discussed earlier could be eliminated with the introduction of on-site technicians for each school where technology is implemented for educational purposes.

In all, this chapter gave a detailed overview of the ways in which Tis are formed from internal attitudes, beliefs and feelings, how ICTs effect TI and vice-versa as well as how and why certain technologies are used above others in the educational environment. The next chapter concludes the research by drawing together the various findings through returning specifically to the research questions articulated at the start of the project.

## Chapter Six

# CONCLUSION

### 6.1 INTRODUCTION

This chapter concludes the study and it summarises the findings regarding the integration of new technology in the language classroom and innovative teacher identities.

The investigation found a range of factors and elements that link teacher identity and the innovative use of ICTs. One of the major elements that emerged, was that teachers who care about the whole person of the learner and are driven to enhance the learning experience and learning outcomes of their students, appear to be most able to integrate technology and pedagogy innovatively. The researcher found that according to expert teacher testimonies, good practises can be taught, modelled and learnt; however, the internal motivators can be encouraged, but are certainly less easily taught. Further, the study found that the participants all had in the course of their career and in taking note of the digital transformation globally, made a positive mind shift towards integrating technology and pedagogy for teaching and learning.

### 6.2 SUMMARY OF STUDY FINDINGS

In order to achieve the aim of the study, four questions were proposed (see Section 1.3) The findings are presented in the following subsections organised according to the research questions, to indicate in which ways the aims of the study could be met.

#### **6.2.1 What are the self-reported experiences of teachers who use ICTs innovatively and creatively in promoting language learning?**

Teachers reported on their experience by pointing out that the students of today are mostly ‘tech-savvy’. ICTs are therefore used in teaching and learning to stimulate thinking and spark ideas. Students, they reported, become active knowledge producers by first getting exposure to possibilities and then producing their own e-Content using texts, images, video, audio and other media.

The participants report that their students' results improved, especially when ICTs were used to extend the classroom in equipping students to learn at their own pace and in preparation for examinations. ICTs are enabling tools for collaboration and communication, enhancing learning. The participants showed that they understand the integration of the technological, pedagogical and content knowledge for effective teaching and learning.

In using ICTs, these teachers taught students new skills regarding the use of technologies to gain knowledge and access information, and this has contributed to the improvement in the critical thinking of students. Students have also been taught responsible use of social media and have not abused the access they have to the teacher after hours.

ICTs allow teachers to spend more time with students and build good relationships with them. Students are more co-operative if the teacher has a relationship with them. This enables better classroom management. In contrast, the participants report experiencing negative reactions directed toward them from teachers who do not use ICTs regularly for teaching and learning. Also, teachers who use ICTs innovatively report feeling frustrated and disillusioned because of their colleagues' slow rate of ICTs adoption for teaching and learning. Even though these teachers experience a lack of support, they are not deterred by challenges and naysayers and do everything in their power to overcome challenges and barriers. The participants are willing to and often also did defy and disrupt the systems in place, in the interest of the students.

Yet, once the teachers have proven success and were acknowledged for innovatively integrating technology and pedagogy, they were given more scope and were allowed to use various technologies previously viewed with suspicion. The opinion of these teacher regarding ICTs in the school and its use for teaching and learning is valued. Technologies and classrooms equipped with technology that were not used by other teachers, were given to the teacher who used ICTs innovatively. After receiving awards, the teachers became a source of inspiration to other teachers and were mentors who shared ideas and best practices with other teachers. The drive and passion for change is completely evident in the innovative teacher.

### **6.2.2 What do teachers find inhibiting in the use of ICTs in language teaching and learning?**

Teachers who participated in this study, found external factors such as resources, access, data and policies more restrictive than internal factors. The lack of ICTs such as data projectors and laptops for teachers or computer labs which the students can use or even connectivity to harness

online information and collaboration hamper the effective integration of ICTs in teaching and learning. At some schools the resources are outdated or in need of repair. Many of the students in sub-economic communities do not possess their own personal devices which prevents teachers from setting tasks that require individual use of a device. Such lacking of resources, however, contributes to collaboration because students then need to share devices.

Connectivity that affords access, is another challenge the participants of this study who teach in South Africa, mentioned that they often have to contend with. Connectivity to the internet is unstable and unreliable and can be restricting teachers from incorporating online activities in the classroom activities. The process of getting a full class to log onto the computer and then enter a password to get connected to the internet may be time consuming, because the connectivity is often poor, and all students cannot log on simultaneously. Struggling to gain access to the internet is a restrictive factor because teachers cannot waste time getting students connected to the internet since they have limited time in a period to teach the lesson. Also, students may not have access to the internet at home.

Further, the study has highlighted expert teachers' experience that restrictive policies stifle innovation and the use of ICTs for teaching and learning. A cellphone, which is one of the cheaper ICT devices that the students can possess, can be integrated effectively for student engagement in a lesson. A source of frustration and demotivation for many teachers is the no-cellphone policy of the school. Added to this, to use the cellphone requires data, which is expensive, and students do not want to use their own data to perform school tasks. Further, the school culture of not having ICTs as a priority and ensuring an enabling environment that will support teachers, hampers the integration of technology and pedagogy.

Added to this, teachers reported time as a major inhibitor to the utilization of ICTs for teaching and learning. It takes time to search for and evaluate appropriate online content. Also, creating and preparing creative lessons can be time consuming. Further, professional development and growth demands time – to be life-long students in a way that better equips staff to teach effectively is not a quick, once-off process.

### **6.2.3 What do teachers find inspiring and facilitative to learning in the use of ICTs in teaching language?**

Incorporating ICTs into teaching and learning, according to this study's participant teachers, enhances the lessons and makes learning fun and attractive for the students. ICTs enable

teachers to create lessons which are student-centred, catering to the students' learning styles. Further, teachers can spend more time with students and build good relationships that enable attention to the whole person in developing students.

Students are engaged in the lesson and want to attend classes, and this reduces the problem of a high absentee rate of students, especially in the senior classes. Further, a positive change in the students' behaviour was observed. Students were better behaved, more co-operative and more responsible in looking after the resources. ICTs in teaching and learning, according to the participants, contributes to the development of the 21<sup>st</sup> century skills of collaboration, communication, critical thinking and communication.

Further, participants reported that the use of ICTs contribute to ubiquitous and autonomous learning. Teachers create content that the students can access and download at any place and anytime using any device. In this manner education is extended beyond the four walls of the classroom. Not only is content available any time, but the teacher is as well. The use of social media contributes to the communication between teacher and students, teacher and parents and students with students. Social media also plays a role in sharing, viewing and gaining knowledge. The use of ICTs in teaching and learning capacitates networking and the sharing of ideas and support. Students have access to a plethora of information which enables them to gain knowledge.

The use of ICTs enabled activities and tasks the teachers had never imagined or thought possible before. Virtual reality enables students to go on excursions throughout the world without leaving the classroom. Students also have access to a larger authentic audience, which makes them part of the global citizenship. Cross-curricular problem-based learning and collaborative projects can be implemented and even published online. Technology is a tool that can be used to reach the 21<sup>st</sup> century student and prepare him/her for the fourth Industrial revolution referred to in chapter four.

#### **6.2.4 How does the use of technologies shape the professional identity of teachers?**

The teacher's personal self cannot be separated from the professional self. The LTI is extended and expanded due to the new literacies of digital technologies such as the internet, mobile phones, digital cameras and recorders. Methodologies and pedagogies of teachers have recently changed significantly to include digital materials and tools. With the change in methodologies also comes a change in the role of the teacher as facilitator of developing knowledge; the

teachers who participated in this study reflected on how they had a role of supporter, mentor, coach, guide and motivator. The LTI is thus proven not to be singular or static, but made up of various components that change with the environment. A teacher with a strong LTI motivates and supports other teachers to experiment with seeing the curriculum as a guide to what needs to be taught, rather than simply how to teach it.

Teachers who understand their own identity in using ICTs, are said to better support, enhance and extend their teaching and the students' learning. If teachers know and understand their identity, they are more innovative. The observation this study has made, finds that the teacher who understands the LTI is not afraid of using ICTs and is willing to try new approaches to teaching by incorporating ICTs in the lessons. Teachers seek out fresh ideas including ICTs for teaching and learning. The new methodologies are implemented even if it means going against the institution's policies. Additionally, these teachers are future focused, cognisant of preparing their students for the fourth industrial revolution thereby developing the minds of their students for tomorrow by incorporating 21<sup>st</sup> century skills such as communication, collaboration, critical thinking, creativity and digital literacies to teaching and learning. Some reflection on the part of the teacher is needed. Teachers reflect on their teaching methods since methods have changed over the years. Teaching shifts from teacher-centred to student-centred learning.

A passionate, committed, knowledgeable teacher is, according to my analysis and interpretation of the narratives generated in this study, the most instrumental factor in effective instruction, since such a teacher will facilitate the acquisition of knowledge including using ICTs (Leu & Kinzer, 2000). An identity is formed by the sense of belonging, as well as through the collaboration, sharing ideas and support that exist between the members of the COP or PLN, as mentioned in chapter 5, including the virtual communities. The knowledge, beliefs, values, practices and skills of a teacher are integral in the formation of the LTI and the use of technologies for teaching and learning.

A teacher with a strong LTI will also use ICTs to interact with the students outside the classroom situation, listening to them and thus strengthening their relationship with the students. The TI of caring and concern often leads to teachers going beyond the call of duty. The teacher's main focus is the students and getting them to reach their potential.

Teaching means different things to different teachers as defined by their personal TI. Also, differences are seen in how teachers view their professional identity in consideration and in application of ICTs in teaching and learning.

If there is a move towards student-centred learning, there can be a move towards teachers taking ownership of their own professional development, especially e-Learning and teaching, seeing that we are moving into the fourth Industrial revolution.

If the goal is to develop and prepare students for the future, teachers should incorporate 21<sup>st</sup> century skills into their teaching and learning and prepare students for the future world of work. The mind-shift cannot be forced onto teachers. It could, however, be a requirement in appointing teachers – a feature that can be assessed in the interview. Teachers have to reflect on their teaching and decide how they will move forward on their development journey.

The interviews made it clear that the education department has to support teachers on this e-journey which can lead to more innovation if it comes from the teachers themselves. This study has provided evidence that if teachers take ownership of their development, there is an improvement in the technology and pedagogy integration which leads to innovative lessons.

### **6.3 RECOMMENDATIONS**

Based on the findings of this study, the following recommendations can be made for improving practices in ICTs usage in language classrooms.

- Get teachers comfortable with ICTs by providing training and mentoring especially to the pre-service and novice teachers, as well as to those who are afraid to embrace ICTs in the classroom. Once these teachers feel confident in the use of the technologies, they can progress to produce their own content and eventually integrate technology and pedagogy innovatively. By reaching teachers as they enter the profession, we may build up a strong corps of innovative teachers going forward.
- A professional development program is needed to enable teachers to progressively advance in the integration of technology and pedagogy to enhance teaching and learning
- Reduce the factors that hinder the utilization of ICTs for teaching and learning by creating an enabling environment which includes the availability of resources and connectivity.

- Appoint a resident technician or ICT specialist to assist the teachers at the school. Teachers currently do not have training in the ICT hardware and, therefore, when there are problems, they cannot fix them without expert support.
- Policy changes and re-evaluation are needed to integrate technologies effectively into the teaching and learning process. The education department and the institution should revisit the policies so that they do not restrict technology and pedagogy integration.
- Teachers should be encouraged to tell their stories so that other teachers may learn from and be motivated by it.
- A conscious effort raising teachers' awareness of their professional identities, and developing a positive integration of ICTs in teaching practice could be done by sharing the narratives of innovative and expert teachers more widely.

#### **6.4 LIMITATIONS AND SUGGESTIONS FOR FURTHER RESEARCH**

On the basis of the findings of the study as presented in chapter 4 and 5 and summarized in this chapter a few limitations are noted. Firstly, this study's findings are based on the interview narratives of a small sample of teachers who actively use ICTs for teaching and learning. Secondly, as the number of participants was small and the qualitative narrative method for the analysis of the interviews was used, it is not possible to regard the conclusions on the grounds of these five teachers, as broadly generalisable.

However, although the small sample may limit the generalization of the research findings, the findings do suggest a few interesting phenomena and directions for further research, specifically in a relatively under-research context within the South African regional education systems:

- Future research could consider looking at the association between teacher identity and teacher technology use as the teacher identity may change depending on the resource availability and training.
- In the future, teachers with less experience in using ICTs in their work should be studied as their ideas, problems, fears and difficulties might be different to those who are ICT-skilled and confident.
- To be able to compare the opinions of teachers of different perceptions of teacher role and identity in detail, and work out more generalised models based on them, future researcher can consider using a combination of qualitative and quantitative methods.

- Analysing teacher identity being influenced by how and why teachers choose to care for their students could be a further focus for a study even though one cannot quantify the internal /intrinsic motivational factors.

Future researchers can also consider exploring student-centred ICTs investigation by researching the impact of innovative teaching practises on students in South African schools.

Longitudinal research should be done to see the effect of time, sampling, and context.

The sample size could be larger, to include the preparation and use of technologies for the fourth industrial revolution.

We are currently experiencing what has been termed the “fourth industrial revolution”. Teachers need to prepare their students for the future world of work. Integrating technology and pedagogy innovatively will enhance teaching and engage the students. Teachers who understand their professional and personal identity are not afraid to venture into the unknown possibilities of ICTs for teaching and learning. These teachers will try to overcome barriers that prevent them from using ICTs effectively and efficiently. The innovative teachers are reflective of their teaching, they want what is best for the students, and they try to make learning fun. The teachers who understand and accept their teacher identity, take ownership of their own professional development to remain current and aim to be the best they can be in delivering quality education to their students. This study has shown, qualitatively, that a link can be made between the innovative teacher identity and proper integration of new technologies in the language classroom for teaching and learning.

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# APPENDIX A: QUESTIONNAIRE

Questionnaire link: <https://goo.gl/6GgyqR>

QR code:



## MTeLL Questionnaire

Integrating new technology in the language classroom My name is Gail Valentyn. I am a student on the Masters Program at the University of Stellenbosch. Would you please be so kind as to fill in the questionnaire. The data collected will be used for my Masters thesis which focuses on the innovative uses of technology by language teachers to enhance teaching and learning. All information will be confidential. Answering this questionnaire should take you about 20 minutes. Your input is really important for my study. Thank you for your collaboration. Please answer the questions as accurately as possible.

### 1. Name

*Enter your answer*

### 2. Surname

*Enter your answer*

### 3. Pseudonym

*Enter your answer*

### 4. Age

- 20 - 29
- 30 - 39
- 40 - 49
- 50 - 59
- >60

## 5. Teacher's Educational Trajectory

Please provide information on where and when you had the following education: Primary education: school – area/town; dates; language-of-learning e.g. Ashley Primary School, Pinetown, Natal; 1976-1982; dual medium school (Afr/Eng), attending Afrikaans stream

*Enter your answer*

## 6. Please provide information on where and when you had the following education:

Secondary education: school – area/town; date; language-of-learning e.g. Vredendal High School, W. Cape; 1983-1987; Afrikaans

*Enter your answer*

## 7. Please provide information on where and when you had the following education:

Tertiary education: which institutions, which qualifications, dates; language-of-learning e.g. 1. University of the Western Cape, BA, BA Hons (Linguistics), Secondary teaching diploma; 1988-1992; Afr & Eng used in bilingual classrooms 2. Stellenbosch University, B.Ed. M.Ed; 1996, 1997-1999; English

*Enter your answer*

## 8. Please provide information on your teaching experience. At which schools you taught, during which years, the grades and subjects you taught.

*Enter your answer*

## 9. When did you start using ICT in your teaching for the first time?

## 10. Has this changed your teaching?

- Yes  
 No

## 11. How many years have you been teaching?

- <1

- Between 1 to 4 years
- Between 5 to 10 years
- More than 10 years

**12. How many years have you been using technology in teaching?**

- <1
- Between 1 to 3 years
- Between 4 to 6 years
- More than 6 years

**13. To what extent do you use technology for:**

	Never	Seldom	Often	Always
communication and/or networking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
as a management tool	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
for organising your work and keep records	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
for preparing lessons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
for finding digital learning resources	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
for designing and producing your own digital learning resources	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**14. How often do you use computers and/or the internet in your language classes? Question**

None of the time	Some of the time	Most of the time	All of the time
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
None of the time	Some of the time	Most of the time	all of the time

**15. Who has access to computers and/or Internet in the classroom?**

- Students are equipped with computers and/or Internet
- Only the teacher uses a computer and/or Internet

Both, teacher and students, use computers and/or internet

**16. Do you have access to the following technologies in your classroom?**

Desktop computer without internet access

Desktop computer with internet access

Non-internet-connected laptop, tablet PC, netbook or notebook computer

Internet-connected laptop, tablet PC, netbook or notebook computer

E-reader (a device to read books and newspapers on screen)

Mobile phone provided by the school

Interactive whiteboard

Digital camera or camcorder

Computer laboratory

Other

--

**17. Do you have your own computer in the classroom?**

Yes

No

**18. Does your school provide students with laptops (or tablet PC, desktop computers, netbooks, notebooks) for their own use**

Yes

No

**19. Support to teachers for ICT use**

*Is there support to teachers integrating ICT for language teaching and learning provided in the following ways?*

Training

Fellow language teachers share their experience

Support from the education department

No support

**20. To what extent do you integrate technology and pedagogy.**

	Never	Sometimes	Most times	Always
to facilitate teaching-specific concepts or skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to support various student learning styles and to personalise learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to facilitate teaching pupils with disabilities (cognitive, physical, behavioural)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to support activities that facilitate higher-order thinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to support creativity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to foster pupils' ability to use technology in their learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify below):	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**21. How comfortable are you using technology in the classroom for language teaching and learning?**

*Teachers skills*

	Not	Slightly	Moderately	Extremely
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**22. How comfortable are you using technology at home, as an extension of your teaching?**

*Teachers skills*

	Not	Slightly	Moderately	Extremely
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**23. To what extent are you confident in the following:**

	Not	Slightly	Moderately	Extremely
Produce a text using a word processing programme	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use emails to communicate with others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Capture and edit digital photos, movies or other images	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Edit text online containing internet links and images	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Create a database	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Create and/or edit a questionnaire online	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Email files to someone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**24. To what extent are you confident in the following:**

	Not at all	Slightly	Moderately	Extremely
Prepare materials to use with an interactive whiteboard	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Participate in a discussion forum on the internet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Create and maintain blogs or web sites	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Participate in social networks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Download or upload curriculum resources from/to websites or learning platforms for students to use	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**25. Which of these technological devices do you use in the language class?**

- Personal computers
- Interactive whiteboards
- Learning Management Systems
- Audio equipment
- Digital photo cameras
- Digital video cameras
- Mobile phones
- Projection system
- Other

**26. Have you ever undertaken professional development in the following areas***Support to teachers for ICT use*

	Yes	No
Introductory courses on internet use and general applications (basic word-processing, spreadsheets, presentations, databases, etc.)	<input type="radio"/>	<input type="radio"/>
Advanced courses on applications (advanced word-processing, complex relational databases, Virtual Learning Environment, etc.)	<input type="radio"/>	<input type="radio"/>
Advanced courses on internet use (creating websites/home page, video conferencing, etc.) Equipment-specific training (interactive whiteboard, laptop, tablet, etc.)	<input type="radio"/>	<input type="radio"/>
course on multimedia (using digital video, audio equipment, etc.)	<input type="radio"/>	<input type="radio"/>
Subject-specific training on learning applications (tutorials, simulations, etc.)	<input type="radio"/>	<input type="radio"/>
Course on multimedia (using digital video, audio equipment, etc.)	<input type="radio"/>	<input type="radio"/>
Participate in online communities (e.g., mailing lists, groups, blogs) for professional discussions with other teachers	<input type="radio"/>	<input type="radio"/>
ICT training provided by school staff Personal learning about ICT in your own time	<input type="radio"/>	<input type="radio"/>
Other professional development opportunities related to ICT	<input type="radio"/>	<input type="radio"/>

**27. Do you belong to a professional learning community or community of practise where teachers can share best practise**

- Yes
- No

**28. How often do you do the following activities?***ICT based activities and material used for teaching*

	Never	Sometimes	Often	Always
Browse/search the internet to collect information to prepare lessons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Browse/search the internet to collect resources to be used during language lessons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use applications to prepare presentations for lessons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Create your own digital learning materials for students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prepare exercises and tasks for students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Post home work for students on the school website	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use ICT to provide feedback and/or assess students' learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communicate online with parents	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Download/upload/ browse material from a learning platform	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Look for online professional development opportunities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**29. What kind of computer programs do your pupils use most often in the language lesson.**

- Word processor
- educational games
- story writing programs
- grammar exercise programs
- pronunciation programs
- vocabulary programs
- spelling programs
- programs for special needs
- cross-curricular programs
- language testing
- Other

**30. To what extent do the following affect the use of ICT for teaching and learning in your classroom.**

*Obstacles to the use of ICT in teaching and learning*

	None	Slightly	Moderately	Extremely
Insufficient number of internet connected computers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Insufficient Internet bandwidth or speed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Insufficient number of interactive whiteboards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
School computers out of date and/or needing repair	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Insufficient technical support for teachers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	None	Slightly	Moderately	Extremely
Using ICT in teaching and learning not being a goal in our school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
School time organisation (fixed lesson time, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Submit**

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## **APPENDIX B: INTERVIEW SCHEDULE**

Five teachers proven to be successful in technology integration will be interviewed on how they integrate technology and pedagogy to enhance language teaching and learning. I would ask questions related to the technologies they use, why the teachers used the technologies, how the technologies were used and what barriers/challengers the teachers had to overcome?

The interview is done to understand the technology integration practices better.

Answers to these questions will be used to draw conclusions on the strategies used by innovative language teachers to enhance teaching and learning. Furthermore, the answers can help guide other teachers into being innovative in their teaching by incorporating technology effectively into their lessons.

The interview will take approximately an hour.

- Thinking back to your own education, what technology was there and how was it used in the classroom?
- Where, would you say, did your awareness of ICT start?
- What/who would you say was the trigger/motivator for you to use ICT in your teaching?
- Give an example of how you used ICT in your lesson.
- What technologies you used
- How you used it
- How were the students involved?
- What was the impact on the students when you used ICT in your lesson.
- What technologies do you use mostly?
- Why that technology
- How?
- Do you think you use technologies differently to most teachers? Elaborate
- You identified some challengers you faced in the use of technologies in your teaching.
- How did overcome these challengers.
- Did you receive training in the integration of ICT for language teaching and learning? Elaborate.
- Was the training self-initiated or compulsory?
- Any special courses?
- Accredited course
- Self-taught
- informal

- Do you have the freedom to incorporate technologies in your lesson? Elaborate.
- Do you think there are benefits to using technology for language learning? Elaborate on your answer.
- What worked so well for you in the integration of technology and pedagogy that you will want to pass onto other teachers?
- Have you shared your best practises with other teachers? Elaborate.

# APPENDIX C: INFORMED CONSENT FROM STELLENBOSCH UNIVERSITY



UNIVERSITEIT • STELLENBOSCH • UNIVERSITY  
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## STELLENBOSCH UNIVERSITY CONSENT TO PARTICIPATE IN RESEARCH

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**Title of Study:** Integrating new technology in the language classroom:  
innovative teacher identities  
**Investigator's Name:** Gail Valentyn  
**Dept:** Modern Foreign languages

You are being asked to take part in a research project on the integration of technology in the language classroom. You were selected as a possible participant because you have been recognized as an innovative teacher integrating technology and pedagogy successfully for teaching and learning in your language classes.

Please read this form and ask any questions that you may have before agreeing to be in the study.

### 1. Purpose of Study

The purpose of the study is (i) to gain information on what technologies teachers have access to and actively use in their language classrooms, (ii) why the teachers choose to use the technologies, (iii) how the technologies were used, (iv) what barriers/challengers the teachers had to overcome, and (v) how this generally affects their perception of themselves in their professional capacity.

### 2. Description of the Study Procedures

If you agree to be in this study, you will be asked to do the following:

Complete a questionnaire that will take about 25 minutes

To be interviewed at a venue and on a date agreed upon between yourself and the researcher. The interview will last approximately one hour and will be recorded for the research. Aspects of interest to the research that have not been covered in the questionnaire will be discussed during the interview.

### **3. Risks/Discomforts of Being in this Study**

Participation in this study will not hold any foreseeable risks or discomfort to you. If at any stage you do feel uneasy, you may request information to be removed, or you may yourself withdraw your participation.

### **4. Potential benefits to subjects and/or to society**

You will not benefit directly from this research in terms of material gain.

The indirect benefit may be in (i) enhancing awareness of innovatively integrating technology and pedagogy for language learning, and (ii) the potential uses of findings and suggestions that result from the study.

### **5. Confidentiality**

Any information that is obtained regarding this study will remain confidential in that no personal information will be divulged in the presentation of data and results.

All data will be handled by myself and my supervisor, and will be anonymized before it is processed, transcribed or analysed. Confidentiality will be maintained by means of the use of pseudonyms.

All original data will be in my safe custody.

If you wish to review it to be sure that what it contains is what you really wish to say, that is possible at any stage.

The data will be used for academic purposes only.

### **Payments**

Participation is voluntary, and as such there will be no remuneration for participation.

### **6. Right to Refuse or Withdraw**

Your decision to participate in this study is entirely voluntary.

You may refuse to take part in the study *at any time* without affecting your relationship with me or the University of Stellenbosch.

You have the right not to answer any single question, as well as to withdraw completely from the interview at any point during the process; additionally, you have the right to request that I not use any of your interview material.

### **7. Right to Ask Questions and Report Concerns**

You have the right to ask questions about this study and to have those questions answered by me before, during or after the research. If you have any further questions about the study, at any time feel free to contact me, Gail Valentyn at [gailvalentyn12@gmail.com](mailto:gailvalentyn12@gmail.com) or by telephone at 0721858801. If you like, a summary of the results of the study will be sent to you. If you have any other concerns about your participation that have not been answered by me, you may contact

Prof. C. Anthonissen, supervisor, at [ca5@sun.ac.za](mailto:ca5@sun.ac.za) (Stellenbosch University).

### **8. Rights of research subjects**

You are not waiving any legal claims, rights or remedies because of your participation in this research project. If you have questions regarding your rights as a research subject, contact Ms

Maléne Fouché [mfouche@sun.ac.za; 021 808 4622] at the Division for Research Development, Stellenbosch University.

## 9. Consent

Your signature below indicates that you have decided to volunteer as a research participant in this study, and that you have read and understood the information provided above. You will be given a signed and dated copy of this form to keep, along with any other printed materials deemed necessary by the investigators.

The information above was described to *me* by *Gail Valentyn* in *English* and *I am* in command of this language. *I* was given the opportunity to ask questions and these questions were answered to *my* satisfaction.

*I hereby consent voluntarily to participate in this study.* I have been given a copy of this form.

.....  
**Subject's Name (print):**

.....  
**Subject's Signature:**

.....  
**Date:**

.....  
**Investigator's Signature:**

.....  
**Date:**

I declare that I explained the information given in this document to \_\_\_\_\_  
[*name of the participant*]. He/she was encouraged and given ample time to ask me any questions. This conversation was conducted in English.

.....  
**Investigator's Signature:**

.....  
**Date:**

# APPENDIX D: NOTICE OF APPROVAL



## NOTICE OF APPROVAL

### REC Humanities New Application Form

20 June 2018

Project number: 6819

Project Title: Integrating new technology in the language classroom: innovative teacher identities

Dear Mrs Gail Valentyn

Your REC Humanities New Application Form submitted on 20 June 2018 was reviewed and approved by the REC: Humanities.

Please note the following for your approved submission:

**Ethics approval period:**

Protocol approval date (Humanities)	Protocol expiration date (Humanities)
20 June 2018	19 June 2021

**GENERAL COMMENTS:**

Please take note of the General Investigator Responsibilities attached to this letter. You may commence with your research after complying fully with these guidelines.

**If the researcher deviates in any way from the proposal approved by the REC: Humanities, the researcher must notify the REC of these changes.**

Please use your SU project number (6819) on any documents or correspondence with the REC concerning your project.

Please note that the REC has the prerogative and authority to ask further questions, seek additional information, require further modifications, or monitor the conduct of your research and the consent process.

**FOR CONTINUATION OF PROJECTS AFTER REC APPROVAL PERIOD**

Please note that a progress report should be submitted to the Research Ethics Committee: Humanities before the approval period has expired if a continuation of ethics approval is required. The Committee will then consider the continuation of the project for a further year (if necessary)

**Included Documents:**

Document Type	File Name	Date	Version
Informed Consent Form	Consent_to_Participate_Form	06/04/2018	1
Data collection tool	Interview Schedule	06/04/2018	1
Research Protocol/Proposal	Valentyn RESEARCH PROPOSAL FINAL_11 June 2018	11/06/2018	2
Data collection tool	Valentyn questionnaire Final-June2018	11/06/2018	2
Proof of permission	Research approval letter	19/06/2018	version1

If you have any questions or need further help, please contact the REC office at [cgraham@sun.ac.za](mailto:cgraham@sun.ac.za).

Sincerely,

Clarissa Graham

REC Coordinator: Research Ethics Committee: Human Research (Humanities)

National Health Research Ethics Committee (NHREC) registration number: REC-050411-032.  
The Research Ethics Committee: Humanities complies with the SA National Health Act No.61 2003 as it pertains to health research. In addition, this committee abides by the ethical norms and principles for research established by the Declaration of Helsinki (2013) and the Department of Health Guidelines for Ethical Research: Principles Structures and Processes (2<sup>nd</sup> Ed.) 2015. Annually a number of projects may be selected randomly for an external audit.

## **Investigator Responsibilities**

### **Protection of Human Research Participants**

Some of the general responsibilities investigators have when conducting research involving human participants are listed below.

**1. Conducting the Research.** You are responsible for making sure that the research is conducted according to the REC approved research protocol. You are also responsible for the actions of all your co-investigators and research staff involved with this research. You must also ensure that the research is conducted within the standards of your field of research.

**2. Participant Enrollment.** You may not recruit or enroll participants prior to the REC approval date or after the expiration date of REC approval. All recruitment materials for any form of media must be approved by the REC prior to their use.

**3. Informed Consent.** You are responsible for obtaining and documenting effective informed consent using **only** the REC-approved consent documents/process, and for ensuring that no human participants are involved in research prior to obtaining their informed consent. Please give all participants copies of the signed informed consent documents. Keep the originals in your secured research files for at least five (5) years.

**4. Continuing Review.** The REC must review and approve all REC-approved research proposals at intervals appropriate to the degree of risk but not less than once per year. There is **no grace period**. Prior to the date on which the REC approval of the research expires, it is **your responsibility to submit the progress report in a timely fashion to ensure a lapse in REC approval does not occur**. If REC approval of your research lapses, you must stop new participant enrollment, and contact the REC office immediately.

**5. Amendments and Changes.** If you wish to amend or change any aspect of your research (such as research design, interventions or procedures, participant population, informed consent document, instruments, surveys or recruiting material), you must submit the amendment to the REC for review using the current Amendment Form. You may **not initiate** any amendments or changes to your research without first obtaining written REC review and approval. The **only exception** is when it is necessary to eliminate apparent immediate hazards to participants and the REC should be immediately informed of this necessity.

**6. Adverse or Unanticipated Events.** Any serious adverse events, participant complaints, and all unanticipated problems that involve risks to participants or others, as well as any research related injuries, occurring at this institution or at other performance sites must be reported to Malene Fouche within **five (5) days** of discovery of the incident. You must also report any instances of serious or continuing problems, or non-compliance with the REC's requirements for protecting human research participants. The only exception to this policy is that the death of a research participant must be reported in accordance with the Stellenbosch University Research Ethics Committee Standard Operating Procedures. All reportable events should be submitted to the REC using the Serious Adverse Event Report Form.

**7. Research Record Keeping.** You must keep the following research related records, at a minimum, in a secure location for a minimum of five years: the REC approved research proposal and all amendments; all informed consent documents; recruiting materials; continuing review reports; adverse or unanticipated events; and all correspondence from the REC

**8. Provision of Counselling or emergency support.** When a dedicated counsellor or psychologist provides support to a participant without prior REC review and approval, to the extent permitted by law, such activities will not be recognised as research nor the data used in support of research. Such cases should be indicated in the progress report or final report.

**9. Final reports.** When you have completed (no further participant enrollment, interactions or interventions) or stopped work on your research, you must submit a Final Report to the REC.

**10. On-Site Evaluations, Inspections, or Audits.** If you are notified that your research will be reviewed or audited by the sponsor or any other external agency or any internal group, you must inform the REC immediately of the impending audit/evaluation.

# APPENDIX E: CONSENT APPROVAL FROM WESTERN CAPE EDUCATIONAL DEPARTMENT



Directorate: Research

[Audrey.wyngaard@westerncape.gov.za](mailto:Audrey.wyngaard@westerncape.gov.za)  
tel: +27 021 467 9272  
Fax: 0865902282  
Private Bag x9114, Cape Town, 8000  
[wced.wcape.gov.za](http://wced.wcape.gov.za)

**REFERENCE:** 20180614-3313  
**ENQUIRIES:** Dr A T Wyngaard

Mrs Gail Valentyn  
17 Minos Road  
Woodlands Park  
Wetton  
7785

**Dear Mrs Gail Valentyn**

## **RESEARCH PROPOSAL: INTEGRATING NEW TECHNOLOGY IN THE LANGUAGE CLASSROOM: INNOVATIVE TEACHER IDENTITIES**

Your application to conduct the above-mentioned research in schools in the Western Cape has been approved subject to the following conditions:

1. Principals, educators and learners are under no obligation to assist you in your investigation.
2. Principals, educators, learners and schools should not be identifiable in any way from the results of the investigation.
3. You make all the arrangements concerning your investigation.
4. Educators' programmes are not to be interrupted.
5. The Study is to be conducted from **17 July 2018 till 28 September 2018**
6. No research can be conducted during the fourth term as schools are preparing and finalizing syllabi for examinations (October to December).
7. Should you wish to extend the period of your survey, please contact Dr A.T Wyngaard at the contact numbers above quoting the reference number?
8. A photocopy of this letter is submitted to the principal where the intended research is to be conducted.
9. Your research will be limited to the list of schools as forwarded to the Western Cape Education Department.
10. A brief summary of the content, findings and recommendations is provided to the Director: Research Services.
11. The Department receives a copy of the completed report/dissertation/thesis addressed to:

**The Director: Research Services  
Western Cape Education Department  
Private Bag X9114  
CAPE TOWN  
8000**

We wish you success in your research.

Kind regards.  
Signed: Dr Audrey T Wyngaard  
**Directorate: Research**  
**DATE: 14 June 2018**

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Lower Parliament Street, Cape Town, 8001  
tel: +27 21 467 9272 fax: 0865902282  
Safe Schools: 0800 45 46 47

Private Bag X9114, Cape Town, 8000  
Employment and salary enquiries: 0861 92 33 22  
[www.westerncape.gov.za](http://www.westerncape.gov.za)

## APPENDIX F: PERSONAL INFORMATION OF PARTICIPANTS

<b>Personal Information</b>		
	<b>Pseudonym</b>	
	<b>Gender</b>	
	<b>Age Range</b>	

<b>Personal Educational Trajectory</b>	
<b>Primary School</b>	•
<b>Secondary School</b>	•
<b>Tertiary School</b>	•

<b>Professional Educational Trajectory</b>	
<b>Years in Teaching</b>	
<b>Educational Phase(s) Taught</b>	
<b>School Types</b>	
<b>Languages of Instruction</b>	
<b>Years of ICT usage in Education</b>	
<b>Award(s)</b>	
<b>Overview:</b>	

## APPENDIX G: TRANSCRIPTIONS OF INTERVIEWS

<https://goo.gl/ciQFDE>

QR Code

