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# The relationship between the digital identities of teacher trainers and their approaches to the use of ICT in teaching and learning: a case study at the University of the Witwatersrand

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# The relationship between the digital identities of teacher trainers and their approaches to the use of ICT in teaching and learning: A case study at the University of the Witwatersrand

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**Date Submitted: 29 May2014**

**A research report submitted in partial fulfilment of the requirement for the degree of Master in Education.**

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**Faculty of Humanities**

**2014**

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## ACKNOWLEGDEMENTS

I would like to thank the following for their contributions to this research:

- Dr Ian Moll, my Supervisor, for his expertise and guidance.
- All the teacher trainers at the University of the Witwatersrand School of Education for their participation and valuable feedback. This research would have not been possible without their help.
- My Mom, Landiwe, and my sister, Thuli, for their continued support in looking after my son when I needed to work on this research. I could not have completed this research without their help.
- My learning partner, Mary Sekhohola, for her continued support and encouragement.
- My friends and colleagues, for sharing my concerns, understanding my needs and for always being there with helping hands.
- The Human Resource Department, University of the Witwatersrand, for assisting with statistical data
- The Pan African Research Agenda, for allowing me to collect, share and use information from their database.
- The National Research Foundation (NRF) for sponsoring my research

## KEY WORDS

Digital identity, technology, communication, identity, digital media, pedagogy, computers, integration, ICT, habitus, technology integration, cultural capital

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DEFINITIONS within the context of this research:

Habitus — The conditionings associated with a particular class of conditions of existence produce the habitus, systems of durable, transposable dispositions, structured structures predisposed to function as structuring structures, that is, as principles which generate and organize practices and representation.(Bourdieu 1990a: p.53; also 1977: 78,84, 85 cited in King 2000: p.423) see Bourdieu below.

The habitus, a product of history, produces individual and collective practices-more history- in accordance with the schemes generated by history. It ensures the active presence of past experiences, which, deposited in each organism in the form of schemes of perception, thought and action, tend to guarantee the 'correctness' of practices and their constancy over time, more reliably than all formal rules and explicit norms. (Bourdieu, 1990:54)

Digital literacy — Is the theory and practice that focus on use of digital technology, including the ability to read, write, and communicate using digital technology, the ability to think critically about digital technology, and consideration of social, cultural, political, and educational values associated with those activities. (Spilka, 2010)

Role-identity — Is the character and role that an individual devises for himself as an occupant of a particular social position. (McCall and Simmons, 1978:65)

Digital Identity — Is defined in this study in relation to 'technology identity'

Technology identity — Are beliefs about one's own technology abilities; beliefs about the importance of technology; beliefs about participation opportunities and constraints that exist; and one's sense of motivation to learn more about technology. (Goode 2010:502)

Cultural capital — Cultural capital is an indicator and a basis of class position, including Cultural attitudes, preferences and behaviour that are conceptualised as "tastes" used for social selection. (Bourdieu, 1979a/1984 cited in Winkle-

| | |
|---|---|
| | Wagner 2010: 5) |
| Field | The field is the space in which cultural competence, or knowledge of particular taste, dispositions, or norms, is both produced and given a price. The field determines the properties, internalized as dispositions and objectified as economic or cultural goods, that are valid, active, or pertinent in a given social setting. (Bourdieu, 1979a/1984 cited in Winkle-Wagner 2010:7) |

## DEDICATION

**This research is especially dedicated to my son,**

**Sandiselwe Luthuli.**

**Each page written represents time spent away from him at a very tender age.**
**Thank you for your unspoken understanding.**
**You have been a source of inspiration.**

## DECLARATION

I declare that this research report, titled "The relationship between the digital identities of teacher trainers and their approaches to the use of ICT in teaching and learning: A case study at the University of the Witwatersrand" is my own unaided work, and that all the resources I have used or quoted have been indicated or acknowledged by means of references. This research report is submitted as a partial fulfillment for the degree of Master in Education at the University of the Witwatersrand, Johannesburg. This report has not been submitted before for any other degree at any other university.

**Amanda Nsele**

Name of candidate

Signature of candidate

29 May 2014

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## ABBREVIATIONS AND ACRONYMS

CNS: Computer and Network Services

EDIT: Educational Information Technology

ELPS: Educational Leadership and Policy Studies

HEI: Higher Education Institution

ICT: Information and Communication Technology

IT: Information Technology

PANAF : Pan African Research

UNESCO: United Nations Education, Scientific and Cultural Organisation

WSOE: The Wits School of Education

OER: Open Educational Resources

## ABSTRACT

The purpose of this study is to examine the digital identities of teacher trainers at the University of the Witwatersrand School of Education (WSoE), where the study was carried out. The study aims to find out if teacher trainers have adapted their use of technologies such that the students' trends of learning are accommodated, also to establish the practices and approaches of teacher trainers and the implications that their digital identities have in forming them. This study uses Bourdieu's notion of cultural capital, field and habitus as a theoretical framework to assist in explaining how teacher trainers choose to adopt technologies in their practices by referring to Bower (2008). Bower (2008) indicates that, in order to match learning tasks with learning technologies, educational goals and the requirements for each task must be identified first. Kirschner et al. (2004) cited in Bower (2008) notes that, "educational affordances are characteristics of an educational resource that indicates if and how a particular learning behavior could possibly be enacted within the context.

The study uses a mixed method approach which incorporates techniques from both qualitative and quantitative research. It uses data previously collected by the School of Education ICT Committee and interviews. The main objective of this study is to determine the teacher trainers' digital identities and their relationship to the use of ICT in teaching and learning. Purposive sampling is used to get opinions of targeted groups and information that is readily accessible. The findings suggest that using digital resources allows teacher trainers to prepare material for teaching and learning and they are able to adapt it and personally develop in professional learning, thus promoting equality of educational opportunity. Finally, the findings seem to be consistent with a large scale Pan-African study (PanAf, 2011) research which showed that not every teacher trainer considers Information and Communication Technologies central to teaching and learning purposes. The data from each interview reveals the skills, expertise and professional knowledge of each teacher trainer acquired through practice and pedagogical content knowledge. Findings are not representative of the entire population of teacher trainers at the School of Education but are important for consideration. The findings have important implication for management because they suggest that there are occurrences that may need to be discussed and managed. Teacher trainers' habitus reflects the social position in which it was constructed, the structured structure, and individual digital identities include a set of attributes, practices,

skills and the norms to which they are conformed to within a digital environment. This study contributes to the discussion of digital identity and the use of ICT in teaching and learning.

# CHAPTER 1

## 1.1 Introduction

Montgomery (cited in Huyer and Sikoska, 2003) argue that technologies are tools and methods designed to accomplish a task. Firstly, we need to understand how approaches towards the use of technology in teaching and learning shape the digital identities of teacher trainers. Secondly, we need to know how the environments in which technologies are placed determine the way in which people would access and use the technologies. Previously conducted research indicates that, there are unequal forms of social and educational inequalities and unequal availability of digital technologies. Cooper and Weaver (2003) for instance, argue that there is a gap between those who have access to technology, and those who do not. This results mainly from differing levels of training that individuals have. The study is using the concept of digital identity in relation to how teacher trainers relate to the use of ICTs. Also, to establish how the teacher trainers' digital identities may influence their use or non-use of digital technologies in teaching and learning. Goode's (2010) concept of technology identity will assist to unravel experiences that may lead to the information of an individual's technology identity. This study aims to discover the relationship between the digital identities of teacher trainers and their approaches towards the use of digital technologies in teaching and learning at the Wits School of Education (WSoE). By using Bourdieu's concept of habitus, the study will also define technology integration in teaching and learning in relation to barriers, particularly those related to teacher trainer's beliefs. The study seeks to outline the approaches that have been used to help define a set of problems and their solutions, which relate to the use of digital technologies.

There is a need for higher education to ensure that learners are part of the network society. This is mainly due to changes in economy of the world as more and more countries struggle to be part of the globalised economy which is mainly on the internet and use of digital technologies. As this study intends to discover the digital identities of teacher trainers and how they affect the process of teaching and learning, the research will be undertaken with lecturers in the School of Education. There has not been any research done with regards to teacher trainers and the role of their "digital identity" in shaping their approaches to the use of digital technologies in teaching and learning at the University of the Witwatersrand to date. This research is hoped to bring some light to governing bodies and all those concerned.

## 1.2 Background to the Research Problem

Czerniewicz and Brown (2010) define digital identity as a set of claims made by a digital subject about itself or another digital subject or entity. An individual entity uniquely describes the relationship this subject has to other entities. In the context of this study, the lecturers are digital subjects because they represent the digital realm which is being described and is dealt with within this research. With the rise of network-based transactions of information or moving data, the web has opened new opportunities which come with factors that, by using digital media, inform human thinking. Our goals are aimed at enquiry, to define the characteristic that unifies identity.

This study will use Bourdieu's notions of cultural capital and habitus as a theoretical framework to explain the role of communication technologies, such as cell phones and computers in teaching and learning. Habitus is "the conditionings associated with a particular class of conditions of existence producing the habitus, systems of durable, transposable dispositions, structured structures predisposed to function as structuring structures, that is, as principles which generate and organize practices and representation." (Bourdieu, 1990a: p.53; also 1977: 78, 84, 85 cited in King, 2000: p423)Habitus is a concept that seeks to explain dispositions that influence individuals to become who they are, and yet also includes the conditions of existence (Bourdieu, 1990). Belland (2009) gives an insight on using the theory of habitus to move beyond the study of barriers to technology integration. According to Bourdieu (1979a/1984 cited in Winkle-Wagner , 2010: 5), "Cultural capital is an indicator and a basis of class position, including cultural attitudes, preferences and behaviour that are conceptualised as "tastes" used for social selection." It is a concept based on high status cultural signals used in cultural and social selection, which includes forms of knowledge skills embodied in an individual.

Gillen and Barton (2010: p5) cited in Attwell and Hughes (2010) draw attention to the work of The New London Group who put forward four components of pedagogy: "Situated Practice, which draws on the experience of meaning-making in everyday life, the public realm and workplaces; Overt Instruction, through which students develop an explicit metalanguage of design; Critical Framing, which interprets the social context and purpose of Designs of meaning; and Transformed Practice, in which students, as meaning-makers, become designers of social futures" (Cope and Kalantzis, 2000). This study will focus on the

changing demands in competencies and how this concept can be evaluated to develop new approaches on the real impact of digital materials and tools on learning as discussed by Lararinis, Green and Pearson (2011). This is to show how learning, using ICTs may be enhanced by computer assisted teaching and its application into education. Literature (Green and Pearson (2011), Cope and Kalantzis, 2000) reveals that e-learning provides a platform most individuals would not dream about ore even consider possible. With new changes in the society, individuals must use the opportunities presented by digital technologies.

In understanding pedagogic action as defined by Bourdieu in Belland (2009), this study will define and use the term pedagogy as it is understood in literature. It has to be acknowledged that 'pedagogy' is a contestable term which is understood and viewed differently within the modes of teaching and learning. Mortimore (ed) (1999) defines pedagogy as, "any conscious activity by one person designed to enhance learning in another." Belland (2009) draws upon Bourdieu's proposition of pedagogic action which has to do with reproduction of social inequality in and through education. Bourdieu and Passeron (1990) cited in Belland (2009) refer to pedagogic action as attempt to instil dispositions in students that are not part of their habitus. Pedagogic action is defined by Bourdieu and Passeron, 1977:5 as "…objectively, symbolic violence in so far as it is the imposition of cultural arbitrary by an arbitrary power." For Bourdieu this means that pedagogic action plays a major role in the reproduction of culture and the social formation and transformation within the educational system continues to produce educational inequalities. The significance of engaging with literature in order to link the idea of Bourdieu and Passeron's pedagogic action (1977 cited in Moore, 2004) provide a justification of the arbitrary of pedagogic action. They justify that pedagogic action is about holding power in the transmission of knowledge and impose authority to gain legitimacy for the cultural arbitrary. Bourdieu (1986 cited in Belland (2009) developed this concept to analyse the impact of culture on the class system and on the relationship between action and social structure. Within the research context this means that culture and education contribute to social reproduction or reproduction of educational inequality. Educational inequality is characterised as inequalities between individuals, and these are the result of factors such as lack of equal opportunities. An individual's unique habitus comes to light, as Bourdieu (1998) contemplates that dispositions make up an individual's habitus and the habitus is formed by the individual's history as he/ she acts in accordance to social structures.

Czerniewicz and Brown (2010) unravel complexities which need to be explored when grappling with participation in higher education in a digital age. Prensky (2001a: 11) "Digital

Natives are used to receiving information really fast. They like to parallel process and multi-task. They prefer their graphics before their text rather than the opposite. They prefer random access (like hypertext). They function best when networked. They thrive on instant gratification and frequent rewards. They prefer games to "serious" work." He refers to as all those that are born in the current generation and grow up familiar with digital technology, and tend to learn informally, either by teaching themselves or through social networks. Prensky claims that socio-cultural backgrounds have an effect in the way individuals use digital technologies. The socio-cultural background is one of the factors that may cause teacher trainers to use or reject digital technologies. Cultural and economic factors also play a role because they form an individual's habitus. Based on this notion, Prensky (2001a) says that educational institutions need to change to accommodate this new type of digitally literate students. This study aims to find out if teacher trainers have adapted their use of technologies such that the students' trends of learning as Prensky claims are accommodated and or not and what perceptions are accountable to the approaches they are using. As mentioned above, it has to be noted that Prensky's theory "Digital Natives, Digital Immigrants" implies that digital immigrants struggle to come to terms with the technologies and in most cases, they tend to resist using ICTs. This resistance is caused by socio-economic background which is the result of unequal access and distribution of resources. Whereas, digital natives grow up in an era of technology and constantly use digital technologies. Due to constant use of ICTs, digital natives have a cultural capital of technology use embodied in them. Prensky (2001) doesn't provide an explanation about individuals born within the digital age but aren't exposed to technologies due to social inequalities and socio-cultural background.

## 1.3. The University of the Witwatersrand School of Education

The Wits School of Education was formed after a merger of the former Johannesburg College of Education and the previous Faculty of Education of the Witwatersrand University. The University which is known to the public as 'Wits', situated in the central economic network of South Africa, as well as Southern Africa, and it plays a major part in the development of education in the country and the region. The merger has given undergraduate teachers, postgraduate and educational researchers' opportunities to enhance their field of studies. Wits School of Education is committed to making an important and valuable change of education, to set right inequalities and absorption into theory application of well-researched educational perspectives, approaches, policies and methods.

## Wits ICT Policy

This section begins by having a brief description of Wits ICT policy (SPP-Acceptableusepolicy, C2006/123), as it is absolutely necessary to understand how the policy goals are reflected in teacher trainers' pedagogical integration practices. UNESCO (2009) asserts that there must be a national policy statement which should reflect the vision and framework that will be a basis in developing institutional ICT policy. The main purpose of this study is to establish the relationship between the digital identities of teacher trainers and their approaches to the use of teaching and learning but it is vital to understand the policy that governs the institution where the study is being conducted. The University of the Witwatersrand has a general ICT policy for all users of ICT facilities which includes device connection. The policy sets the rules which govern systems and services. The responsibility for implementing the standard guidelines, policies and regulations lies with all faculties and departments within the university. The policy also has a disclaimer of liability. As earlier stated, the university has a general ICT Policy (SPP-Acceptable use policy, C2006/123), and there is not a specific one that relates to Pedagogy integration for lectures in general and specifically for the School of Education with regards to teacher trainers. However, the university has a 2010 to 2014 strategic plan for Learning (eLearning Strategic Plan 2010 to 2014, University of the Witwatersrand).

For UNESCO (2009), if a higher education institution seeks to promote effective use of ICTs there are particular strategies that need to be identified. According to UNESCO's Background paper from the Commonwealth of Learning workshop held in Paris during a World Conference on Higher Education (2009), first the institution must identify ways that will enhance research capabilities significantly. Second, to promote collaboration among Higher Education Institutions (HEIs) in all ICT related activities. Third, the bandwidth and connectivity must be enhanced through suitable hardware. Lastly, the faculty and other relevant personnel must build a capacity and implement an incentive system that would promote the use of ICTs by academic staff. The role of utilising digital technologies in teaching and learning should not only be left to departments and members of staff only. It is vital for management to ensure that digital technologies are integrated into teaching. It must be an integral part of daily teaching and professional practice in which teacher trainers engage.

## 1.4. Research Questions

1. What are the digital identities of teacher trainers at The Wits School of Education?
2. What are teacher trainers' approaches to the use of ICT in teaching and learning?
3. What is the relationship between ICT and pedagogy, and how does it reflect on teacher trainers' teaching?

## 1.5. Significance of the study

The purpose of this project is to identify and discuss some of the key identity issues that shape teacher trainers' attitudes to, and choices concerning the, use of ICTs for teaching and learning. This will include the implications ICTs have in learning and strategies to be used to ensure effective teaching and learning. Bourdieu's habitus is defined in Belland (2009) as sets of predominant factors which generate practices and perceptions. This research will attempt to establish the practices and approaches of teacher trainers and the implications that their digital identity has in forming these practices. This will be established by engaging with a range of possibilities and affordances that digital technologies can offer. The notion of affordances comes from Gibson's (1979) ecological approach to human interaction. The term affordance has been used in a number of ways, and Gaver's (1991) definition is more practical for this study. Gaver (1991) defines technology affordances as, "action possibilities in a technology environment given the technical capabilities of the system and the action capabilities of the user." According to Gaver (1991) this is because an environment is perceived by its potential for action. Technology has been integrated into teaching to aid the shift to a more student-centred classroom (Belland, 2009). This practice empowers teacher trainers and students alike to become confident and competent users of ICTs in their own teaching. Belland (2009) also states that power, growth and the ability to access technology have not been accompanied by an equal growth with integration of technology into teaching and learning. The main aim of this research is to get better knowledge and understanding of the current pedagogic practices used and integrated into teaching. Belland's article is used for this study because he provides an interpretation and analysis of Bourdieu's theory of habitus which is the framework for this study. With Bourdieu's approach, habitus as a product of history aligns closely with teacher trainers' practices, which include teaching the strategies

that teacher trainers use, and the structuring of instructions to ensure that students construct knowledge for their own learning by using technology.

Belland (2009) suggests that students are more likely to use the techniques and strategies that were used for their own learning in their future teaching if they believe that the strategies learnt were valuable. Technology integration includes using technology to improve teaching and learning or to make teaching and learning more effective. Sutherland (2004) cited in Hodgkinson-Williams, (2005) states that, the adoption of ICTs in education continues to pose challenges globally. Belland (2009) discusses ways in which Bourdieu's work on 'habitus' and pedagogic action examines different ways of knowing the previous experiences of the individuals and their background knowledge, which become part of the concepts and position that partially form human actions as practices. He further establishes ways in which education can be transformed to encourage technology integration and pedagogic action about technology for a longer period, so as to incorporate practical experience. This study uses Bourdieu's notion of habitus and dispositions i.e. cultural capital and field to further understand what constitutes the digital identities of teacher trainers who have a range of approaches to the use of ICT in teaching and learning.

The study is focusing on the digital identities of academics and how each individual's expertise in his or her profession differs within aspects of personal knowledge orientations. Bourdieu's theory of habitus will assist in determining the social determinants of the identities being studied. These social determinants can be classified by the distinctions which the teacher trainers make in choosing the technologies to integrate in their teaching. Also looking closely at how teacher trainers' habitus can affect or promote interactive teaching methods and overcome their dispositions which include thoughts and perceptions that are socially produced. Resistance is also a key issue with regard to the attitudes of the teacher trainers and their choices of integrating, or not integrating, ICTs into teaching and learning. Changing ones' habitus may be a challenge if it goes against the individuals' beliefs but lifelong experiences form dispositions related to the teacher trainers' habitus which are influenced by socio-cultural and socio-economic backgrounds.

# CHAPTER 2

# THEORETICAL FRAMEWORK AND LITERATURE REVIEW

## 2.1 Literature review introduction

This literature review explores key aspects of the dominant themes of this research and covers a variety of themes to be reviewed. The six main themes are: digital identity; the relationship between digital identity and digital divide; the significance of learning theories; pedagogy before technology; pedagogical practices; and diverse approaches to the use of ICT in teaching and learning. Although the literature presents these themes in a variety of contexts, the project will focus on the application of Bourdieu's concept of habitus which is a guiding framework for this study.

According to McMillan and Schumacher (2006), when one reviews literature, two major reasons are taken into consideration. The first is to ensure that the review establishes the important links between knowledge and the problem being investigated, which enhances the significance of the research, and the second is to provide vital information about the methodology that can be incorporated into a new study. Hart (1998) concurs by stating that the literature review provides a background to the proposed study. The review may provide a theoretical background about research conducted in the past, the basis of the present research and what could be researched in future. It includes the research methods to be used, previous findings and the relevance of the current study. Hart (1998) also suggests that a literature review should be done in such a way that it distinguishes what has been done from what needs to be done. It also helps in gaining a new perspective on the topic and important variables relevant to the research to be conducted. Figure 1 on the next page, indicates the different forms that can be used by institutions and as a core means in teacher training processes. It displays the main content areas for ICT usage and the approach on selecting appropriate ICT tools for teaching and learning. The four categories place an emphasis on the use of tools and developing of methods for content delivery.

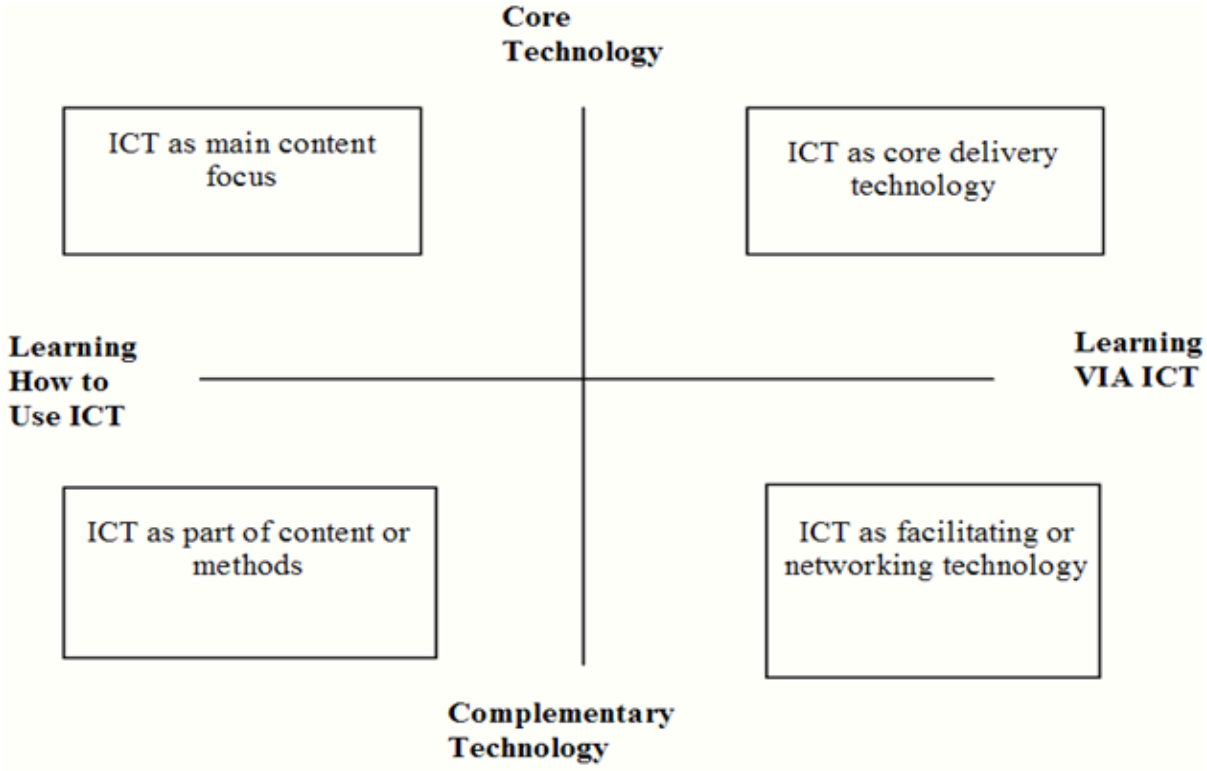



Fig 1: Categories for ICT in teacher training (adapted from Collis and Jung, 2003)

The above categories clarify approaches used for ICT in teacher training, which in turn lead the researcher to understand approaches used by teacher trainers in teaching and learning. One of the categories addresses issues in selecting appropriate ICT tools in order to promote learning activities and integrate aspects of successful technology practices. Collis and Jung 2003 framework is useful in understanding data collected because it corresponds with practices to teaching and learning with higher learning institutions. Digital technologies are critical in promoting technology integration, the crucial factors being teacher trainers' competencies and attitudes. Figure 1 assists in understanding how teacher trainers adapt in the use if ICT in their teaching and social realities in order to enrich learning opportunities. The categories of ICT by Collins and Jung (2003) are vital for this study because they provide pathway in determining the teacher trainers' digital identity and to identify how their patterns of ICT use play a role in their academic life. These categories provide a critical stance to reflect on the opportunities and challenges posed by social and academic transformation. Also the dispositions teacher trainers' have towards engaging with ICT.

Figure 1 indicates categories of ICTs, from learning how to use ICTs to learning via ICTs. This will ensure that students leave the institution capable and confident about integrating digital content into their teaching. This will be possible if teacher trainers' digital identity and

digital competences encourage creativity and productivity with ICT pedagogic integration. It can be acknowledged that Information and Communication Technologies in teacher training can take many forms. Teacher trainers concur that technology is perceived differently by different individuals, as the educational field requires teacher trainers to deliver content, maintain records and search information related to their subjects. Students can learn or be trained on the use of ICTs and how these can be used in facilitating technology use, while having more focus on pedagogy and content knowledge.

## 2.2 Theoretical Framework

The purpose of this study is to investigate and understand how different types of capital shape teacher trainers' attitudes to, and choices about, using Information and Communication Technologies (ICTs) for teaching and learning at the Wits School of Education (WSoE). This research will try to establish the practices and approaches of teacher educators and the implications their digital identity has in forming the practices. The purpose of this research is to understand issues of access and use in terms of digital pedagogy, learning cultures and the integration of technology into teaching (Belland, 2009). The guiding framework for this study is the theory of habitus by Bourdieu and for this study, Bourdieu's theory has assisted to explain the literature reviewed and to present research findings and analyse participants' responses with regard to their individual and group habitus, cultural capital and the concept of field.

## Cultural capital

Cultural capital is defined by Bourdieu (1979a/1984 cited in Winkle-Wagner, 2010:5) as "an indicator and a basis of class position, including cultural attitudes, preferences and behaviour that are conceptualised as "tastes" used for social selection." This definition indicates the cultural background and knowledge of individuals, skills they have acquired and dispositions that have been passed through generations. Also in Bourdieu (1987) cultural capital is defined as the set of knowledge and skills an individual possesses. He argues that cultural capital is not evenly distributed and therefore cannot be acquired instantly. It has a set or type of knowledge, ideas, dispositions and skills that are obtained through socialisation. As earlier stated, the concepts of capital, habitus and field are connected and the knowledge accumulated from past experiences is dependent on interest and meanings which varies from

one individual to another. The cultural capital of teacher trainers is part of the academic field as they are researchers who impart knowledge. Their identities are determined by the cultural capital and habitus which they possess.

### Field

The concept of field refers to objective structures of power and material inequality due to prior economic realities (King 2000). "Field, where practices take place, is a network or configuration of objective relation between positions." (Bourdieu and Wacquant,1992:97). Also, "the field is a veritable social universe where, in accordance with its particular laws, they accumulate a particular form of capital and where relations of forces of a particular type are exerted." Bourdieu (1990: 164 cited in Winkle-Wagner, 2010: 7). This means that field has to do with interactions and social practices an individual makes within a social position. It has to do with norms, cultural competence, knowledge and dispositions. "Field" is defined by Bourdieu in Richardson (1986) as a set of power relations between agents or institutions. It is characterised by a group of individuals who are searching to improve their positions and these positions are dependent on the type and legitimacy of the capital and the habitus of the individuals.

## Habitus

Habitus is a concept that seeks to explain the dispositions that influences individuals to become who they are, and also includes the conditions of existence (Bourdieu, 1990). The conditions of existence are displayed by individuals in their everyday activities in relation to society. According to Bourdieu (1979) as cited in Belland (2009), conditions, or the set of dispositions in which an individual grew up, will influence each individual's unique habitus. However, Bourdieu also stipulates that people sharing similar life experiences tend to have similar habitus, as he maintains that each person's habitus is formed throughout his or her life, beginning from infancy. Bourdieu, in King (2000), asserts that the habitus consists of a perceptual structure and integrated disposition which assist to organise the manner in which individuals see the world and act in it. Bourdieu's theory of habitus will be useful as a tool to examine the social determinants of the identities being studied. This includes integrating technology into their teaching and learning.

Bourdieu (1990) asserts that dispositions are more specific at an individual level and habitus generates and shapes perceptions and actions. Similarly, Bourdieu's habitus is defined in Belland (2009) as sets of predominant factors which generate practices and perceptions. This study will give us a good sense of the diversity of experiences of the lecturers within the Wits School of Education with their divergent approaches to the use of ICT in teaching and learning. As this study is aimed at investigating digital identities within the teaching and learning process, this research will be done with teacher trainers in the School of Education.

Habitus changes over time and these changes are determined by circumstances, which may include behaviour or belief. A particular context can reshape an individual's practices within that context. McGregor et al (2010), further suggest that institutional routines, practices, and the individuals' knowledge and understanding of teaching and learning can impact on teacher trainers' beliefs about education because the identities of the teacher trainers' identities are evolving. Because of this, McGregor et al (2010) argue that teacher trainers' identities are consequently dynamically shaped and influenced through the interaction within the community within which they work, so that their habitus is reinforced in the field within which they work. Human practices are similarly repeated through individual actions and activities and these actions involve understanding within the social conditions. As a result, their habitus is a structure that deals with the social world and the dispositions of habitus intersect and connect with this field.

In determining the broad nature of habitus in Bourdieu's definition and related literature (King, 2000: 425 and Browitt & Nelson 2004:33), it is that of internalised principles resulting from upbringing that creates an individual's view of the world through dispositions which reflect on the individual's action and world view and its on-going structures. Bourdieu (1977: 85 cited in King, 2000: 245) stipulates that, "the habitus is the product of the work of inculcation and appropriation necessary in order for those products of collective history, the objective structures ~e.g. of language, economy, etc., to succeed in reproducing themselves more or less completely, in the form of durable dispositions, in organisms which one can, if one wishes, call individuals, lastingly subjected to the same conditions of existence." Also in Browitt and Nelson (2004:33) Bourdieu defines habitus as a product of history, as such, "it produces individual and collective practices- more history- in accordance with the schemas generated by history;, it ensures the active presence of past experiences, which deposited in each organism in the form of schemes of perception, thought and action tend to guarantee the

"correctness" of practices and their constancy over time, more reliably than all formal rules and explicit norms."

Bourdieu, in King (2000), stipulates that habitus is derived directly from the socio-economic structural positions in which individuals find themselves. This means that individuals unknowingly internalise their objective and social conditions, including their economic class, which will enable them to perform or act appropriately in social positions. Bourdieu contemplates that an individual will unconsciously live out an objective social destiny as a result of the habitus. He believes that this is because the emphasis is on the existence of objective economic and conceptual structures (habitus), while the interaction is subjective to the element of the social life of the individual.

Habitus explains how the body is present in the social world while the social world is simultaneously present in the body. Habitus is not predictable and therefore has no principles of behaviour. Bourdieu (1998) contemplates that dispositions make up an individual's habitus that is formed by the individual's history. Habitus encompasses the way in which people act in a manner that is reflective of social structures and their process of socialisation, which is in turn reproduced in their actions. According to Bourdieu (1990), habitus is a product of history, which also produces more history, and the system of dispositions (Bourdieu, 1990).Teacher trainers are participants in the field of education within the institution of teaching and learning and this is where their expertise has been further constructed, developed and established.

Habitus enables the social practice to be observed in one's life path. Dispositions include habits, bodily postures, tastes, beliefs, values; feelings and thoughts that Bourdieu (1990) argues are socially produced. Dispositions are formed by history which is imparted from the past to present. ('Imparted' is used in the sense that the social agents' dispositions are embodied in an individual or social agent view of the world, and in the ways in which he or she acts within that world). Dispositions are instilled throughout childhood or upbringing structures as children watch and listen, so that the cultural capital of all those who surround them and especially their family, becomes part of their habitus. Hoffman (1998) as cited in McGregor et al (2010) has acknowledged identity in educational research as a significant component. Sfard and Prusak (2005) indicated that identity is not only about the character, nature and personality of an individual but is also about the ways in which they develop attitudes, conceptions and beliefs. Similarly, the habitus is central to a connection of personal

and social dimension of notions of self (identity), practices and representations. For McGregor et al (2010), many teacher trainers are immensely invested in a predominantly teaching culture where identity is deeply embedded in notions of shaped values and ideologies of learning. In Bourdieu's approach, identity is closely aligned to habitus. Habitus is a product of history with different individual, group or societal practices.

### 2.2.1 Technology integration

There have been varying definitions with different connotations of technology integration such as that cited in Belland (2009) as the use of technology to help participants solve problems and to make teaching and learning more efficient and effective. Jonassen et al (2003), as cited in Belland (2009), define technology integration as the resolute change in the social system which has been caused by the adoption of technology to help students construct knowledge, either for research and analysing information or to solve particular problems. He also contends that, in integrating technology, there are barriers related to teacher beliefs which underlie the lack of technology integration in learning institutions.

The Wits School of Education is a higher learning institution embedded in a world where technologies or digital technologies are changing the ways in which we make meaning and engage with each other. As most authors contend in Belland (2009), lack of technology integration means that technology is not being utilised because of incompatible beliefs about technology and teaching preventing the integration of technology. He contends that, although there could be more training in technology skills and more available technology, the final barrier to successful technology integration is teacher beliefs about its role in education and the teachers' inability to integrate it successfully. Anderson et al (2007), cited in Belland (2009), argue that, if teacher educators believe that technology integration should happen, then they can make it happen. King (2000) affirms that the habitus establishes that the individuals will certainly act according to the "logic of the situation". However, the origins of individuals' actions are not situated in their interaction with other people but in the objective structures which challenge them.

Table 1 on the next page is adapted from Laurillard (2005) about teaching and learning events and associated media forms. Educational technology creates affordances for a range of different teaching and learning activities which may have not been considered by the teacher. This framework describes teaching and learning using five key events, namely; acquisition,

discovery, dialogue, practice and creation. The events include teaching and learning strategies linked to teaching events using computer and non-computer based activities.

| Teaching and Learning Event | Teaching action or strategy | Learning action or experience | Related media form | Examples of non-computer-based activity | Example of computer-based activity |
|---|---|---|---|---|---|
| **Acquisition** | Show, demonstrate, describe, explain | Attending, apprehending, listening | Narrative, linear presentational. Usually same 'text' acquired simultaneously by many people | TV, video, film, lectures, books, other print publications | Lecture notes online, Streaming videos of lectures, DVD, Multimedia including digital video, audio clips and animations |
| **Discovery** | Create or set up or find or guide through discovery spaces and resources | Investigating, exploring, browsing, searching | Interactive non-linear presentational. Searchable, filterable, etc., but no feedback | Libraries, galleries, museums | CD-based, DVD, or Web resources including hypertext, enhanced hypermedia, and multimedia resources. Also information gateways. |
| **Dialogue** | Set up, frame, moderate, lead, facilitate discussions | Discussing, collaborating, reflecting, arguing, analysing, sharing | Communicative Conversation with other students, lecturer or self | Seminar, tutorials, conferences | Email, discussion forums, blogs |
| **Practice** | Model | Experimenting, practising, repeating, feedback | Adaptive Feedback, learner control | Laboratory, field trip, simulation, role play | Drill and practice, tutorial programmes, simulations, virtual environments |
| **Creation** | Facilitating | Articulating, experimenting, making, synthesising | Productive learner control | Essay, object, animation, model | Simple existing tools, as well as especially created programmable software |

Table 1: Teaching and learning events and associated media forms, adapted from Laurillard (2002)

This framework is useful for this study because it displays the integration of digital technologies and pedagogy in a meaningful way. The framework on table 1 displays different ways in which the emergence of digital media can allow teacher trainers to shift from accepted social codes and allow ICTs to provide a rich teaching and learning environment,

provided they are properly integrated into teaching. Their practical learning and teaching strategies have been embodied in them through subjects of expertise and space of teaching and learning teacher trainers' use. As a result, the teaching strategies are compatible with the individual through their dispositions, interaction and how an individual views the world and act in it (King, 2000).

## 2.3 A theoretical perspective on digital identity

In order to make logical sense of the relationship between habitus and the digital identities of teacher trainers, it is necessary and relevant to use the theorists mentioned in this section. Nach and Lejeune (2010) and McCall and Simmons (1978) use interrelated concepts of identity theory and I will use their ideas to provide a description of major elements that will construct parts of the literature review and later the analysis of findings in the study. Other theorists are used to support and provide a similar, or different, perspective of identity. It is therefore vital to examine the concept of identity or identities in a digital context.

Literature presents the concept of digital identities differently. Allison, Currall, Moss and Stuart (2005) use the term digital identity in relation to digital texts and documents. Digital identity is defined by Abelson and Lessig (1998) as a unique piece of information which is associated with an entity and how others perceive it. The entity involves a collection of characteristics which can be inherent or assigned by another. However, Rannenberg, Royer, and Deuker (2009) define digital identity as the representation of the identity of a person in digital environments, in particular in terms of representation of the characteristics (values associated to a set of attributes) of the person. The term digital identity describes the persona an individual presents across all the digital communities in which she is represented. It is vital to understand that each identity maps the unique set of characteristics that every each individual has (Parslow: 2009). A digital identity of an individual has implicit and explicit representation. In relation to the theory of habitus, Belland (2009) assists in helping understanding the theory of habitus as instilling certain dispositions within which there are similar members with similar amounts of capital, the habitus allows certain pattern of behaviours to individuals.

Jenkins (2004) states that all human identities are, by definition, social identities relating to how we see ourselves in a society. Jenkins (2004) is used in this study because of the

relationship social identities have with habitus. Habitus has a strong emphasis on thoughts and perceptions which are a product of social conditioning. Similarly, social identity has to do with an adoption of similar ideas and views within a social group. Bourdieu cited in Swartz (1997) argues that the habitus each individual has creates a 'sense of one's palace'. It is a profound understanding of an individuals' sense of importance which signifies prospects of growth that indicates a potential to be fulfilled or utilised. This is because we identify ourselves or others in a matter of meaning, and meaning always involves interaction, which are an agreement and disagreement, convention and innovation, communication and negotiation. Goldstein and Rayner 1994: 367-368, as cited in Jenkins (2004) stated that:

"In practice, interest and identity claims are closely intertwined. What I want is in some sense shaped by my sense of who I am. On the other hand, in clarifying my interests I may sometimes begin to redefine my sense of self. But there remains for me a fundamental distinction between my objectives that do not threaten my identity and those that do."

This statement goes back to an issue discussed by Allison, Currall, Moss and Stuart (2005), where they argue why identity matters, and if it does what the fundamental issues are that need to be considered. Allison et al. (2005) propose that digital objects or entities present us with certain problems and those particular problems include issues surrounding what constitutes identity within digital world and between digital entities.

According to Allison et al (2005) digital entities present us with problems, and they have also challenged the issues surrounding what really constitutes identity within the digital world and between digital entities. They determine why digital identity matters, if at all different issue in addressing and responding to identity. However Abelson and Lessig (1998) argue that identity evolves over time and the characteristics change every day. They state that individuals have different uses for identity which call for different representations.

Representation identities have to do with how the individual creates meaning about the world within which she/ he lives, the manner in which meaning is interpreted and expressed. It becomes a vital issue when digital identity is used but there is not a clear distinction on how an individual can control it to help present the persona with the reputation that he or she wants. Jenkins (2004) in his earlier research used the term social identity but later realised that the social aspect is in essence that of identity.

Digital identity theory draws upon ways that accomplish the construction of particular roles or specific roles and identities. Those roles come to light through interactions with the society. Bourdieu cited in Wacquant (2008) argues that the habitus is both structured by the social forces that produce it and structuring through its influence over human behaviour. McCall and Simmons (1978) look at identity theory in terms of behaviour and attitude related to conduct which plays a major role in examining identity. They suggest that an individual has social interaction that may lead to differential performances because it is in accordance with their identity. McCall and Simmons (1978) note that if an individual conducts himself in a manner consistent with his role, and if that role is fulfilling of the specific contents of self, that view becomes legitimate. They stipulate that each individual has incorporated in his 'inner forum' habitus, which is a repertoire of many different perceptions. For McCall and Simmons (1978) this repertoire enables us to take roles that are in accordance with our identity. It enables an individual to use diverse practices in the institution and the field within which they work. According to Bourdieu cited in Wacquant (2008) habitus is the product of the structure, a product of practice and reproducer of structure. For example, the structure is a particular environment from which the individual comes. This is the history they carry with them, as the habitus is formed by past experiences and structured by one's future experiences. These experiences play a major role in teacher trainers' habitus as they shape how they engage in their activities within the field of higher learning. The environment within the institution has practices that involve interaction, previous experiences and cultural perceptions that shape an individual's habitus.

Several parts of habitus involve observable social behaviour of individuals through their interaction with others. Habitus deals with social structures that generate knowledge and action. These are related to experiences which are relevant for identity. Nach and Lejeune (2010) focus on technology identity. They are used for this study because they use an approach which contains and provides additional supporting information that is useful in untangling the concept of identity in relation to communication technologies and identity.

Identity is a social construct of an individual and for technology to be part of daily practice, behaviours relating to technology use or non-use, become ones habitus and are fundamental to identity.

Identity is shaped through interaction; it involves experiences and transitions within the field of teaching and learning. Teacher trainers' interaction with the School of Education is useful

in understanding their identity because habitus influences actions in utilising technologies. Nach and Lejeune (2010) argue that individuals from diverse areas rely on Information and Communication Technologies (ICTs) to accomplish their tasks. They also acknowledge that in order to be able to fit into their new Information Technology environment, there are essential organisational actors in order to develop new skills, behaviours and attitude while dismissing others as they may create a challenge to a sense of self, personal identities, dispositions and the habitus overall. Information Technology is widely accessible but for it to have value it must be productively used with knowledge and skills that must be in relation to the field within which they operate. McCall and Simmons (1978) have examined how important negotiation is in working out the differential performances, which can be several things relating to identity, and relationships and how roles are interconnected within a group or interaction context. The roles are formed from the individuals' habitus that is about past experiences, thus shaping understanding of responsibilities within an organisation. They further note that, for each role to function, the individual must cooperate and exchange relation with other roles. An individual will act on a role or position if they feel that it represents their identity. This is because individuals view themselves differently from the people with whom they interact, but as different with their own identity, interest, duties and resources.

According to Nach and Lejeune (2010) it is vital to examine coping strategies and the ability of people to maintain control over their identity across contexts and factors related to those strategies. They also recognise the vulnerability associated with losing control over ones identity as a critical challenge for internet use in general. However, McCall and Simmons (1978) determine that individuals view themselves in terms of meanings conveyed by a structured society. They make clear that the naming of individual roles within identity theory includes certain things which have to do with self and other, that take on meaning in relation to our plans and the activities in which we are involved in. Nach and Lejeune's study (2010) concurs that, when individuals believe that Information Technology or ICTs add value to their identities by adding desired roles, tasks or responsibilities by providing new opportunities and reducing burdens, those individuals will be more willing to experience positive emotion and perceive their identity to be reinforced.

Goode (2010) highlights the four key belief system areas of an individual's technology identity. Firstly, the beliefs about one's technology skills, the skills one has about utilising the technologies. Secondly, Goode (2010:502) looks at the beliefs about opportunities and

constraints to use technology, which can be determined by the level of participation in using the technologies or the acquisition of technology. Thirdly, the beliefs about the importance of technology, as stated by Nach and Lejeune (2010), that individual's beliefs, understanding and interaction with technology will determine its (technology) importance. The richer the understanding individual has, the more comfortable they can be in utilising the technologies and the user behaviour determines their digital identity. Lastly, they discuss beliefs about one's own motivation to learn more about technology, which is the student's self-efficacy. Self-efficacy is defined by Kinzie, Delcourt and Powers (1994) as an individual's confidence in his or her ability, which may impact the performance of task. Self-efficacy is also defined by Bandura, 1977: 3, as the "…belief in one's capabilities to organise and execute the courses of action required to produce given attainment."

Identity is created through interaction and reinforced by the socialisation process of an individual. It is the past experiences, thoughts and behaviour that encompass how identities are formed. Technology provides experiences and opportunities but when the experiences and perceptions are challenged by aspects of habitus, the complexities of using ICTs must be examined. Nach and Lejeune (2010) have constructed a theoretical model on coping with Information Technology challenges to identity. It is essential to use this model because it provides representation of information and understanding in relation to identity that is challenged by technologies. An individual's digital identity includes his or her attributes, practices, skills and access to technologies.

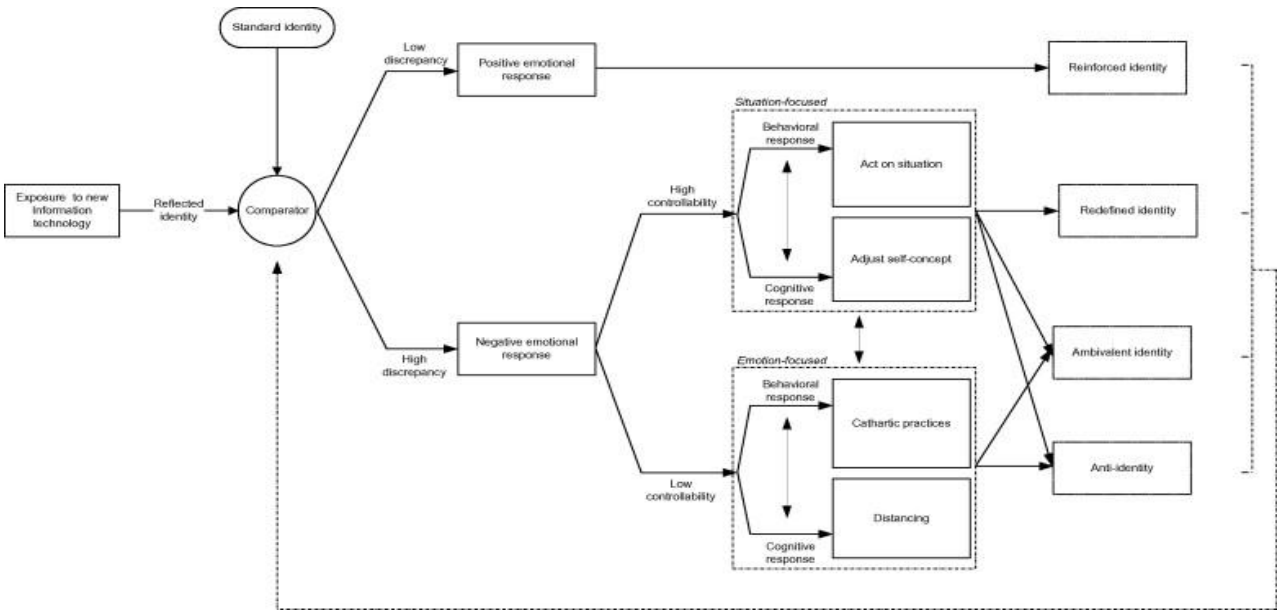



***Fig.2:*** *A theoretical model of coping with IT challenges to identity. Source Nach and Lejeune, 2010.*

This model demonstrates internal changes to be considered within self when an individual's identity is challenged in the course of interaction with information technologies. An exposure to new technologies can have an effect on job activities and desired roles expectations. It could be said that Bourdieu's theory of habitus plays a vital role in depicting an individual's behaviour arising from past experiences. While some individual's interaction with technology can be consistent with how they see themselves when given the technology, some find that it fits in well with their desired role, confirms supports and reinforces their identity. Thus, King (2000) contends that habitus serves as a strategy which generates principles which drive an individual's thoughts, perceptions, expressions and actions that enable an individual to decide about the diverse tasks in his or her daily life.

Daily practices, experiences and behaviours play a pivotal role in construction and representation of one's identity. McCall and Simmons (1978) examined the concept of identity and interaction by identifying that it converges and, within each, it has a key concept which results in the development of a situated identity. They have described interactions as "taking place among identities rather than among persons and centering on the meanings of the behaviours rather than the behaviours themselves." According to Nach and Lejeune (2010) an individual may find that a particular technology provides an apparent way of doing his or her job, which may confirm a desired role that supports and reinforces his or her identity. They examined digital identity as the social structural positions which are connected to each other with considerable differences held by an individual and the possible impact of each on that person's performance.

Professional identity has to do with an individual's abilities, activities he/she engages in, principles and professional knowledge as an academic. "Professional identity can be thought of as both personal and social in origin and expression. On the other hand, one's personal 'self', or one's 'identity', consists of a self-aligned mix of beliefs, values, perceptions, experiences and emotions that constitute the way one sees one's own place in the world. On the other hand, identity or self is intensely socially and rationally situated, and is influenced by the political, historical, social and cultural conditions and discourses that operate among and around us. Professional identity is thus personally and individually perceived, but socially and culturally negotiated" (Davey (2013:31-32).

Alsup (2003) presents a rational argument about professional identity. She suggests that professional identity has to do with understanding the self through participation to

professional bodies. Digital identity, which is central to this study, is interconnected to professional identity because of the on-going construction, and sharing diverse experience while integrating roles within the two entities. Individuals act in a role or position that represents their identity (McCall and Simmons, 1998). Individual's beliefs about opportunities, skills and expertise in using technology also play a vital role in their digital identity. Similarly, Alsup (2006) argues that professional identity involves beliefs, dispositions, professional qualities and internalised ideals located within individuals. Professional and digital technology mean different things in different contexts, in this study they (professional and digital identity) are about developing self-belief and knowledge within a professional community with differing experiences and understanding of each entity.

Professional and digital identities are rather contestable concepts because an academic digital identity may be part of his or her professional identity. However, Alsup (2006) argues that others may experience a conflict within self about digital and professional identity. This may be caused by a teacher trainer basing his or her experiences on others and enacting what she/he believes is expected of him or her, without allowing themselves to experience cognitive dissonance related to teacher identity. Alsup (2006) stated that, "…expressing oneself through discourse and having this expression heard and respected is important in order for an individual to develop a healthy identity." She further suggests that, there is a need for an individual to have a voice in developing professional identities, so that, one can make decisions about the identity they choose to adopt. Nach and Lejeune (2010) provide a rich understanding of a range of user-behaviour that is grounded in the individual's identity. Figure 2 also provides an insight into understanding patterns of behaviour for each individual, such as resistance, technology acceptance and rejection, self-adjustment and resistance to accept the technology and utilise it. Individuals may reject a technology not necessarily because of an Information Technology task mismatch or performance issues but because of how technology makes them feel about themselves. Just like Nach and Lejeune (2010) recognise that a user may initially be reluctant to use technology but may choose to adapt to the new work environment by learning new skills in response to sustained support from management or perceived value. Emotions like pride, enthusiasm, joy and self-esteem are key ways by which identity is expressed or 'performed.' In the course of interaction with technology, anger, frustration and relief may also be felt. Information Technology has broadened the way in which people work.

McCall and Simmons (1978) acknowledge that identity theory deals with the components or elements of a structured society. When people act in the social structure, they tend to name one another and themselves in the sense of recognising each other as occupants of certain roles. This is because the self is fashioned through our social interactions, community, and the networks to which we are affiliated, including the desired roles. They construct our identities and also interpret the identity of others. McCall and Simmons (1978) further note that, as individuals, we tend to identify people we meet in terms of their social positions or the role they have within a society. According to McCall and Simmons (1978) this is because we may know the implications people is positions or social roles have for our plans of action and we can modify our conduct or the manner in which we carry ourselves accordingly. In concluding this section, McCall and Simmons (1978) contend that individuals hold certain expectations towards occupants of a certain position, and the expectations we have display an aspect of anticipation. On the whole, the concept of habitus highlights the shift in identities when habitus is reproduced. Habitus provides useful concepts in understanding identity and its relation to habitus. Dispositions that are compatible with the field are more likely to be rewarded because they are valued by structuring practices.

Humans are linked to certain roles and McCall and Simmons (1978) examined the fact that, by extension, individuals are also linked to the larger society. If the linkage is tight, an individual view of self is more likely to be influenced by definitions and meanings attached to those groups and roles. Paying special attention to identity theory, McCall and Simmons (1978) argue that the manner in which an individual perceives his or her role identity influences his or her behaviour. McCall and Simmons (1978) define role identity as the character and the role that an individual devises for himself as an occupant of a particular social position. They contend that role identities are mostly intuitive because occupants of such roles view themselves as they would like to think of themselves and acting as occupants of that position. According to McCall and Simmons (1978), this is because individuals tend to enact identity of an important role which predicts their identity. The role identity is welcomed with new characteristics and skills that are perceived to be consistent with that identity. They argue that the contents of an individual's role identity provide him or her with a criterion for appraising his own actual performances. This means that conceptions of self as discussed by Benson and Mekolichick (2007), give meaning to our daily routine, for they largely determine our interpretations of the situation with which an individual is faced, the event and other people we encounter. McCall and Simmons (1978) argue that our role

identities go as far as to determine the objects of our environment, their identity and meaning. On the whole, the habitus is closely aligned with identity. Dispositions allow the individual to act and behave in a particular way, which is aligned with their role identity.

Benson and Mekolichick (2007) advocate that highly interactive activities to instant messaging, can have a maximal educational impact for the largest number of users. However, studies have shown that both faculty members and students vary widely in their desire and ability to use such tools. Benson et al (2003), cited in Benson and Mekolichick (2007), acknowledges that many aspects of the relationship between how people view themselves and their desire to use, support and become comfortable with digital technologies, have not been examined. Core identities, according to Jaffee (1998) cited in Benson and Mekolichick (2007), are often invoked and defended in teacher- student interactions and the use of digital technologies may disrupt, threaten or enhance those identities. Benson and Mekolichick (2007) raise an interesting view on digital technology use in higher learning institutions, as they claim that, for students, this association may influence the extent to which such use is related to performance on academic tests, papers and projects. While for faculty the relationship may help to explain who is more likely to adopt appropriate digital capabilities in their teaching which, in turn, may indirectly influence such factors as a student evaluation score and professional reputation, McCall and Simmons (1978) argue that there are competencies and interactions that encompass a shift in the minds of the students' selves.

### 2.3.1 The relationship between digital divide and digital identity

Digital divide and digital identity are interrelated entities. Van Dijk (2005) and van Dijk (2006) provide an important view of digital divide to assist in untangling the relationship it has with digital identity. On the other hand, Goode (2010) uses the concept of identity in relation to how academics relate to the use of ICTs. Her article on digital identity divide focuses on the concept of technology identity. Goode (2010:498) states that, "technology identity represents a blend of four areas of an individual's belief system: beliefs about one's technology skills, beliefs about opportunities and constraints to use technology, beliefs about the importance of technology, and beliefs about one's own motivation to learn more about technology." Both concepts are useful for the study because digital divide is a social issue, with socioeconomic disparities linked to societal perceptions. The digital inequalities have an effect on habitus. Patterns of digital divide contribute to shaping digital identity and the individuals' habitus.

Digital divide is defined by Van Dijk (2005) as being the gap between those who do, and those who do not, have access to computers and the internet. Originating from Prensky's work, "Digital Natives, Digital Immigrants" (2001), the term has been used in different contexts. However, for this study the focus is on the educational context. Prensky (2001) deployed the term "digital native" as the, "native speakers of the digital language of a computer, video games and the internet." Prensky later defined digital natives as the current generation born in a digital media environment. They have a better understanding of technology concepts and digital immigrants than individuals born before the existence of digital technologies. With the on-going debate on digital divide, there is a rather contrasting understanding of the notion, with Peter and Valkenburg (2006) focusing on digital differentiation, stating that, the emerging digital differentiation approach predicts that internet use will depend on socio-economic, cognitive and cultural resources. The approach, according Peter and Valkenburg (2006) tends to evaluate political and social role, with different uses and different patterns on using the internet. These patterns result from unequal socio-economic, cognitive and cultural resources (Van Dikj 2002 cited in Peter and Valkenburg (2006:297). In understanding the relationship between digital divide and digital identity, Bourdieu's concept of habitus provides a way of interpreting practices which lead to digital divide.

Habitus refers to sets of practices that have become common practice. The societal shared dispositions integrate past and current experiences. He says that unequal access to the new digital media was only acknowledged as the problem of the future. This means that digital divide promotes unequal access with unequal effects. Bourdieu's notion of habitus and capital provided him with an approach in creating ways to explain the existing social inequality. These social inequalities are mostly perpetuated through education created by class inequality. Bourdieu quoted in Wilkes (1990:114) defines class as "set of agents who occupy similar positions and who, being placed in similar conditions…… have every likelihood of having similar dispositions and interest and therefore of producing similar practices and adopting similar stances." Digital divide is a term used to refer to a gap between those who have access to technology and those who do not. It is the gap between those who have the expertise and training to utilise technology and those who do not. Habitus enables the past experiences to be present. This is because habitus generates perceptions, expectations and practices which are active components of an individual's past experiences that function in the present, thus shaping thoughts and perceptions.

Societal inequalities lead to digital divide thus having an impact on digital identity. Goode (2010) denotes that holding a particular technology identity impacts the academic and social life of college students. Knowing how to utilise the technological environment at the university is critical for a student's academic success. The article is about a range of technology knowledge among the students in higher learning institution. Some students come to institutions of higher learning underprepared for the digital environment of that particular institution. In this case, habitus is representative of embodied social structures that result in digital divide. Goode (2010) affirms that the digital divide has an impact on higher learning education, which can be the lack of technological mastery skills in some students, due to societal factors.

Light (2001), cited in Goode (2010), comprehends that digital divide considers the disparities in access to, and use of, digital technology. He contemplates that digital divide has moved away from being a direct technological perspective and that it is now moving towards a framework that examines how the digital divide reflects and reinforces the society's social and economic inequities. In addition, Goode (2010) enlightens that digital divide is based on an assumption that closing the gaps in access to computers will diminish broader technological inequalities. According to Light (2001), this is an assumption which requires enormous faith in the capacity of a technology to bring about major social change. Goode (2010) indicates that technological integration not only varies according to socio-economic status, but previous research examining which students encounter rich computing learning experiences has shown that there are discrepancies in access along the lines of race. Goode (2010) comprehends that students whose computer use, or personal computer, is low, have a widening digital divide. How wide or narrow the digital divide is can be determined by the manner in which schools provide learning opportunities and abilities. She further suggests that digital divide is determined by how schools provide different learning experiences for students from different gender, racial and socio-economic groups.

As mentioned previously, digital divide is defined by Van Dijk (2005) as the gap between those who do not have access to computers or information and communication technologies and the internet, and those who do have these facilities. On the other hand, Goode (2010) notes that perceptions shift overtime and they are mostly influenced by the benefits of using the technologies. With progressing research, digital divide is no longer seen as the 'haves' and 'have nots'of digital technologies. Van Dijk (2006) reviewed his research and has identified different types of inequality to which the term digital divide refers to. According to

Van Dijk (2006), those types of inequality are vital, as they may point to the first answers in our search for reasons of the use and non-use of the internet and digital technologies by students. In this case, digital divide is formed by lived experiences. The relationship between capital and habitus is very important because it reveals how the amount of capital one has can condition one's way of thinking and can lead to a certain habitus and therefore result in an unconscious belief in the legitimacy of class inequality. Habitus is a structured structure which incorporates practices that are embodied in individuals. Such different inequalities, according to Van Dijk (2006), can be grouped into immaterial, material, social and educational types of inequalities, as shown in Figure 3 below:

| **Technological** | **Technological opportunities** |
|---|---|
| Immaterial | Life chances |
| Freedom | |
| Material | Capital (economic, social, cultural) |
| Resources | |
| Social | Positions |
| Power | |
| Participation | |
| Educational | Capabilities |
| Skills | |

**Fig. 3:***Types of inequalities caused by digital divide. Adapted from Van Dijk (2006).*

In terms of Bourdieu's concept of habitus, the above figure explores the power of social change. The shift from material to cultural and symbolic forms of capital is, to a large extent, what hides the causes of inequality. Habitus is able to change under certain circumstances and, over time, practices and structure shape and condition perceptions. This indicates the shift in cultural structure, also an individual shift in perceptions. Therefore that individual becomes an agent of that change. In order to establish the relationship between the digital identities of teacher trainers and how they approach using ICTs in teaching and learning, Van Dijk (2006) very usefully classified digital divide research under four successive types of access: motivational, physical, skills and usage, suggesting that, in most developed countries, the physical divide, (and thus the problem of insufficient access to the internet) is closing,

while the digital divide caused by a lack of digital skills and concerning the use of applications continues, and skills even widens. The notion of class habitus has been beneficial in explaining how the concept of inequality functions: it may function through socialisation, which focuses on agents of change which, in turn, reproduce certain structural dispositions.

These structural dispositions may result in the way that social and economic inequality is natural and cannot be avoided and therefore people accept the status quo without questioning how legitimate it is. As Van Dijk (2006) brings an insight, that digital divide is now seen as a continuance of access and use where multiple interrelating factors such as attitudes, skills and quality of access are at work. He further explores in detail how the user interacts with others when using the technologies. He suggests that when participants can reflect upon using new technologies and their lives, the culture of continuous learning will provide new learning experiences. This can include how the uses of technologies are changing their lives, or making them easier, due to technology improving the system of their work and making it quicker to complete some tasks. Goode (2007), cited in Goode (2010), stated that not only does technology integration across academic disciplines vary according to socio-economic status, but research examining which students encounter rich computing learning experiences also exposes discrepancies in access along lines of race and gender. In other words, the discrepancies refer to inequalities to accessing and utilising the medium, while, in other cases, there are lower levels of usage among women and certain racial groups.

### 2.3.2 The significance of learning theories in educational technology

Learning theories, particularly constructivist theory, is brought into focus in this section because of its relation to social practice and how individuals engage with learning. Gaining knowledge is a societal practice that contributes to an individuals' ways of knowing. Learning is part of constructing meaning through the process of social interaction. The social experience plays a major role in the formation of identity. Production of thoughts and perceptions are made possible by habitus because of a deeper understanding fostered by education or ways of knowing.

New technologies are changing in education, as are the identities of the individuals' conception about themselves as producers of knowledge and how that knowledge is

delivered. This study aims to draw on digital identity and teacher trainers and their collective expertise in knowledge production. Pedagogy will provide an opportunity on teaching and learning of academics, their expertise in their chosen fields and on reflection on their teaching experiences. In regard to digital identity, it is essential to understand learning theories as they provide an account to ideologies and contextualisation of instructional design. An individual's teaching paradigm may consist of, or combine, different learning theories. Mutch (2003) indicates that Bourdieu's notions of habitus are not just a form of practice, but modes of thoughts that are unconsciously acquired; these thoughts are resistant to change and are transferable between different contexts. Identities are internally stored and the modes of thoughts acquired through habitus provide a range of user behaviour which is grounded on their digital identity.

There are implications associated with the use of an educational technology environment. Such learning environments must entail the instructor and student's role, social characteristics and the role of technology in the teaching and learning environment. The main theoretical traditions informing on-line learning are behaviourism, cognitive science and constructivism. These theories are essential components of an individual's digital identity, and are manifest aspects of teaching and learning. For instance, direct instruction provides opportunities for the acquisition of knowledge, skills and dispositions informed by the beliefs of behaviourist theory. On the other hand, the cognitive constructivist view maintains knowledge is continuously reconstructed and refined through experiences. Pedagogy must provide experiences. Dewey, as cited in Hein (1991), defines the term 'constructivism' as the idea that the students construct their own knowledge.

When meaning is constructed, there is a process of learning. The social constructivist theory signifies a general approach to identity as it suggests that students must be provided with the opportunity to interact with their senses so that they can construct their own meaning in their own world. The teacher trainer must develop a strong understanding of digital identity for self, students and the organisation or institution to which he is affiliated. This is because identities are linked to social structure within which identity exists. This includes activities, resources, meaning and expectations associated with the role and enabling an individual to enact the desired identity role. However, Tam (2000) explains constructivism as a fundamental departure in thought about the nature of knowing, hence of learning and thus of teaching. In addition, constructivist teaching is based on the belief that learning occurs as

students are actively involved in a process of meaning and knowledge construction, rather than passively receiving information.

Geelan (1997) argues that the constructivist perspective affirms two principles. He first, suggests that knowledge is actively constructed by students and that such knowledge is constructed on the foundations of the students' existing knowledge. Constructivism is a philosophy of learning that helps us reflect on our past experiences and we construct our own understanding of the world in which we live. Likewise, habitus integrates past experiences, perceptions and thoughts which shape current practices. Knowledge is constructed by students through an active mental process of development; learners are the builders and creators of meaning and knowledge. Constructivism draws on the developmental work of Piaget (1977). According to Geelan (1997) constructivist teaching fosters critical thinking and creates active and motivated learning.

### 2.3.3 Pedagogy before technology

Change is part of the field of higher learning, societal and technological development and new ideas and visions entering education. Jochems, Merriënboer and Koper (2004) highlight that new educational methods are introduced to support complex learning and the development of professional competencies. Their view is that technology mediates social and educational contexts; we speak of technology affording learning and education. This means that we must take the technological, social and educational affordances into account as discussed in Kirschner (2002). Affordances are determined by the technology utilised, the technology fixtures, interaction and interdependence. Jochems et al (2004) argue that affordances are relevant to the students' social interaction. They should invite students to engage in activities that are in accordance with them. Kirschner (2002) as cited in Jochems et al (2004), defines educational affordances as the characteristics of an artefact that determine if and how a particular learning behaviour could possibly be enacted within a given context.

It has been an issue that most technological devices are developed solely with a goal of using technology and completely ignoring the needs and abilities of the people who will be using it, which also applies to their use in education. Therefore educational affordances must fulfil the learning intentions of the students while ensuring that they are meaningful and must, as well,

support or anticipate the learning intentions. E-leaning is not simply a matter of ‘digitising’ traditional materials, but involves a new approach, which must take into account pedagogical, technological and organisational features to form a well-designed education system. Carrington and Robinson (2009) demonstrate that for teacher trainers to engage most productively with the full range of possibilities and affordances offered by digital technologies, they need to engage with digital cultures and develop more relevant pedagogies in relation to social learning.

It is believed by Chappell, Rhodes, and Solomon Tennant (2003) that identity is an important frame for examining pedagogy, change and lifelong learning today. They argue that each individual comes with a different background, different institutional histories and different theoretical allegiances that have different practising engagements. According to King (2000) habitus ensures the active presence of past experiences, as well as the appropriateness and cohesion of practice overtime. It enables free production of thoughts, perceptions and actions within the socially situated boundaries that originally were set for its creation. Chapel et al (2003) note that new economic times’ discourses are having a major influence on major areas of education. It is self-construction and re-conceptualization of knowledge which occurs inside and outside the educational learning institutions. Technology has changed the way in which we do our work and has greatly transformed education. Watson’s research (2001) has indicated that teachers are threatened by change, and, conversely, are not impressed by change that appears to focus on what technology can do rather than on learning. She suggests that teachers use Information and Communication Technologies in their teaching only when it has a particular resonance with their pedagogic and subject relationship. The reluctance to adopt change may be from past experiences or the lack of technology exposure which defines their digital identity.

According to Watson (2001) pedagogy emphasis is on the use of Information Technology in the curriculum which helps students to become more knowledgeable. The knowledge gained is about the nature of information, comfort with the new technology and the ability to utilise it to their advantage. However, it is important to distinguish between teaching with computers or information technologies, and teaching students about computers. It is vital to understand and have the skills and confidence required for an educator, as well as the use of technology and the relevance of knowledge learnt. Ofsted (2001), cited in Watson (2001), acknowledges that some teachers may have computer expertise but they rarely use the pedagogic expertise to help them make the most effective use of Information and Communication Technologies in

their lessons. For most, technology is based on skills and knowledge gained, rather than on the knowledge it can impart. While Watson (2001) states that the importance in developing confidence and satisfaction is in the use of information technology, she also notes that it helps to develop the flexibility required to take advantage of future development in information technology, digital identity and teacher training.

## 2.4 Pedagogical practices and technological implications in higher learning institutions

Beetham and Sharpe (2007) define pedagogy as the processes, experiences, contents, outcomes and relationships of teaching and learning. This involves using that art on the traditions of teaching and learning, while initiating theory and practice. Lytras (2005) argues that, it is merely the specification of engagement mechanisms with the learning content. He further suggests that Bloom's three domains support the digital technologies educational design. Bloom's domains include Cognitive, Affective and Psychomotor. For Lytras (2005), Bloom's taxonomy promotes the achievement of well-defined objectives. This is because the levels, (namely knowledge, comprehension, application, analysis and synthesis) increase in difficulty. This promotes the learning performance and the highest degree of a learning content. Lytras (2005) argues that it is essential, when using Bloom's taxonomy in the technology environment, to use such a starting point. However, academics are still concerned about the approach to be used in the mode of delivery of the content taught. Bourdieu (1984) cited in (King 2000:423) states that, "the cognitive structures which social agents implement in their practical knowledge of the social world are internalised, embodied social structures." According to (King 2000:423),"this habitus is derived directly from the socioeconomic or structural position in which individuals unconsciously internalise their objective social conditions, such as their economic class, so that they have the appropriate tasks and perform the appropriate practices for that social position."

Information and Communication Technologies (ICTs) are used to enhance and support teaching and learning processes. It is the instructional content (or learning experiences) easily enabled by electronic technologies. It also incorporates a wide variety of learning strategies and technologies. These strategies have much to do with the identity or digital attributes of the content delivered. There are still questions on whether technology use enhances learning and if this improves the students' achievement. However, it may also depend on how the technologies are utilised, because utilisation influences outcomes. Kobayashi (2008)

acknowledges that a technology-based environment can create a great opportunity for training in higher learning institutions, as it provides an opportunity for instructors to re-examine their teaching and learning goals, curricula content so that they can make an explicit connection that exists among them as expertise within their fields of interest.

In reviewing the literature, Castells (2009) argues that higher learning institutions have also been expressively affected by technological change itself. According to Nach and Lejuene (2010), this is because, higher learning institutions are institutions that process their own information and have communication technologies outcomes, namely reinforced identity, redefined identity, ambivalent identity and anti-identity through the use of technology or lack thereof. These are strategies through which individuals strive to redefine themselves. One of the strategies of coping with information technology is classified as 'acting on a situation.' Nach and Lejuene (2010:621) suggest that it refers to a situation which focuses on an individual's coping strategy. They also propose that, when individuals believe they can do something, or when their identity is threatened by Information Technology, they will take measures to defend and manage their valued identity and attempt to bring their work in line with their self.

> "We defined four types of strategies (acting on the situation, adjusting the self, cathartic practices and distancing) through which people cope with technological challenges to their self. We suggest that these strategies may lead to four individual-level outcomes, namely reinforced identity, redefined identity, ambivalent identity and anti-identity." (Nach and Lejuene, 2010:618-619).

These strategies are essential for this study in order to understand the processes by which information technology affects users' identity. Reinforced identity is characterised as the manner in which individuals process information centred on their identity. For Nach and Lejuene (2010), this means any information that conflicts with the manner an individual sees in him/herself is rejected by others, yet information that contributes to reinforcing and confirmation of identity creates a strong and fulfilling identity. (Nach and Lejuene, 2010:627) state that, "identity is never fixed; people will keep on moving in and out of the role-performance arena to fit in their environment. This suggests that an ambivalent identity, for instance, may turn into a redefined identity or vice versa. They describe redefined identity as a process of restructuring an individual's identity through social interactions, attributes,

beliefs and values one holds. Ambivalent identity has to do with uncertainty or attitude of an individual towards change. The role of knowledge and self is the result of hesitancy about approach and attitude. Some individuals could embrace technology but certain individuals could reject the technology completely. Some of the reasons for this reaction could be the changing of technology features or they may partially use the technology for its functionalities. However, anti-identity indicates an identity which members of an organisation or institution are afraid of becoming. Their identity is not aligned with the goals and vision of an institution.

The study by Nach and Lejeune (2010) aims to explain and justify why it will employ a critical perspective in line with the central argument of this research which revolves around the role of identity and the relationship between teacher educators and how they approach learning. They believe that, while individuals are attempting to adjust themselves they may oppose a particular requirement of a technology but consent to adjust some personal habits to fit other requirements. Their habitus allows them to act in accordance with a desired behaviour. In an attempt to adjust the self, an individual will use the internalised dispositions to develop their own abilities and acquire the dispositions of habitus through experience and social interactions. Similarly, (Nach and Lejeune, 2010:621) believe that, " … a user may initially be reluctant to use technology but choose to fully adapt to the new work environment by learning new skills in response to sustained support from the management or perceived value in the long run." There are also emotion-focused coping efforts which may bring feelings of hopelessness. These feelings could be driven by poor self-adjustment or failure to confront a problematic situation. According to Lazarus (1975 cited in Nach and Lejuene, 2010:622), "cognition and cognitive processes are believed to provide people with some relief or prevent them from being overwhelmed by situational stress." Therefore "distancing" becomes a cognitive response to a particular situation. Distancing then becomes a defence mechanism used to protect oneself from unpleasant emotions. The cathartic practice is experienced from releasing negative emotion. Nach and Lejuene (2010:624) discovered that this practice is mostly driven by feelings of hopelessness, anger, and frustration which threaten their identity. As a result, identity confirmation will be unsuccessful, and the interconnected position and social structure are likely to diminish or create a gap between self-meaning and identity standard.

## 2.5 Approaches to the use of ICT in teaching and learning

Wilson and Stacey (2003) see a great need for, and the importance of, the role of instructors in higher learning institutions in teaching and how they can develop their on-line presence. Wilson and Stacey (2003) acknowledge that new technologies provide a flexible model for learning, while ICTs require interactive learning. With the use of digital technologies in higher learning institutions, the educator staffs need to embrace the course designs as well as the changes that new technologies and pedagogies can bring. Vygotsky's theory of social constructivism is an explanatory theory when it comes to the effectiveness of on-line learning. With the process of communicating electronically, it enables the learners to construct actively their own perspectives of learning.

The use of digital technologies in teaching and learning comes with the need to match the levels of needs of academic staff to content and development. The new technologies are providing greater opportunities for educators to make learning more interactive and collaborative. Wilson and Stacey (2003) argue that opportunities should be provided for staff to share their experiences, ideas and reflections with others as they engage students in the learning environment. Some may see the diversity of teaching and learning in using digital technologies for teaching and learning as something that challenges the traditional concept of education. One of the key objectives for using digital technologies in teaching and learning is to make lifelong-learning a driving force behind a diverse society. Laurillard (2002) suggests that we need to find better ways of using technology so that we can scale-up the quality and the value that the teacher provides. She describes the importance of higher education in ensuring that there is personal development among academics as individuals. Information and Communication Technologies are opening up new opportunities in higher education; even though the full potential is yet to be fulfilled Laurillard (2002) is encouraged about the manner and the speed in which technology is advancing. However, she acknowledges that there is still a great need for a clear distinction between teaching with technology and teaching about technology. Vygotsky's theory of social constructivism as cited in Wilson and Stacey (2003) state that students must have the ability to challenge their own knowledge and the views of others.

In researching the expectations of students for an interactive learning environment that engages them Sims (2003, cited in Wilson and Stacey, 2003) concluded that the students'

control of the environment with active communication providing feedback was an essential component of interactivity. Wilson and Stacey (2003) assert that the students' process of learning was achieved through collaborative behaviours, from their sharing the diverse perspectives of the other group members, to being able to seek feedback and clarify ideas through the groups communication, either electronic or through other forms of communication stimulated by the electronic group communication. According to Flottemesch (2000) cited in Wilson and Stacey (2003), students tend to judge the learning environment by the perceptions that their educators have and by the interactivity of online education, that includes the use of communication technologies by teacher trainers. Such perceptions underline the importance of providing all teacher trainers with effective professional development. Wilson and Stacey (2003) describe development for academic staff in relation to the use of Information and Communication Technologies.

Technology adoption patterns of academic staff differ with each individual. If one's habitus allows one to generate technological practice, one will. King (2000) explained that the habitus established by an individual will certainly allow him or her to act in accordance with the logic of the situation. This is because those who utilise the technology will see it as fun and challenging. Wilson and Stacey (2003) contend that those individuals will use the technology to achieve and improve their teaching and learning. They further suggest that, in using technology, there must be an interaction and the technology used must be carefully integrated. While Wilson and Stacey (2003) are aware that academic staff may not embrace change at the same time and in a similar manner, some may be more reluctant than others. Academic staff is expected to integrate the use of technologies into their teaching. King (2000) asserts that, because of the perceptual structures and integrated dispositions, those dispositions assist the individual to organise the way in which they see themselves and in which they act in the world. Pressures for universities are expanding. Laurillard (2002) argues that technology can do so much, but academics need to question the knowledge-building and the transmission process of knowledge. She argues that the social and academic interest in knowledge should be well understood. Therefore, it is imperative that teachers provide appropriate content and ideas for the particular learning activities that they want to design. (Laurillard 2002: 143) argues that, "…if there is to be innovation and change in university teaching- as new technology requires, as the knowledge industry requires and as students demand- then it follows that academics must become researchers in teaching." Technologies have been adapted to teaching and it can be difficult for individuals to decide

on how best to use the learning technologies for learning and how these can best suit a particular subject. She further states that universities need to change the approach in order to meet the challenge and massive needs in higher education.

There have been various efforts to integrate ICTs into institutions of higher learning. Kozma (2001) affirms that content knowledge needs tools and methods for effective delivery. Instructors must demonstrate an appropriate pedagogical knowledge and skills in areas of teaching methodologies, assessment techniques, instructional design and the use of educational technologies. Knowledge must be integrated in teaching in a manner that will make the delivery of content more effective. Kobayashi (2008) explains that, for ICT to be integrated effectively within the curricular and different academic activities, higher learning institutions must be committed. This commitment includes utilising technical support, training and infrastructure, which must be identified in order to transform the traditional culture of all academics.

## 2.6 Literature Review Conclusion

Bourdieu's theory of habitus helps to unravel the concept of digital identities presented in the literature. Teaching and learning trends with regards to teacher trainers' approaches to the use of ICT have been reviewed in order to determine the requisite or associated pedagogical expertise. Kobayashi (2008) declares that usage of ICT is still a challenge to instructors as they must not only become familiar with ICT, but also obtain the pedagogical expertise needed for effectively and productively working with the new technology learning environments. He further explains that there are pedagogical issues involved in using Information and Communication Technologies with which academics need to be familiar.

The concept of field, cultural capital and habitus are the key concepts used by Bourdieu to explain his social theory. The review of the literature indicates that the history of the individual, structured structures and the experiences learned or gained result in dispositions. In Bourdieu's terms regarding structures, habitus is embedded within an individual in a cultural manner. King (2000) noted that the habitus comprises perceptual structures and embodied dispositions which organise the ways in which individuals see the world and the manner in which they act in it.

It has been suggested that the notion of digital divide has been misinterpreted, defined and used differently in the literature. Van Dijk (2006) argues that there are many shortcomings to digital divide research, which, include the lack of theory, conceptual definition, interdisciplinary approach, and qualitative and longitudinal research. Goode (2010) indicates that technological integration brings major social change. She affirms that digital divide is based on an assumption that having access to computers will diminish technological inequalities. However, it is societal inequalities that contribute to social and digital divide. Literature indicates that digital divide is not an issue of a technology gap but rather societal inequalities and economic inequities thus having an impact on digital identity. Bourdieu's notion of habitus is used in this study to understand the relationship and approaches teacher trainers have with ICT. Also the integration of ICT to teaching and learning and practices associated with it. At the most, discussions in this study are about digital divide, the use of digital technologies, how teacher trainers relate to the use of ICTs, and habitus as a framework and main focus on digital identities.

Jaffe (1998), cited in Benson and Mekolichick (2007), notes that identities are often invoked and defended in interactions between teacher and students and the use of digital technologies may disrupt or enhance the students' identities. Benson and Mekolichick (2007) affirm that teacher trainers or instructors who strongly identify with their role as faculty members are more likely to use the technology, are comfortable with using it and can integrate technology use with their sense of self. Laurillard's framework on teaching and learning media forms demonstrates learning events and provides strategies associated with technology integration. Benson and Mekolichick (2007) affirm that technology is a tool because it makes some jobs easier to perform. Nach and Lejeune (2010) concur that individuals' beliefs, understanding and interaction with technology will determine the importance of technology to those individuals. The rich understanding of technology and user behaviour will determine an individual's digital identity because individuals do not view themselves as being similar to the people with whom they interact but according to the role they represent, their interests, duties and norms associated with that role.

The role associated with the use of ICT seems to be significant. Swartz (1997) contends that the concept of habitus makes it clear and easy to determine how the social reality generates the actions of the individual, the manner in which an individual acts and how individuals see themselves within the society and the role they have. Literature point out that educational technology may create a rich learning environment in higher learning institution. Goode

(2010) suggests that the majority, if not all, higher learning institutions require students to use the internet for everything that they do. That includes searching for resources through their library internet portal, submissions of assignments, applications for financial aid, legislation, research and campus announcements. Goode (2010) believes it is therefore important to be technologically savvy and it is key to achieving academic goals successfully in higher learning institutions. She also notes that past experiences and exposure to using the internet and communication technologies influence the adolescents' relationship with technology today.

Goode (2010) believes that research and surveys previously done provide important information about unequal distribution of resources and knowledge. According to Goode (2010), digital divide moves from distinct technological perspective and towards a framework that examines how the digital divide reflects and reinforces society's social and economic inequities. King (2000) determines that this is because habitus represents the visible forms of social structures which focus between working class. The negative effects of digital divide have made it a struggle to overcome social inequality.

As indicated in the review, it can be said that technology is utilised differently from one individual to the other. Diverse practices and dispositions of habitus indicate a varying degree of capacity in experiences and in utilising technology affordances. Wilson and Stacey (2003) assert that, through a range of educational media, each individual uses a particular method of teaching which is unique from the others. There is also diversity of access which causes a shift from teaching to learning. A great emphasis of habitus is drawn from the concept of culture. Its interpretation is based on how individuals view the world within which they live. In other words, their view or interpretation defines who they are, which influences how they interact with others. Wilson and Stacey (2003) argue that education cannot easily change but the education system needs to progress faster to increase knowledge and understanding. The challenge is therefore for universities to ensure that they inspire teacher academics to develop their capabilities and have curriculum-defined goals so that they can improve their teaching strategies. In terms of habitus being a structured structure which incorporates practices embodied in individuals, it is vital to understand how it affects the digital identities of teacher trainers.

# CHAPTER 3
# Methodology

The purpose of this section is to provide a broad outline for the research study undertaken. A research methodology establishes the current situation, identifies opportunities and problems, and also outlines the type of method used when conducting the research. The methodology suggests instruments used in answering the research question and ways to further probe areas that require further exploration.

## 3.1 Research design

This study uses a mixed method approach which helps in understanding the nature of digital identity change or the absence thereof in institutions of higher learning. This approach is guided by the direction of collecting, analysing data by using a mixed methods research design which incorporates techniques from both qualitative and quantitative research. Teddlie and Tashakkori described the mixed method research in their handbook (2003:285) citing Johnson et al, 2007: 123) as, "mixed methods research is the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative viewpoints, data collection, analysis, inference techniques for the broad purposes of breath and depth of understanding and corroboration." McMillan and Schumacher (2006) characterise a research design as the procedures taken for conducting a research study, which includes when, from whom and the conditions under which data will be obtained. The research design demonstrates the general plan of how the research will be set up, including the ethical consideration of research participants. Are their ages suitable for the type of questions asked? How will consent be obtained and how will confidentiality be guaranteed? It also includes the types of instruments that will be used to collect the necessary data.

### 3.1.1 Data collection

The empirical base of this study was found in an already existing data base. In 2011, an internal survey was conducted in the Witwatersrand School of Education (WSoE) to try to determine the use of digital technologies in teaching by academics. In addition, the PanAf (2011) data base contains some details about ICT integration on teaching and learning by WSoE academics. This research project tapped into these data bases as its starting point, and formed the quantitative dimension of the study. The qualitative dimension of this study is

interviews conducted with six academics. Purposive sampling, which is later defined, was used to select six participants who were interviewed. Identified participants were e-mailed to request them to be part of the study, others responded and some didn't. Personal visits and discussing about the scope and describing the interest of research, assisted in getting some teacher trainers to partake in the study.

The approach has drawn on the range of techniques being used to describe the complexity of their digital identities and habitus from various perspectives. A part of the quantitative data collection techniques included personal history information by The Wits School of Education teacher trainers on data previously collected by the Information and Communication Technologies Committee in 2011. The questionnaires analysed included information from individual lecturers on the use of ICTs in their teaching. These questionnaires were an existing data form PanAf database which is discussed further in the report.

Qualitative data from interview questions has deepened and broadened knowledge about the topic of interest. The rich data gathered provided an analysis for the study and discovered connections with previous studies. The Pan-African research agenda had research collaboration with the University of the Witwatersrand ICT Committee on pedagogical integration of Information and Communication Technologies (ICTs). This information provided an insight to The Wits School of Education teacher trainers' digital identities, drawing on Bourdieu's theory of habitus. This insight reflected on the impact of teacher trainers and their ICT usage in thinking about ways knowledge is presented to students. It's been a proficient way to learn how teacher trainers present knowledge and how ICTs help them to evaluate their own teaching.

The notion of habitus is defined in Belland (2009) as sets of predominant factors which generate practices and perceptions. According to Bourdieu, cited in Belland (2009), perceptions may influence an individual's habitus, although each individual has his or her own unique habitus. However, people from similar backgrounds or shared life experiences may have similar habitus. As this study will be using a multi-methodology approach, the quantitative data collection method used will be by means of questionnaires. The data collected will support and provide qualitative elaboration from individual interviews with six participants. The participants for this study are diverse, although they are all teacher trainers in one institution but their educational experiences and academic knowledge will differ as they all have differing views and approaches to education. Extensive knowledge and

familiarity with teaching has informed and shaped their professional identity (McGregor et al, 2010).

### 3.1.2 Sampling method

For this study, a qualitative purposive sampling technique was used. Purposive sampling is useful in getting opinions of targeted groups and information that is readily accessible. This is effective because you get specific types of people or groups and purposive sampling provides diversity within the given population. According to McMillan and Schumacher (2006), purposive sampling is the selection of elements within a population which is informed about the topic being researched. It is a strategy in which individuals are deliberately selected in order to provide important information that cannot be obtained from other sources. Non-probability is a causal method used for selecting the population group that will be part of the study. In this study, non-probability indicates that sampling does not involve random selection. Purposive sampling is an example of non-probability sampling defined by Kumar, (2005, 207) as, "The primary consideration in purposive sampling is your judgement as to who can provide the best information to achieve the objectives of your study. You as a researcher only go to those people who in your opinion are likely to have the required information and be willing to share it with you."

Within the School of Education, the culture of using digital technologies as part of the teaching and learning process is being established and, as previously mentioned, the data from Pan-African research and information from the Wits School of Education ICT Committee survey has been used. In defining the concept of digital identities, one of the research questions probes about the digital identities of teacher trainers. Macmillan and Schumacher (2006) add that, "samples are chosen because they are likely to be knowledgeable and informative about the phenomena the researcher is investigating". By using the theory of habitus, the data previously collected and interviews conducted conceptualise various theoretical perspectives with different levels of understanding for each teacher trainer but each with unique contribution of digital identity. Digital identity is intangible, so the data will mostly include direct questions to participants about their digital identities and their approaches on using digital technologies for teaching and learning.

## 3.2 Data analysis

The study uses a range of approaches and draw on Maxwell's (2008) strategies for qualitative data analysis, that is coding and thematic analysis. The analysis encompasses the use of Atlas.Ti, software for coding. According to McMillan and Schumacher (2006) the process of coding means giving descriptive terms for a subject matter such that any topics that come up under that codes are grouped together. Categories are formed from codes and involve organizing similar meanings of a topic together. A code may fall under different categories because it may be interpreted in different ways (McMillan and Schumacher (2006)). Forming categories makes it easier to identify patterns through the categories and find the relationship between them. Analysis is used as part of the research framework De Laat (2006), narrative analysis (Sfard and Prusak, 2005) by building an explanation as narrative, McGregor et al (2011) state that narrative analysis is a methodological approach that can be useful in analysing data because it is a multi-modal form of communication which conveys understanding about research, and its form and function for individuals in their particular educational settings, which is how individuals define themselves (Dunne et al (2005) as cited in McGregor et al (2010).This can be determined by cultural contexts and the plurality of the narratives drawn upon and into which those individuals are drawn.

### 3.2.1 Coding analysis

"Qualitative research is research that involves analysing and interpreting texts and interviews in order to discover meaningful patterns descriptive of a particular phenomenon" Auerbach and Silverstein (2003:3).This study uses Atlas.Ti coding which is a Computer Assisted Qualitative Data Analysis Software. Atlas.Ti assists in putting segments of information together and segmenting the selected data into quotations. The software has features which provide an overview of codes, memos and annotations created from the selected passages and data sources. The selected passages and text were assigned codes and memos which are called families. The 'families' make the data manageable because they can be compared to other 'families'. Atlas.Ti for coding was useful for this study because themes and new codes emerged as the researcher re-read the data and codes already created. However, it is vital not to have too many codes because they can clutter ideas and hamper progress. In my experience, Atlas.Ti for coding is a useful tool that assists in ordering qualitative data.

Interviews are conducted in this study to collect data and gain knowledge, and coding is used as a cornerstone for developing the analysis. Kvale (1996: 14) suggest that, "interviews are an interchange of views between two or more people on a topic of mutual interest, sees the centrality of human interaction for knowledge production, and emphasizes the social situatedness of research data." For the purpose of the study interviews are important because the participants shared their point of view on aspects of their digital identity. Kvale (1996) highlights the importance of human interaction on interviews so that participants can be prompted further to shed light to aspects of the study. The text produced from interviews is analysed, segments of codes separated. At the beginning of the analysis, it was manageable coding the information, but when the study progressed it became a challenge, as some codes had to be replaced. At the same time the researcher was trying to avoid having too many codes. Other codes were rather long and had to code changed completely or rephrased. Barry (1998) reports that coding assists automate and speeds up the coding process, which administers a more complex way of looking at the relationships in the collected data. Coding analysis supports a more conceptual and theoretical thinking about the data. However, it is still vital to read and fully understand contextualised data. Also important is to choose the correct software that will meet the researcher's needs. According to Barry (1998), software packages have different personalities and different structures, so that each may be different from the others in terms of functions and complications.

With coding analysis used, when looking for themes certain codes emerged on this study. In finding themes, the focus was mainly on the analysis of primary documents which included PanAf (2011) data and a database of questionnaires which contain details about teacher trainers' teaching, learning approaches and the implications that digital identity has in forming these practices. I looked for themes on the qualitative study, asked questions on whether the respondent has digital identity and the relationship between self and digital use. In trying to figure out concepts, I referred to responses used by the respondents and in the primary documents. Also, the respondents approaches in utilising digital media and whether the phenomena, has resulted in an individual changing or adopting certain behaviours. Codes that emerged include knowledge, practice, access, experiences, communication, computer research, etc. According to frequency of appearance codes that emerged were used as a guide in creating 'families' such as, identity, approaches, teaching and learning, teacher trainers, information, impact in order to group data to represent themes.

## 3.3 Limitations of the study

This is a small-scale study which was conducted in a limited space of time. The limitations of this kind of study become apparent when the researcher reaches the point where conclusions must be drawn and finds that the actual study and the research question might require more confirmation. Results from data interpretation on larger scale studies can produce more precise results compared to those from smaller-scale studies. It is vital to be rigorous when using thematic analysis as the codes must be re-tested to ensure that similar results are found and that the researcher has interpreted exactly what the participants have described in their questionnaire answers from previous data collected and insights gained from individual interviews.

Questionnaires, which were the source of the PanAf data, were distributed to 124 trainers at The Wits School of Education. A total of 39 (31%) from 124 distributed were returned. The responses received provided a minimal view of the entire teaching staff. However, six teacher trainers were interviewed for purposes of this qualitative elaboration. In brief, minimal responses refer to limitations that were encountered in this study.

## 3.4 Reliability and Validity

Reliability is defined by Lewis (1999) as the extent to which a questionnaire, test, observation or any measurement procedure produces the same results on repeated trials. It refers to the degree with which repeated measurements, or measurements taken under identical circumstances, will yield the same results. Validity is about whether an item or instrument measures or describes what it is supposed to measure or describe (McMillan and Schumacher: 2006). The researcher used data previously collected, information on individual lecturers on how they used ICTs in their teaching and analysed information from the Pan-African research database about the Wits School of Education ICT pedagogical integration. Interviews were conducted so that the researcher could go into more depth with certain questions to further develop findings from the Wits School of Education on the questionnaires and documents analysed on digital identities of their teacher trainers' Education. The different sources of data used and the lengthy data collection period enabled continual data analysis, comparison and corroboration to refine the ideas and matches between research-based categories and participant reality (Schumacher, 1993).

Triangulation is a powerful means of demonstrating concurrent validity. It is defined by Cohen and Manion (1994) as using more than one method for gathering data in a study. More than one approach was used to collect data in this study by using both qualitative and quantitative approaches in order to enhance credibility and ensure findings. The multi-method approaches used include three main sources of triangulation (namely interviews, questionnaires and documentary analysis). Thus triangulation was used to verify information generated by the different tools collected in different contexts. Pieces of data and responses from respondents were compared in order to determine similarities and differences in findings and enable the researcher to clarify any inconsistencies that arose.

## 3.5 Ethical considerations

It is vital to deal with participants sensitively, keeping their personal information confidential and asking permission from them to utilise their input. For this study, the participants were teacher trainers at the University of the Witwatersrand School of Education. To ensure that the Institution's Code of Conduct and ethical issues were not violated, the Head of School was contacted to ask for permission and request access to previous data collected PanAf (2011) data) and also to inform her about the scope of the research. She granted permission to conduct research, subject to all conditions set by the school of ethics committee. Participants were asked to sign or initial an electronic consent form, which outlined the nature and purpose of this research study. Co-operation, interaction and level of trust are vital in ensuring productive interviews. Respondents were requested to partake on the interviews by e-mail. A personal follow up was made, so that respondents could get to know the interviewer. Several attempts were made to ensure that interviews took place. Conversational exchanges prior to interviews assisted me to establish the purpose, tone and goals of the interviews.

There is no harm or risk associated with this study. The information obtained from the Pan African database and ICT Committee has been used for this research and is confidential. The Pan-African Research Agenda database is a public domain and information may be used without obtaining consent. The research results are anonymous. Data collected is coded to protect the identity and privacy of participants. The interviews were recorded and notes or scripts gathered from the interview are kept safe and will be destroyed after two or three

years. The study is voluntary and participants were given an option to withdraw from the study at any time by contacting the researcher on the contact details provided.

# CHAPTER 4

## 4.1 DATA PRESENTATION AND ANALYSIS

### 4.1.1 Introduction

The previous chapter outlined the methodology undertaken for this study. This chapter discusses the data analysed from a total of 39 questionnaires completed by teacher trainers at different levels at the University of the Witwatersrand School of Education in 2011 and six teacher trainers who were interviewed in 2012 for purpose of qualitative elaboration of this study. The questionnaires were an existing data set collected by the Wits School of Education, Information and Communication Technology Committee. As earlier stated in Chapter one, the purpose of this study is to establish whether teacher trainers have adapted their use of technologies to the students' trends of learning. It aims to find the practices and approaches of teacher trainers and the implications that digital identity has in forming these practices.

It has been stated on Chapter 3 that the study uses Atlas.Ti for coding and a brief description on how Atlas.Ti is provided. On this section, I will discuss themes that emerged on this study. I started looking for themes focusing mainly on the analysis of primary documents which included PanAf (2011) data and a database of questionnaires which contain details about teacher trainers' teaching and learning approaches mentioned on the above paragraph. When looking for themes I looked for themes on the qualitative study, I asked questions on whether the respondent has digital identity and the relationship between self and digital use. In trying to figure out concepts, I referred to those used by the respondents and in the primary documents. Also to determine, the respondents approaches in utilising digital media and whether the phenomena, which may have resulted in an individual changing or adopting certain behaviours. Codes that emerged include knowledge, practice, access, experiences, communication, computer research, etc. According to frequency of appearance codes that emerged were used as a guide in creating 'families' such as, identity, approaches, teaching and learning, teacher trainers, information, impact in order to group data to represent themes.

Questionnaires were distributed to 124 trainers at The Wits School of Education at different levels within the institution. A total of 39 (31%) from 124 distributed were returned. 85 (69%) out of 124 distributed were not returned and some were unanswered and could not be

used. Reasons for refusal to participate for non-responses have not been given. Therefore, the total number of usable responses received was 39.

Table 2 and figure 4 below are based on questionnaire responses and indicate gender representation for this study:

| MALE | | FEMALE | | TOTAL |
|---|---|---|---|---|
| Number | Percentage | Number | Percentage | Number |
| 15 | 38% | 24 | 62% | 39 |

**Table 2:** Questionnaire respondents by gender

Table 2 above, indicates the respondents' profile by gender, in order to establish the representativeness of each gender. With the split, it indicates a higher proportion of female respondents (62%) compared to their male counterparts (38%). This indicates a higher female representation in educational and professional roles at the School of Education.

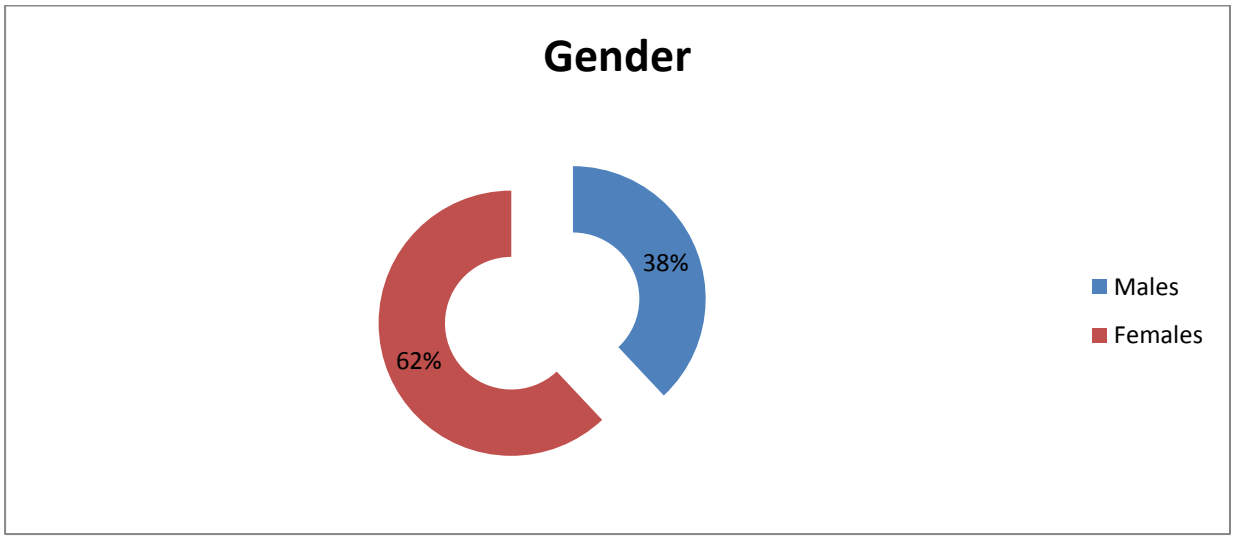



**Fig 4:** Representation of gender in the qualitative data group

Out of the 39 responses to the questionnaire, 38% were males and 62% were females. 39 (31%) out of 124 were used for analysis of this study. Broken down by gender, from the 39 responses received, (38%) were males and 24 (62%) were female respondents. Table 3 on the next page indicates biographical details for the six interviewed teacher trainers, broken down by gender, race, and age range, division they represent and years in teaching in a Higher Education Institution (HEI).

| Age range | Gender | Race | Years of experience in HEI | Division |
|---|---|---|---|---|
| Under 25 | - | - | - | - |
| 26-30 | - | - | - | - |
| 31-40 | - | - | - | - |
| 41-50 | Female<br>Female<br>Male<br>Male | African<br>African<br>European<br>African | *6*<br>*5*<br>*4*<br>*5* | Mathematics division<br>EDIT<br>EDIT<br>ELPS |
| 50 › | Female<br>Female | African<br>European | 18<br>14 | Languages Division<br>Languages Division |

**Table 3:** Biographical details of interviewed teacher trainers

Table 3 is vital for this study because it portrays the educational backgrounds of interviewed academics which are significant to this study since this could show how those backgrounds have affected the academics' dispositions towards the use of ICTs. Education being a category of habitus, the biographical details falls under institutional cultural capital. Sikes & Gale (2006) assist in interpreting and understanding the social positioning, perceptions and experiences of teacher trainers.

Of the six teacher trainers interviewed, four (67%) were females and two (33%) were males. The six interviewed teacher trainers were part of the PanAf (2011) study who had originally answered the questionnaires in order to identify pedagogic uses of ICTs in the School of Education. Age range was not part of the initial interview schedule, but when the interviews were conducted, the researcher deemed it necessary to include age as well. The PanAf (2011) database was used as a source of evidence about the digital identities of teacher trainers The Wits School of Education. The University of the Witwatersrand is part of PanAf (2011) collaborative research on the pedagogical integration of Information and Communication Technologies. The data from the questionnaires was coded using Atlas.Ti for analysis. Atlas.Ti is a tool for coding and ordering qualitative data. The questionnaires did not have demographical information such as race, age, home language and gender. However, the

researcher used information provided by the Human Resources Department, University of the Witwatersrand. The research question guided the analysis of the data presented.

The research was centred on the following question:

**What is the relationship between the digital identities of teacher trainers and their approaches to the use of ICT in teaching and learning?**

The results in this chapter focus on the following specific questions:

1. What are the digital identities of teacher trainers?
2. What are the teacher trainers' approaches to the use of ICT in teaching and learning?
3. What is the relationship between ICT and pedagogy, and how does it reflect on teacher trainers' teaching?

This chapter is divided into three sections. The first section (4.2) discusses research question 1 and focuses on digital identities of teacher trainers at the Wits School of Education. The following indicators are discussed: the role of ICTs in higher education, access, presence and the impact it has, if any, on teacher trainers. The second section (4.3) addresses the second question about teacher trainers' approaches in using ICTs for teaching and learning by looking at the understanding and practices of ICT. The third section (4.4) focuses on the relationship of the teacher trainers' digital identities, ICTs and how this reflects on their teaching.

## 4.2 What are the digital identities of teacher trainers? (Research Question 1)

It was previously stated there were six interviewed teacher trainers. The questionnaires were distributed to all teaching staff at different levels. These levels included associate professors, lecturers, principal tutors, senior lecturers, senior tutors and tutors. This study, as earlier stated, is guided by Bourdieu's theory of habitus as its theoretical framework to explain the phenomena found in literature and research findings. The theory of habitus has helped in understanding, and has provided guidance in analysing, the data collected as it is derived from other studies and this analysis of study findings provides new insights and understanding, with a contribution of new knowledge.

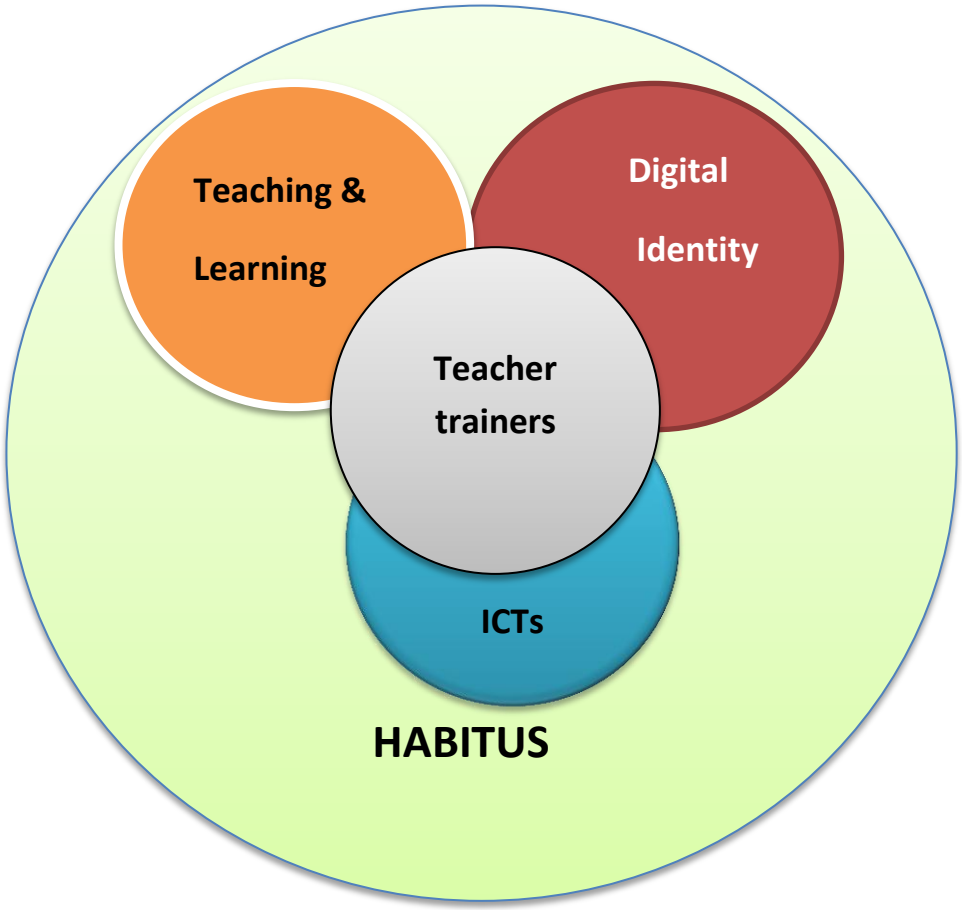



**Fig 5**: Theoretical frame of study for data analysis

The figure above may be understood as a set of interactions between the elements of Bourdieu's notion of habitus and the major themes of study which include teacher trainers, ICTs, teaching and learning and digital identity. The use of Bourdieu's theory of habitus as a framework for this study assisted me to present the findings and analyse the responses with regard to their digital identity and individual habitus. Emerging development of innovative technologies has provided teacher trainers with new possibilities for their teaching. It can be argued that Information and Communication Technologies have placed many demands on teacher trainers to learn how to implement and use these technologies.

This section has three sub-sections to find out more about the digital identities of teacher trainers at the School of Education. These sub-sections are titled: the role of ICT in higher learning institution (4.2.1), the impact of ICT on teacher trainers (4.2.2) and the challenges to the use of ICT by teacher trainers (4.2.3).

### 4.2.1 The role of ICTs in higher education

As mentioned in Chapter 2 of this thesis, Belland (2009) postulated that habitus is a set of predominant factors which generate practices and perceptions. The perceptions and practices are those manifested in an individual, they are collective actions, acquired through knowledge which contributes to gaining skills and expertise. According to Belland (2009), these are sets of dispositions under which an individual grows up and which influence that person. Bourdieu's notion of habitus is dependent on human memory and based on aspects of culture and daily practices of an individual, groups or societies. Literature highlights that, globally, integrating Information and Communication Technologies (ICTs) allows teacher trainers to be innovative in the teaching and learning process.

Teacher trainers corroborated that, for the delivery of instruction to be successful, the learning process and the learning environment must be interactive, productive and effective. If student teachers are to leave the Institution as confident in utilising emerging technologies productively and creatively, Institutions of Higher Learning must ensure that teacher trainers are competent in integrating emerging technologies into their teaching. While it can be acknowledged that ICTs have brought about many challenges to teacher trainers (as will be discussed later in this chapter), the opportunities they bring must be used. Digital identity theory draws upon ways that accomplish the construction of particular roles or specific roles and identities. "… documenting processes with digital imagery and gathering of a visual history of teaching and learning experiences assist me in reflecting and sharing these experiences with colleagues" one respondent said and another stated that, " I have challenging activities that promote thinking, discussion and rich questioning on Blackboard, which creates a rich and open whole class discussion online." It has emerged from data collected that the biggest danger in the use of ICTs is undermining the representation of material in the depth required of University studies. At the same time, it forces one to think about how one presents depth using the smallest number of concepts, images, etc. The aspects of identity and the notion of habitus are a fundamental approach to this study.

During the study, it has come to light that some teacher trainers are employing a variety of technology and a variety of technological teaching tools. Their habitus allows them to generate teaching and learning strategies in using technologies in their day-to-day activities, so this is the habitus of the teacher trainers that do not employ or integrate digital media in

their teaching. An interview respondent stated that, "I choose not to utilise technology in my teaching because of the difficulty I find when attempting to select appropriate learning materials". King (2000) asserts that, for teacher trainers, habitus serves as a strategy which generates principles which drive an individual's thoughts, perceptions and the actions that enable that particular individual to decide about diverse tasks in his or her daily life. Figure 6 below is descriptive of the six interviewed teacher trainers' frequency of ICT use for teaching.

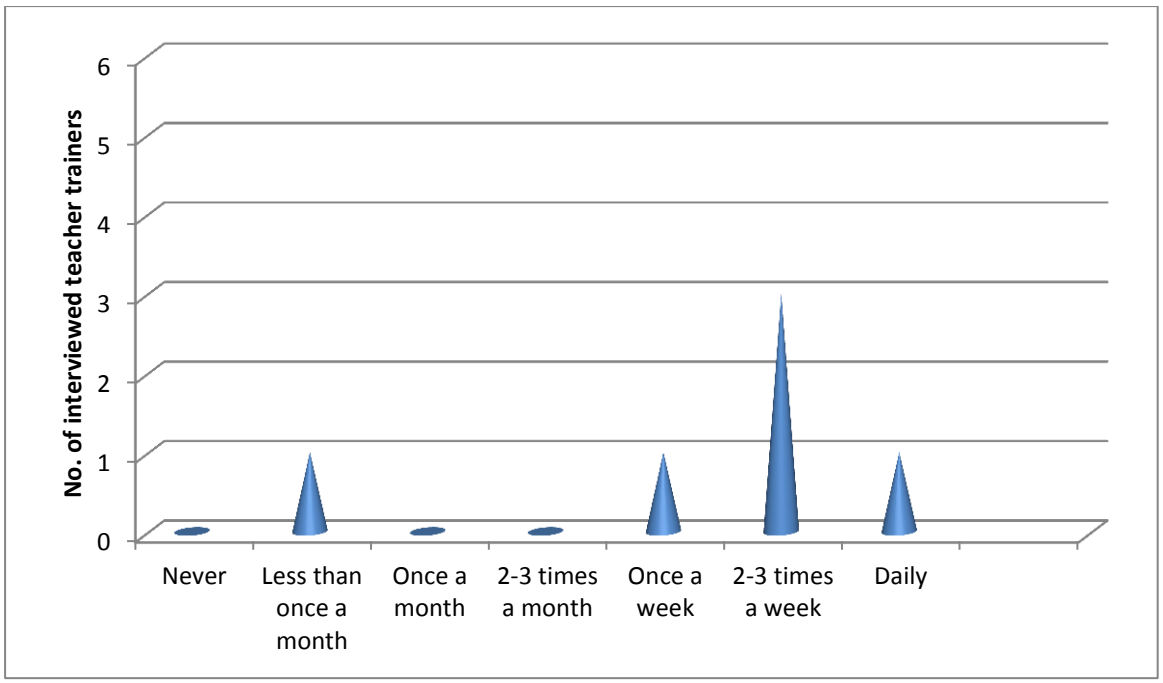



**Fig 6:** Frequency of ICT use for teaching

Responses from teacher trainers who have successfully integrated Information and Communication Technologies in their subject areas stated that the teaching and learning process becomes more meaningful. The respondent indicated that, the competencies gained enabled her in the documenting process of digital imagery and with gathering visual history of teaching and learning experiences. This assisted her to reflect and share the experiences gained with colleagues. . They have a sense of self which allows them to engage with different platforms, thus rethinking ideas. Data obtained from this study revealed that, although it can be acknowledged that educational technologies can be used as tools that will enhance learning and improve the quality of teaching, it must be indicated that this can be achieved through willingness, a positive attitude and realising the benefits and roles governing the use of ICT, thus creating a rich teaching and learning environment. One interviewed respondent emphasised that, if ICTs are integrated into respective subjects, ICT

literacy skills are enhanced. This is for the benefit of the students and teacher trainers, and allows them to develop pedagogy and gain subject-based competencies. It is also about affirming the digital identities and the use of internal processes and structures of teacher trainers.

ICT is a tool that can be integrated across a wide variety of curricula. If teacher trainers' dispositions and practices give a better understanding of opportunities offered by ICTs, their habitus is closely constructed with their digital identity. Being a product of history, habitus produces collective practices acquired over time. Thoughts and perceptions may still change as habitus changes over time, which can bring about understanding so that teaching and learning becomes innovative. In McCall and Simmons (1978), in which they review the identity concept, they have identified that it combines, and is within, a key concept which results in the development of a situated identity.

The type of uses, in which one engages are an indicator of their digital identity as teacher trainers construct a desired role compatible with their social interactions and habitus. Indicator 13 on the interview schedule below is specifically on teacher trainers' digital identities and how their social structure, actions and perceptions are shaped by their habitus.

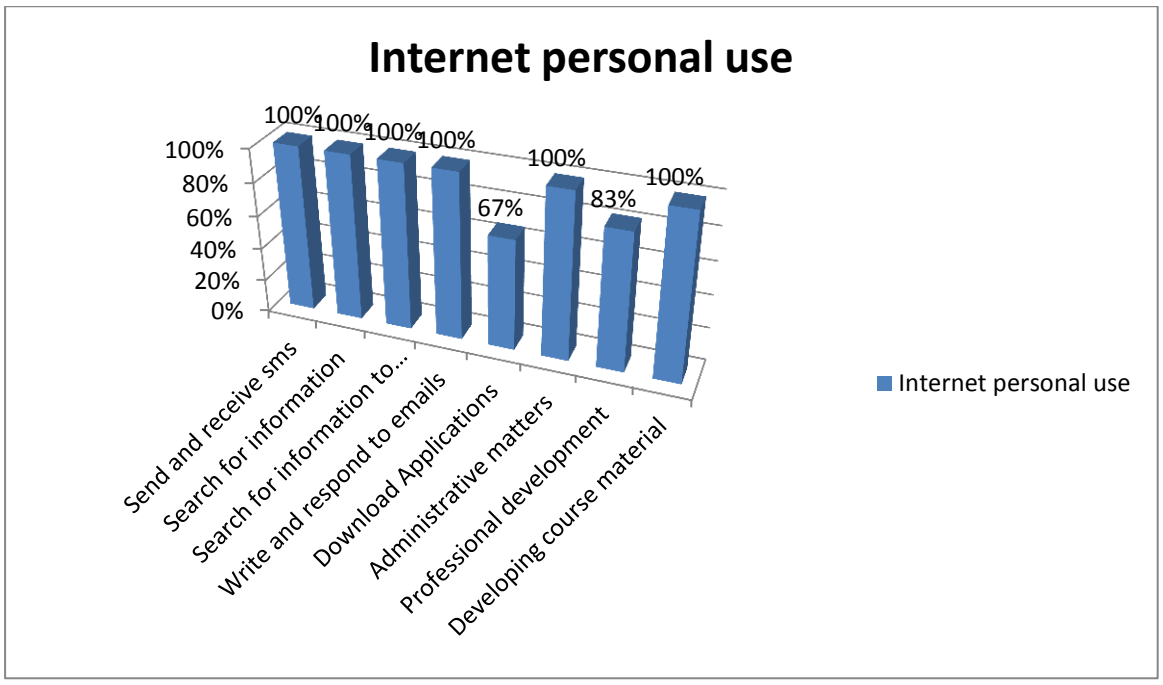



**Fig 7**: Indicates personal use of internet by teacher trainers.

Figure 7 on previous page suggests activities in which teacher trainers engage for their personal use of the internet and figure 8 below indicates educational professional use of internet by teacher trainers.

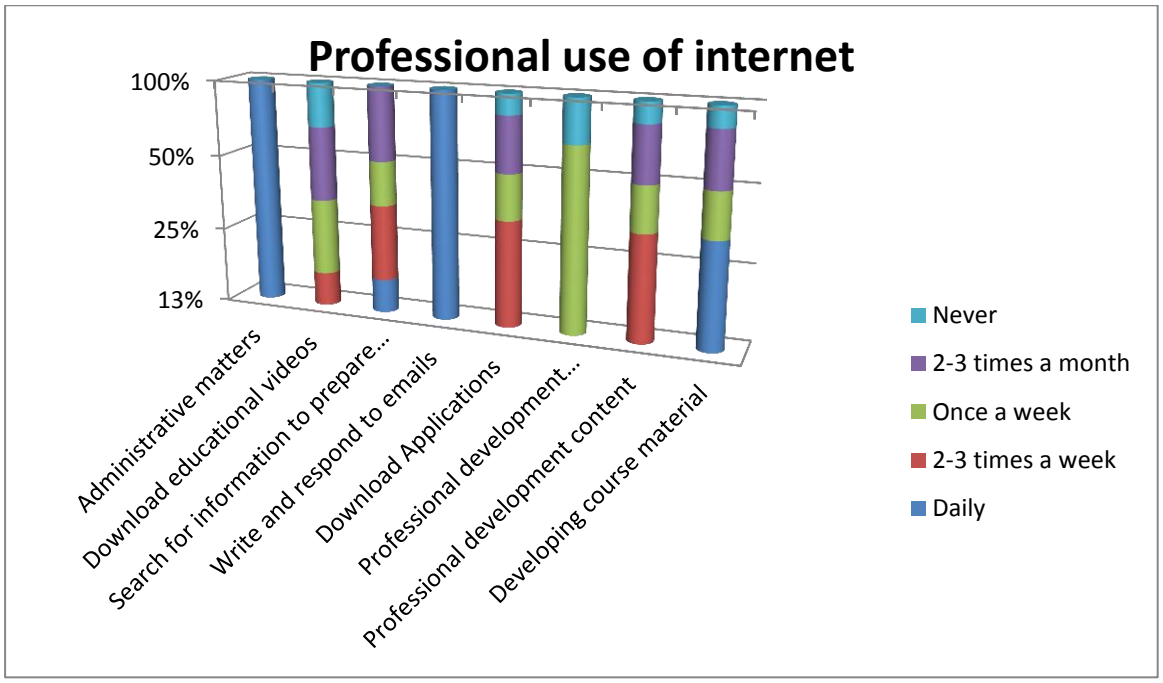



**Fig 8**: Indicates frequency of use of internet by teacher trainers.

Regarding data collected, teacher trainers at the Wits School of Education affirm that the institution offers ICT courses to ensure that they utilise ICTs as an on-going professional development support for teacher trainers. Teacher trainers come to the field with their own experiences. These experiences range from how they were taught and the manner in which they recognise and select ways for teaching and learning in their field of expertise and are part of their history that forms part of their habitus. However, each teacher trainer determines how he or she would utilise and collaborate it into his/her own teaching.

In describing how teacher trainers use ICT for their class teaching, an interview respondent stated that the Wits School of Education prepares teacher trainers to prepare students for the challenges of the technologically-changing world. Nevertheless, two of the interviewed teacher trainers are not equipped with the subject-specific expertise to integrate ICTs effectively into their teaching practise and understanding of technology. Subject-specific expertise or subject specified approach is that whereby ICTs are embedded into one's own subject area and are not just ICT as a subject. It is important to note that data collected

revealed that the Institution offers regular training to teaching staff members. However, findings from other teacher trainers did not substantiate that. It was therefore unclear if there was training offered or not. One's habitus may be responsible for reluctance to integrating technology into teaching and resistance to change. Findings indicate that others choose not to utilise technology in their teaching because of the difficulty they have when attempting to select appropriate learning technologies for students.

The responses from different teacher trainers show how each one of them relates to technology and technology integration to teaching. While two of the six interviewed respondents stated that they have challenging activities that promote thinking, discussion and rich questioning on Blackboard, which creates a rich and open whole class discussion online, one respondent felt that putting content in pedagogy on Knowledge Environment for Web-based Learning (KEWL) was difficult to work with and it was time consuming. KEWL is an Open Source that is freely available to ant institution willing to use it. Copyright issues and content added on the site were also of concern. The different ways teacher trainers relate to technology confirms their digital identity, which Nach and Lejeune (2010) described as an individual's sets of attributes, practices, skills and access to technologies and habitus which Bourdieu in Belland (2009) defines as internalised principles that emanate from an upbringing resulting in a manner within which an individual views the world and the structures in it. On the other hand, these are genuine concerns that need to be addressed within the institution.

Habitus ensures that past experiences are present, active and appropriate within the field of practice. It enables the presence of past experiences to generate practice and choices for utilising technologies. Figure 9 on the next page demonstrates technological resources used for teaching and learning.

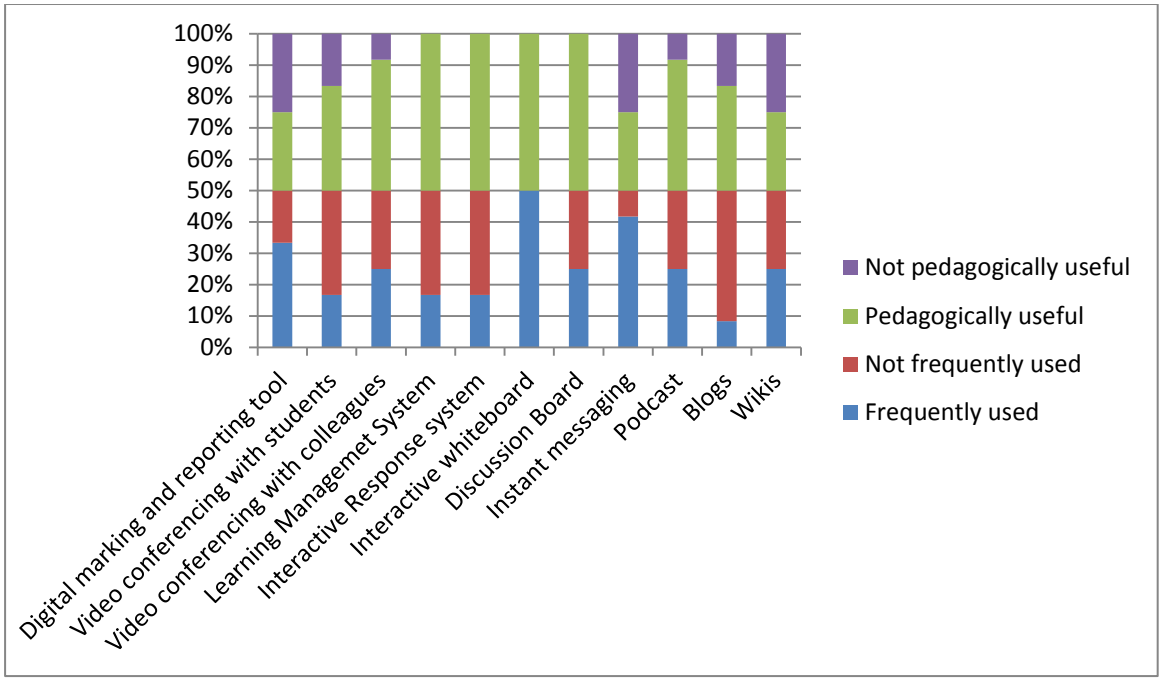



**Fig 9:** Technological resources used for teaching and learning

When it comes to digital communication technologies, it is vital to select one that will support the learning process, not the other way round. The technology must be pedagogically useful and the intended learning goals and objectives must be met. Dispositions teacher trainers hold, their approaches and practices are generated by their habitus. The section below uses Laurillard (2001) because she provides a useful description of using teaching and learning resources, particularly in digital environments. Approaches and competence play a vital role in technology integration success.

Laurillard (2001) argues that ICT-based resources must match the teaching and learning activities appropriately. If they do not do this, intended learning outcomes cannot be achieved. During this study, it became evident that all 39 teacher trainers who completed the questionnaire and the six who were interviewed have access to a computer at work and own a personal computer at home, with internet access available in both places. All have stated that the School of Education provides ICT-related training. While these students all had their skills and knowledge from previous training, others were self-taught. Their habitus and digital identity comes to light, as some teacher trainers feel apprehensive about using digital media or technology for teaching. One respondent felt that some of the students were more familiar with technology than she herself was. Furthermore, technology failure during a lesson could hinder the process of teaching and assistance may not be readily available at the time of need but at a later stage, and so, because of this, the student preferred to continue to

use hard copies. Her primary habitus allowed her to be more comfortable with what she knew. In my view, this has much to do with the relation between self and society, as described by McCall & Simmons (1978), in which they claim that within identity there are social structures that have an impact on self and that this self will have an impact on the social behaviour of the individual. In this case, the teacher trainer habitus encouraged her to choose a certain course of action.

### 4.2.2 The impact of ICT on teacher trainers.

The quality of work presented using digital media allows teacher trainers to reflect on the concepts taught, their own teaching, coherence and interactivity in their presentations. Five of the six interviewed respondents acknowledged that Information and Communication Technology was an effective tool for acquiring information. However, further research on a similar study can be conducted in order to establish the impact of ICTs on teacher trainers' teaching. There is a need to explore this topic further, so that data and findings can be more enriched. Sharing information has now become swifter and ideas are presented in a more effective and relevant manner which is especially useful for research in higher learning institution. UNESCO (2009) team of researchers have a similar finding supported by other researchers that, the use of ICTs in Higher Education Institutions (HEIs) is used to transform and bring researchers around the works together through collaboration of new knowledge. As earlier stated in Chapter 3, Wits University, and especially their ICT Department, is part of the PanAf (2011) research collaboration. It is apparent that teacher trainers see technology- or ICT-use as an information source that can be shared with a large number of researchers who are then able to communicate and extend their teaching role with students beyond the classroom.

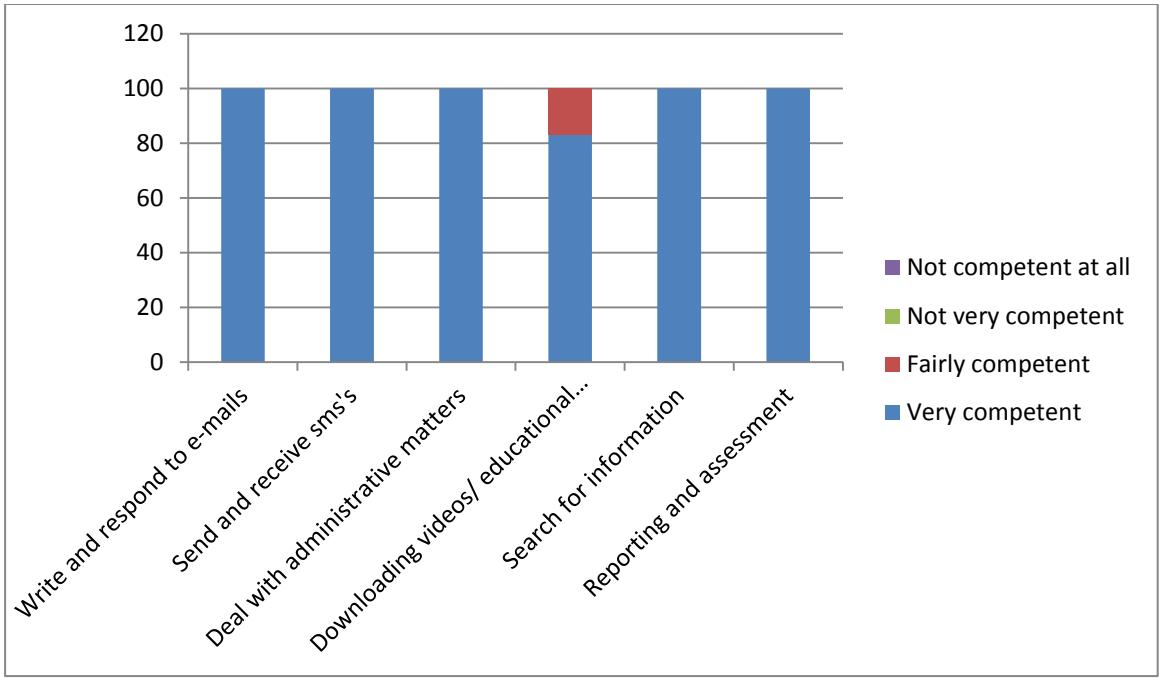



**Fig 10**: Level of teacher trainers' competence in utilising ICTs

It can be acknowledged that some activities in using technology require specialised digital skill. However, Figure 10 above shows some of the competencies teacher trainers have in utilising digital media. The central connection between identity, practices and overall habitus reshapes the individual practices, thus reshaping their habitus. The habitus enables the social practices in one's life path, like sharing information, to become part of an individual's habitus. They have learnt that practice from their upbringing instilled dispositions that have become their cultural capital, which is part of their history that forms their habitus. Three of the six respondents attested that technology provides discussion forums via the use of e-mails where students can collaborate with others for further and better understanding of the course content. However, the development of identity can be strongly influenced by the practices in the field, which can shift one's habitus. According to some respondents, ICTs allow them to teach more effectively.

The perceptual structure of habitus forms or guides the manner in which individuals see themselves and act the world, field or surroundings in which they are, including the experiences they have acquired in the field. It is not clear, though, what is meant by 'effective'. However, it was noted that not all students seem to perform better when taught using ICT. This is an area that still needs to be researched as the impact of technology use seems to be unclear and needs further study.

All six of the six interviewed respondents comprehended that ICTs allowed them easily to prepare teaching materials beforehand. If necessary, they could then later make any amendments to the course to use for similar future teaching. All questionnaire and interviewed respondents were utilising e-mails for evaluation and notifications within the institution, communication with students and submission of assignments even though not all students e-mail their assignments, especially at undergraduate levels. Teacher trainers are more positive than negative about Information and Communication Technologies. Teacher trainers appreciate that the advent of digital media in teaching and learning has made them think more about the way in which knowledge is presented, as it enhance the ability of a teacher trainer to evaluate his/her own teaching. The field of teaching and learning has structured practices. As earlier stated, habitus is closely aligned with identity and it has interchangeable dispositions. This inclination predisposes how an individual thinks, acts and behaves in particular ways in certain environments. The reluctance to answer and respond to questionnaires is part of their habitus.

One respondent from the questionnaire-data stated the ICT use had immensely improved her teaching because research is a major component for lesson planning. Students are expected to do it, and it is vital for teacher trainers to model this strategy as a necessary and important teaching approach. As a result, most content shared is founded in sound pedagogy which is useful in expanding the students' understanding and interaction with the material or content covered. According to this respondent, ICT in this regard leads to more sound and better quality lectures, as old ideas are revised and new ones developed. Her habitus incorporated how she acted in her field of teaching and learning and her actions with using ICTs. It defined the manner in which she projected the sense of utilising technology into her teaching. The respondent highlighted that utilising digital technologies into teaching equips her with, "An extensive understanding of one's own content builds onto the students' understanding and zest for new knowledge." Online resources offer more ideas and the content covered gets to be more informed. Two other questionnaire respondents confirmed that ICTs have improved their access to e-resources, resources for research on the internet and communication with students and colleagues with a click of a button.

### 4.2.3 The challenges to the use of ICT by teacher trainers

Questionnaire data reflects that most respondents view Information and Communication Technologies as increasingly vital. However, they also view various obstacles which ICTs

bring about. Respondents highlighted that the institution took the use of ICT very seriously but it that it was is a challenge for some to adapt to the use of ICTs in teaching. They argued that learning how to use ICTs was time-consuming and they are already overworked in their current roles. Others argued that the design and development of online learning materials is a specialist skill and should be reserved for teacher trainers who are ICT-trained and specialise in ICT. Evidence gathered indicates that teacher trainers in one of the departments do not have a classroom based data projector. Respondents in that department noted that, this is because data projectors need to be booked out, collected and returned after each lecture. The findings from the teacher trainers' questionnaires indicated that this strategy is time-consuming and tedious. This leads to discouragement for teacher trainers who are prepared to engage with different forms of communication technologies offered by the institution. As a result, role identities are threatened because of the situation in which teacher trainers find themselves which creates a certain behaviour which is caused by the differences in approaches and standards. The reluctance to further engage in using ICTs was the behavioural change caused by the situation which altered digital identities and self-meaning. Their digital identities were then more likely to diminish.

One of the most important challenges that have come with ICT is the problem of plagiarism. According to one respondent, she still sets essays but ensures that she prescribes a core body of papers that must be included in the essay so that students cannot simply lift essays from the web. The respondent also ensures that students are aware of key authors on particular topics, which tends to send students to academic literature rather than popular unreferenced information. However, the use of Turn-it-in, where there are concerns about plagiarism, has been of great help. Some teacher trainers found that online essential notices and articles are underutilised, especially for those who use blackboards.

Figure 11 on the next page demonstrates teacher trainers' level of competence in using digital communication technologies for teaching and learning. When the use of digital media is carefully planned and the competency level is high, a logical progression of thought and clear goals will be achieved. Habitus encompasses how teacher trainers act in a manner reflective of a social structure and the reproduction of their actions, thus taking a role which is in accordance with their identity.

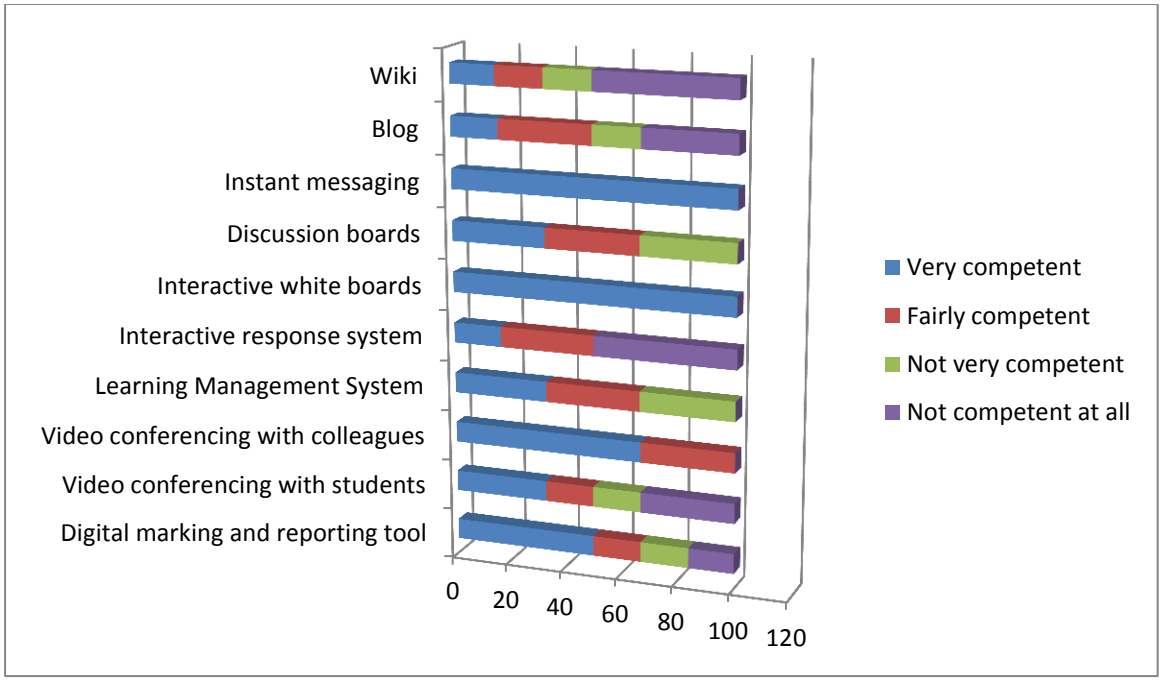



**Fig 11**: Level of competence in using technological resources for teaching and learning

Although all of the Wits School of Education questionnaire and interview respondents appreciated the professional support they receive from the Institution, it has emerged from interview respondents that the technical environment at the School of Education is not properly managed. When further probed about what is meant by 'not properly managed', one interviewed teacher trainer explained that at the School of Education there is a need for a direct link with CNS procedures in place in order to ensure that the technological environment is as effective and beneficial to all stakeholders. What stood out from interviewees is lack of timely assistance from CNS with computers that are malfunctioning. Teacher trainers applaud the current Head of School for taking the responsibility to use an ICT approach to teaching. She has been described as the driving force behind technology and pedagogy integration at The Wits School of Education. However, ICTs have their complexity which requires a specialist with skill regarding technicalities. During the study, it was revealed that this causes some teacher trainers to withdraw from utilising and integrating ICTs in their teaching as indicated by one out of the six interviewed teacher trainers. Such complexities point to a potential gap with regard to digital identity, which may contribute to self-meaning losing motivational force in pedagogical practices that are technologically integrated. It would seem that the institution needs to maximise opportunities and provide support for teacher trainers. Positive experiences provide expectations and anticipation. These

experiences are consistent with teacher trainers' digital identities and generated principles. Digital identities are linked to meaning and expectations are associated with a particular role.

A technological environment needs a proper management approach which can support teaching and research processes. Due to a lack of standards in place for managing technology, most staff members are not keen to adopt technology into their teaching. Two out of the six interviewed staff members felt that technology broke down from time to time which caused much frustration with having to deal with the problems of technology. It changed the expectations they (teacher trainers) have on learning. If things went wrong staff felt that the problem fell on their shoulders, and a conducive management approach regarding technology was strongly needed. This caused an identity shift because of expectations changing.

According to one of the interviewees, technology seems to be changing the expectations students have on learning because of the growth in mobile technology. In addition, findings from the PanAf (2011) database proclaim that there must be successful relevant strategies for using ICTs to exchange pedagogical practices, which focus on enriching the environment by engaging the resources available to co-ordinate various ways to connect students with the information, knowledge, stimulation and the ability to mediate those interactions. It is therefore vital, according to two interview responses, to have more regular times when staff discuss and share on how they use technology for their subject expertise, which might then encourage other teacher trainers to adopt technology into their teaching. In this case, the habitus of the two interviewed teacher trainers' habitus enabled them to act in accordance to the logic of the situation. However, the Head of School and the executive committee must play a leadership role in order to have a degree of quality. By further probing the interviewee about the leadership role, the respondent pointed out that not everybody uses technology to the same extent. Although each individual will utilise and integrate technology differently, interaction amongst staff from other divisions can bring varied mastery skills of digital media in teaching and learning.

Different uses of digital media, with aims, intentions and practices can integrate knowledge and methods which fosters a collective approach to teaching and learning. Consequently, there is a need for communities to practise what will ensure proper structures and processes of collaboration, which might include a mandate to work with other divisions. The culture of using ICT is very strong but does not spill over to other divisions. Part of the culture of using ICTs involves skills, correlation and knowledge in the use of the technologies for teaching

and learning process. Computer laboratories and computer-based teaching labs must be frequently and properly managed and maintained. Teacher trainers acknowledge that the current Head of School understood the importance of technology and has brought about positive changes with regard to pedagogic technology integration.

## 4.3 What are teacher trainers' approaches to the use of ICT in teaching and learning? (Research question 2)

This section will focus on teacher trainers' approaches regarding using ICTs for teaching and learning. ICTs have become one of the most vital aspects with regard to educational systems, especially in higher learning institutions. This component of the study will mainly focus on the approach and integration of learning content with digital technologies by teacher trainers. It can be acknowledged that throughout the educational sector, ICTs have become more widespread. This section will discuss the experiences and attitudes teacher trainers have to their teaching with the main focus on ICT usage in their teaching and learning. For each teacher trainer, approaches may be influenced by different factors, their habitus (which might vary from previous experiences with digital media, technology) and their preferred styles of teaching and how they regard the usefulness of ICTs.

### 4.3.1 Teacher trainers' approaches on the use of ICT

To determine teacher trainers' approaches in using ICTs, one has to look closely at their beliefs and attitudes towards the integration of communication technologies. This is because beliefs and attitudes change, and they need time to change, so that beliefs and attitudes cannot be determined in a short period of time. When they do change, perceptions also change and so does the habitus, which shifts. Whether or not ICT use and integration enhances the quality of learning requires a further extensive study in the future.

The overall conclusion regarding the teacher trainers' approaches of the use of Information and Communication Technologies is that the majority of the respondents agree with the institutions objectives and ICT infrastructure. They (teacher trainers) have corroborated that they have the basic skills required for basic ICT tools and that they are able to use the technologies to prepare learning materials. Thus, teacher trainer's responses included: I have

acquainted myself with resources available, I can search for resources online that support preparation for teaching and learning; the context in which ICTs are used has a big impact because you can evaluate your knowledge and improve your teaching; scanning visuals from books, using internet, DVDs, etc., provides quality visual material and links to wider community of artists and educators. The idea behind this was to both give students informal on-going practice in writing academic articles and to give all access to work in progress. Interviewed teacher trainers further elaborated and stated that their students have been required to post responses to prescribed reading on WebCT for all classmates before each session and when using ICT attention is paid to students' experience of what is presented. This means that choices of numeric input are important and knowing what the corresponding graphic inputs are important.

The academic and social integration of teacher trainers contributes knowledge elements. This integration involves teacher trainers as academics which is part of their habitus. Thirty three (85%) of teacher trainers favoured online resources while only three (8%) use WebCT. However, while most of the teacher trainers use online resources, not all of those resources are ICT integrated. As already stated, three (3%) of the questionnaire respondents use Information Communication Technologies in their work and for teaching and learning purposes, and they have their courses mounted on WebCT. The WebCT licence which the University of the Witwatersrand has expired at the end of 2012 and courses will be migrated to Sakai. Ultimately, this change may have implications for digital identity. It may be an affordance for new opportunities for teacher trainers whose digital identity is compatible with the new digital environment. In contrast, it might mean losing confidence in ability for others, which could require gaining a new kind of expertise.

Data collected from questionnaires and interviews was analysed to determine and understand teacher trainers' approaches to the use of ICT in teaching and learning. Teacher trainers were not directly observed on how they use ICTs, digital media and different ICT application as part of teaching and learning. However, the graph below is indicative of data analysed from questionnaires only.

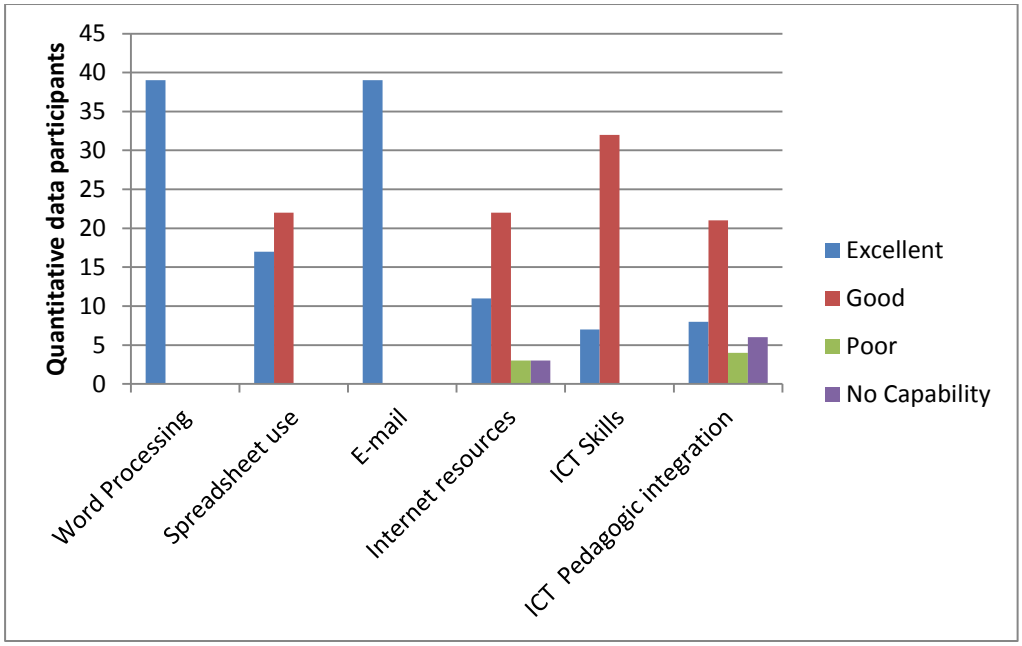



**Fig 12**: Teacher trainers' perceived ICT skills

The above graph indicates teacher trainers' perceptions of their ICT skills. It is ranked on a scale of 4 to 1, where 4 is excellent, 3 is good, 2 is poor and 1 indicates no capability. All 39 questionnaire respondents perceived themselves as possessing computer literacy skills and especially Microsoft Office spread sheet and e-mail. Most presentations were on PowerPoint, often an environment within which planned lectures or seminar inputs are conducted. All questionnaire respondents used e-mail for personal and professional purposes. Most teacher trainers were confident in their ability to select quality teaching resources from the internet. They evaluated the quality of resources by their academic usefulness which allowed them to supplement the internet resources with university library sources.

Teacher trainers regarded themselves as competent in acquiring skills, which included the approach to learning, resources for learning, management and recording, and communication and collaboration. Results indicated that teacher trainers with ICT-rich pedagogy in their teaching had a digital identity which allowed them to represent themselves within a digital environment. This was indicated because working with the technologies requires additional skills and specific attention to learning to use the technology and learning to think with the technology. They had a set of attributes which Belland (2009) describes as their habitus which allows certain patterns and behaviours to an individual. This was the manner teacher trainers presented across digital communities.

The data obtained revealed that a total of eight (21%) of respondents from 39 completed questionnaires were rated as excellent and 21 (54%) were good with ICT pedagogic integration. However, both Scales 2 and 1 were rated 10% and 15% respectively. On Scale 2 the teacher trainers do not integrate technology into their teaching due to lack of technology expertise. Scale 1 (no capability) are the teacher trainers who have not attempted to incorporate technology into their teaching. They regard their ICT skills as quite minimal, as they only allowed them to do the basic administrative tasks required by the institution. However, PowerPoint presentations seem to be a teaching delivery mode for most teacher trainers. In this case, literature indicates that an individual's role identity influences his or her behaviour as, as stated in McCall and Simmons (1978) that, this is the manner in which they perceive themselves. Similarly, Bourdieu proposes that individuals will unconsciously live or act out an objective social destiny as a result of their habitus. .

McCall and Simmons (1978) further contend that individuals tend to develop or express a desirable role which predicts their identity. In relation to digital identity, the concept of habitus explores the dispositions that influence individuals to become who they really are. At the same time, it includes the conditions of existence which are displayed by individuals in their daily activities to how they relate in a society. According to Bourdieu cited in King (2000), habitus is embodied in an individual. Habitus is derived directly from the socio-economic structural positions in which individuals find themselves in, in this case teacher trainers. This means that teacher trainers' dispositions become more specific at an individual level, and what they have learnt and their surroundings become part of their habitus.

According to UNESCO's Background paper from the Commonwealth of Learning workshop held in Paris during a World Conference on Higher Education (2009), ICTs have become an essential element for education reforms in understanding and implementing their pedagogic integration into various curricula. On the other hand, technology should not define or determine what is to be taught, but the affordance it provides must be properly utilised. One respondent contended that having access to the web allows him to have updated information to use. He stated that using Excel enables one to calculate graph results quickly in Maths, thus reducing the time taken to analyse result, so that more time could then be spent on working on how to remediate areas of concern. He further suggested that preparing a lesson using ICTs made him think of the ways in which the lesson could be presented and how students would respond to the lesson, and thus allowed him to think of the best way to make the content delivery more effective. This suggests that, habitus involves contact with others.

These are the knowledge practices that contribute to teaching and learning which allows for integration within the field.

Like Swartz (2002) this is a case where one's habitus generates and shapes an individual's actions and perceptions. Knowledge is ever changing with new discoveries frequently being made. When knowledge is added to the public domain, ICT has made it possible for one to keep abreast with any new developments, discoveries and changes to the scientific world. ICTs allow students to have pre-lecture activities and be able to communicate outside lecture times. One respondent asserts that ICTs ensures a logical progression of thought which is necessary for clear communication of content. It also adds a visual dimension to lectures, which forms transitional strategies in digital identities, social change and, by large, their habitus.

### 4.3.2 Understanding and practices of ICT

It is apparent that teacher trainers employ Information and Communication Technologies in their teaching. Most are cautious that technology should not direct them on what to teach rather widening their approach and horizons. Some are open to what they have to learn about utilising technology in their teaching process and still have to learn how to employ the different ways of utilising technology for teaching and learning. This process involves the knowledge and expertise of teacher trainers. The experiences gained and the teaching approaches they each utilise define their habitus. By using teaching and learning approaches through applications, knowledge and pedagogic integration, digital identities are maintained through practices and expectations of role identity in educational networks. All teacher trainers engage with ICTs for work related matters, such as the use of mark lists, registers, e-mail for notices, internal communication within the institution and preparing or designing course materials. Some are still not enthusiastic about using or integrating ICTs into their teaching. In my view, digital related competencies must be strongly linked to structures and identities.

In analysing the data collected using the framework in table1 Chapter 2, by Czerniewicz and Brown (2005) adapted from Laurillard (2002) shows a significant contribution on how teacher trainers can find balance in utilising technology, while improving understanding of the existing infrastructure and resources. This balance is determined by their cultural capital

and habitus. The skills and dispositions are the teacher trainers' habitus. It has allowed me to view where teacher trainers currently are, with regard to technology integration and utilisation with a variety of learning technologies. Thus their habitus allows them the previous experience and therefore builds habits and certain forms of behaviour and reasoning. This form of conduct is determined by an individual action. Habitus is the sum of one's personal experiences, and it includes an individual's conversational style, gestures, body movement and notions of self. Through experience in social interactions, self-identity is formed.

The concept of self- identity is used differently in different contexts. (Lord et al, 2004) use self-identity in terms of leadership pertaining to self; whereas Gidden's concept of identity is used in terms of modernity. For this study it is used on how social experiences influence behaviour and habits and therefore determining technology. According to (Lee, Lee and Lee, 2006) self-identity reflects social influence and is associated with particular behaviour around the use of technology. Those individuals who associate utilising technology with their self-identity are more likely to use it. Lee et al, 2006 informs that, the self-identity is formed through the internalisation process which compares other's expectations with one's value, beliefs, and previous experience and transforms them into self-expectation. McCall and Simmons (1978) have discussed self-identity in their theory of role identity whereby an individual relates to particular behaviour that reflects his role expectations associated with that role in a society.

Table1 indicates that technology is endorsed as a tool that will enhance and improve teaching and learning while providing different ways in which teacher trainers relate to different media forms and how they undertake different teaching strategies using computer based and non-computer based activities which integrate media forms and pedagogy. A structured conduct enables teacher trainers to be selective of a conduct which is in light of past experiences that have been acquired. Swartz (2002) stipulates that dispositions of habitus can be a force of change and continuity because habitus usually goes through an adjustment to the new conditions it encounters. The table links media forms which are a key to teaching and learning. The five teaching and learning events by Laurillard (2002), namely: acquisition, discovery, dialogue, practice and creation, are the key events describing teaching and learning, media forms and teaching and learning strategies that can be used. The framework is useful in this study because it links technology to be used with pedagogical strategies.

The level of competence relies upon social learning which has to be acquired through practices, embodied dispositions and social integration. Two of the interviewed teacher trainers' displayed enthusiasm about digital media, because they were able to engage with other educational practices and access to the university's domain while at home. This indicates that, if teacher trainers' habitus is compatible with the field, integration is more likely to succeed. Bourdieu and Wacquant (1995) denote that habitus and the level of cultural capital are acquired if there is an interest and effort on the part of an individual. The literature reviewed indicated that, when using ICTs, one needs to understand the associated communication technologies to assess their purpose and how they are linked.

Table 1, by Czerniewicz and Brown (2005), demonstrates different media forms, ICT and non-ICT. Both forms are important to teaching and learning as each form is associated with a certain approach to teaching and learning experiences. The five media forms are interdependent, and interaction is needed to ensure that intended outcomes are achieved. Habitus gives, or practises, a particular manner and style, so that no individual will have exactly the same code of conduct as anyone else, so that human practices will differ. It is evident from this section that habitus, digital identity and social structures are closely intertwined. This is because there is more to habitus than human interaction alone. Bourdieu in Swartz (2002) state that capital and field are concepts that complete the notion of habitus, because capital requires resources and field is a structured structure from which habitus generates action with regard to the individuals' pedagogic activity, the level of understanding of ICTs, the comfort in utilising them and how each person can be innovative. Habitus is part of an individual. Most respondents find Google scholar more useful for teaching and learning, particularly in initial engagement with the text or with new concepts and ideas, as it indicates which material should be read.

The institution has online journals which are accessible and students could bring to terms daily practices, thoughts and individual approaches to teaching, and encourages growth and innovation as ICTs add value to education. One interviewee's response gave a valuable insight on her previous approach on ICTs which has recently shifted. The social exchanges the teacher trainer had allowed her habitus to utilise her indispensable skills to acquire more knowledge about technology integration, thus allowing her capital and habitus to be slightly shifted or converted, meaning habitus changes over time and so are the dispositions. This is the result interest, support and adjustment. The interviewee stated that she lacked interest in any digital media as she had initially thought that it promoted laziness and provided shallow

pedagogic understanding and practices. She declared that she had to change her attitude and open her mind to learning new ideas and further pointed out that she was not totally against the use of ICTs, as she used e-mail for the internal communication at the School of Education and assignment submission for her students. She stated that her academic understanding through the use of ICTs has increased. She proclaims that Information and Communication Technologies have given her an opportunity to increase her knowledge while enhancing and professionally developing her career.

Also, Bourdieu and Wacquant (1995) remark that habitus and cultural capital are acquired if an individual has interest and is prepared to make the necessary effort. Her habitus involves her past and present experiences which are interconnected and have been acquired daily and have now become innate. The experiences she has learnt have allowed her to gain new perspective and pedagogic understanding which has exposed her to new teaching methods, developing new curricula and sharing professional expertise with her colleagues. This professional expertise is in relation to personal development with regard to technology utilisation. It is the manner in which the teacher trainers acquire knowledge and their ability to think critically and to share the knowledge they have obtained or acquired by introducing technological innovations as part of their teaching and learning experiences. For Bourdieu, it is through the concept of habitus that practice is linked with capital and field.

## 4.4 What is the relationship of ICT and pedagogy, and how does it reflect on teacher trainers' teaching? (Research Question 3)

The Wits School of Education campus has a Computer and Network Services (CNS) which is a division that provides technical supports and frequent maintenance of Information Technology infrastructure. The Wits School of Education's computing environment which is run and maintained by CNS is secure, reliable and has a full time technician who sees to technical challenges experienced by teacher trainers. However, some teacher trainers feel that while CNS sees to technological challenges, it takes time to get the help they need with some technological challenges they face. Teacher trainers state that CNS help is not readily available and they have to wait their turn to get the help they need. Other teacher trainers ask for help from their colleagues, who can help where they can.

Each staff member of the institution has a networked desktop computer with internet connectivity. ICT resources are made available to teacher trainers by the institution, which

encourages its use, promotes competence and appropriate use of digital technologies for teaching. Most make use of computers to prepare learning materials and course outlines. Respondents acknowledge that the use of digital technologies give rise to academic knowledge, debate and teaching and learning strategies. There is a strong sense that ICTs enhanced the ability for teacher trainers to evaluate their own teaching.

The results from the questionnaires and PanAf (2011) database indicate that the majority of teacher trainers employ ICTs for the University's administrative purposes, especially Microsoft software (Word, PowerPoint and Excel, etc.). ICT use and access is encouraged by the Institution and most educators make use of the e-resources offered by the Institution through the University's library. Habitus has a strong link to how knowledge is acquired, which includes the indispensable skills teacher trainers have. They circulate their knowledge and integration to their academic life forms part of their habitus. All six interviewed teacher trainers supplement their teaching with resources they pick from the internet. Data analysed revealed that the Wits School of Education ICT committee keeps abreast by monitoring the use of ICTs in each division, and recommendations are made to the Head of School. Among other things, the ICT Committee monitors maintenance and upgrades of the ICT infrastructure on an on-going basis.

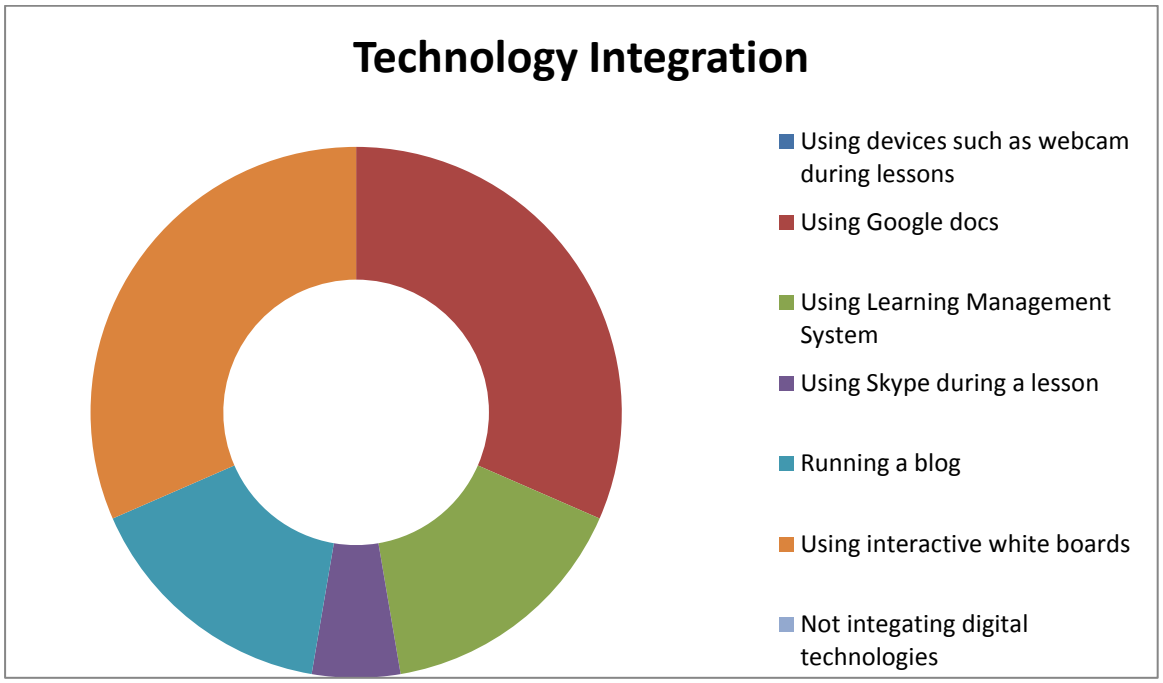



**Fig 13:** Integrating digital technologies for teaching and learning

A geography teacher trainer declared that she used Google Earth a lot for her lessons as a tool for pedagogic content knowledge. This tool enables students to visit areas to which they would otherwise not have access. They view natural and humanly created features on both global and local scales and all that can be done while they are in class. Numerous data layers enrich one's content and therefore facilitates the link between geographical and visualisation concepts. Technology integration allows a teaching strategy which is more practical and could be well managed in the classroom. The teacher trainer has a strong habitus which has been a driving force toward pedagogy and ICT integration. This suggests that habitus guides the way in which the teacher trainer utilises technology, the interaction of her personal character and the environment in which she works that project a clear sense of self. The respondent asserts that a digital board or a computer lab may be used for the delivery of this type of lesson. Accessibility to these resources at the Wits School of Education makes her become more eager and innovative because online information, particularly Google Earth, is updated on a regular basis. It is evident that some make sufficient use of the advantages offered by improved technologies while others are still not sure about proper implementation strategies and integration to pedagogy.

While investigating teacher trainers' relationships with ICTs and how this reflects on their teaching, it became evident from the interviews and questionnaire findings that the majority of teacher trainers are confident about using ICTs. All interviewed respondents concurred that the internet and other research sites allow them to find accredited journals articles, readings and other online sources which further serve to support their areas of discipline. It became apparent that Microsoft Office seems to offer a stable platform from which most teacher trainers' work. One respondent contends that using PowerPoint, videos and visual stimuli creates room for more open discussion and allows one's lectures to be more interactive. In addition, 29 (74%) of questionnaire respondents agree that students who use the medium of Information and Communication Technologies for learning become more eager to engage critically with the learning materials. One teacher trainer stated that integrating ICTs into her teaching allowed her to become more creative in using different teaching aids and to hold the students attention and enthusiasm for learning.

There is still a need to develop appropriate attitudes for some teacher trainers, if they are to understand, implement and maintain the integration of ICTs in teaching and learning. A questionnaire respondent felt that he had relied mainly on oral and written feedback regarding the evaluation and reflection of the courses taught but he did not foresee the use of ICTs as

bringing a better understanding and a different insight from that which he already knew. Most teacher trainers feel that integrating ICTs into their teaching has expanded their views about knowledge, developed new understanding of different contexts of the students' backgrounds and has created an on-going thirst for new knowledge that has led to the introduction of various teaching and support learning materials and interactive presentations. It has allowed for a variety of creativity and interaction. The main debate amongst the respondents is that ICTs allow them to evaluate their own teaching, thus allowing them to review the ways in which they present knowledge to their students.

The most important shift for some questionnaire respondents has been the access to electronic resources and databases which makes it possible to do reviews, and easily access materials that were previously unavailable or could only be accessed through a time-consuming process by using inter-library loans. An interviewed teacher trainer stated that he believed delivering the content using technology devices made it possible for him to re-think the content of his work in relation to the intended learning, as most applications allowed easy rearrangement of data to make learning more interactive. Four (67%) of interviewed teacher trainers have had a negative experience using ICTs for teaching and learning purposes. However, this has not deterred them from using ICTs. To name few negative experiences, they include not knowing how to integrate subject content and digital media or adopting technologies that best suit the content and untimely response from CNS.

They acknowledge that an ICT environment is bound to have challenges but they learn from those challenges, thus improving on what they are currently doing and how best to handle similar situations in the future. UNESCO (2003) maintains that if HEI are to meet the challenges brought about by ICT integration and usage, they must be able to communicate, have access to information, the ability to select appropriate technologies and learn how to use emerging technologies. ICTs play a major role in teaching and learning and they must be effectively utilised. An interviewed respondent shared the table on the next page about principles of good practice for undergraduate and learning technologies. He declared that his current work was guided by these principles, as listed on the table.

| **Principles of good practice** | **Learning technologies (solutions)** |
|---|---|
| Good practice encourages student/faculty contact | Opportunities for teachers and students to interact through online discussion groups and chat rooms monitored by the teacher |
| Good practice encourages cooperation among students | Computer-based tools encourage spontaneous student collaboration |
| Good practice encourages active learning | Provide opportunities for students to simulate, engage in problem-solving scenarios, time-delayed exchanges and real time seminar discussions outside the classroom |
| Good practice gives prompt feedback | Provide immediate feedback in tutorials - hidden text option in word processors provides feedback that can be used by the student and then turned off so that only the revised text is visible |
| Good practice emphasises time on task | Technology increases students' effective time on tasks by reducing the time students spend on task components where they learn little or nothing at all. |
| Good practice communicates high expectations | Significant real-life problems provided through web-based course materials challenge students to acquire information and sharpen skills of analysis, synthesis, application and evaluation. |
| Good practice respects diverse | Technology allows students with similar |

| | |
|---|---|
| talents and ways of learning | motives and talents to work in cohort study groups without the constraints of time and place. |

**Table 4:** Principles of good practice for undergraduate and learning technology. From D'Andrea and Gosling (2005:137-140)

During the interviews, the study revealed that the teacher trainers were using the knowledge and expertise they already had from different, materials, resources and techniques. Expertise is a way of attempting to use new ideas to see what will happen and to make discoveries from that. Bourdieu (1987:87) argued that, "If the best measure of cultural capital is undoubtedly the amount of time devoted to acquiring it, this is because the transformation of capital into cultural capital presupposes an expenditure of time that is made possible by possession of economic capital." In this case, teacher trainers have their cultural capital from being experts on what they do, due to the amount of time spent engaging with resources which is the direct result of the economic capital of their families.

# CHAPTER 5

# DISCUSSION OF FINDINGS

This chapter presents and discusses research findings from the questionnaires, interviews and documentary analysis from the PanAf (2011) database. The results are divided into four sections. The first section (5.1) deals with the study findings on data collected about the digital identities of teacher trainers which will provide an understanding of their pedagogical ICT integration into teaching and learning at the University of the Witwatersrand School of Education. The second section (5.2) deals with the impact of ICT on teacher trainers' teaching, their relationship with ICT, by having an in-depth discussion of Wits ICT policy which guides ICT integration, and professional development with regards to ICT pedagogical integration in knowing if teacher trainers use ICT for pedagogical purposes. The third section (5.3) will discuss the pedagogical approach to teacher trainers' use of ICTs. The fourth and last section (5.4) presents the results summary.

The notion of digital identity is centred in the concept of habitus. In other words, teacher trainers' pedagogical approaches bring appropriate insight into their personal and social production of differences in utilising technologies for teaching purposes.

This chapter addresses the following guiding questions:

- What are the digital identities of teacher trainers?
- What are teacher trainers' approaches to the use of ICT in teaching and learning?
- What is the relationship of ICT and pedagogy, and how does it reflect on teacher trainers' teaching?

## 5.1 What are the digital identities of teacher trainers?

The results of the interviews strongly indicate that academic staff members are utilising different types of technological resources in their teaching. However, quantitative data collected had a low response rate of 39 (31%) of 124 questionnaires distributed 15 (38%) of questionnaire respondents are males and 24 (62%) are females.

Prior studies (Collis and Jung, 2003; McGregor et al, 2010) have distinguished a significant increase about ICT integration in education, particularly in Higher Educational Institutions, with a special focus on pedagogical approaches and the uses of technology. In relation to digital identity, the results of this study indicate that all academic staff at Wits has access to a computer with internet connections. E-mails are used as a form of communication in the University and within different divisions. Results indicate that using a wide range of digital media for different purposes assists in illustrating key aspects of the content delivered. Such aspects are clearly defines in Laurillard's (2002) framework which displays an integration of digital technologies and pedagogy in a meaningful way.

The present study was designed to determine the relationship between the digital identities of teacher trainers and their approaches to the use of ICT in teaching and learning. Interview indicators on 'institution profile' show that, the Head of School is a driving force behind ICTs and pedagogical integration. Results of this study demonstrate that she has been promoting the notion of using technology for teaching and learning so that students can be equipped with digital skills and competencies that are compatible with their academic qualifications. As described by Belland (2009) that the use of technology assists participants to solve problems and to make learning efficient and effective. Habitus has a set of dispositions which generates practices and perceptions. These exist through interaction and interconnection with others and the environment. Our day- to-day interpretation of our world is affected by the complex set of social structures within which we live.

Students may have informal training in using mobile technology, much more learning is vital on technology and pedagogical integration. A strong relationship between a teacher trainer's digital identity and his/her habitus determines his/her interaction with technology. In other words, each teacher trainer sees the world differently and that is influenced by her/his habitus which is the way she/he talks, behaves, interacts and develops possibilities. Findings reveal that using a variety of digital technologies and other digital media resources, i.e. podcasts, summaries, reviews, graphics, multimedia presentations and digital reports are a fundamental mechanism that supports learning and assist in illustrating an argument about selection of content in curriculum.

Nach and Lejeune (2010) have described digital identity as sets of attributes, practices and skills which, if they fit well with the desired role, will support and reinforce identity. In terms of the culture of the institution and utilising technologies, the results of the study imply that

the institution is providing opportunities to teacher trainers by offering them frequent seminars on ICT and pedagogical integration. Habitus is embedded in a theory of action and individual behaviour conformed to cultural roles, rules and norms.

The management at the School of Education deems it necessary for teacher trainers to have the skills and knowledge needed to interact with a variety of technologies. In other words, the culture of the institution supports the implementation and utilisation of technology as a means for teacher trainers to equip students with opportunities to utilise technologies and prepare them for the workplace. Furthermore, interviewed teacher trainers acknowledge that the institution increased technological exploration which allows teacher trainers to better collaborate. This is because the teacher trainers are informed about the opportunities afforded by technologies and utilise those that can better contribute to improving teaching and learning. It is rather interesting to note that Bourdieu in Swartz (2002) believes that primary dispositions can be altered if they do not fit well with the constraints or opportunities of the field. Such situations are likely to provoke change. The change may be an adjustment to new conditions encountered by the subject.

It is interesting to note that interviewed teacher trainers are showing interest and emphasis in integrating technologies to pedagogy which contributes to learning experiences that links current and previous concepts. The questionnaire results corroborated findings from the PanAf (2011) database about teacher trainers' reluctance to respond to questionnaires. It is rather challenging to determine what causes the lack of enthusiasm from teacher trainers. The findings reveal that using technology provides variations in presentation and practice of the material learnt and affords students and teacher trainers' opportunities to engage in their own learning. However, there are still differing views about technology use and pedagogical integration, as this study has shown that other teacher trainers are utilising them while other prefer different not to for different reasons.

Teacher trainers' digital identity generates and shapes their actions and approaches. The Wits School of Education is providing opportunities for using technology, the ability to access valid information, processing the information and creating meaning using a variety of media. This finding is explained by the fact that it remains the teacher trainers' decision on how the content is delivered, as corroborated by all the interviewees. This includes how the pedagogical concept is developed and considers how it will be integrated into ICT. As far as WSoE is concerned, it provides teacher trainers with professional development with regard to

training and pedagogical integration of ICT in teaching and learning. Therefore teacher trainers need to develop their own collaborative skills and devote time to developing technology skills and improving their current skills.

These findings cannot anticipate the entire academic staff's views on technology and the affordances that it brings. This is a small sample size study. However, it has revealed that using digital resources allows teacher trainers to prepare material, reuse and adapt it and personally develop in professional learning. With teacher trainers' approaches which allowed them to understand that ICTs allow them to be productive and effective in their teaching, thus promoting equality of educational opportunity. Research findings show evidence of technology use and pedagogic technology integration throughout the school.

### 5.1.1 Teacher trainers' approaches to the use of ICT in teaching and learning

This section's purpose is to highlight the main findings in relation to teacher trainers' approaches of ICT usage for teaching and learning. It points out to what extent approaches of teacher trainers influence the implementation and progress of pedagogical integration with ICTs. In looking at positive and negative views of teacher trainers, it was noted that approaches change after experiencing different ways technology, thus creating enthusiasm for facilitating realised goals for each individual's personal and professional development.

In order to encourage efficiency among teacher trainers and to develop the positive aspects of using technologies and digital media for teaching and learning, there must be clear integration goals which have a vital aspect in influencing teacher trainers' approaches of ICT usage in their teaching and learning.

## 5.2 The impact of ICTs on teacher trainers and their relationship to teaching

With ICTs advancing, teacher trainers are able to prepare tasks for learning to deepen understanding. When teacher trainers are using communication technologies for teaching and learning purposes effectively, students learn to utilise the technologies efficiently. The findings indicate that for the teacher trainers who utilise ICTs for teaching and learning, there are increased opportunities about knowledge innovation. Technology integration allows the teacher trainers to enhance and supplement learning by widening and expanding learning opportunities. Research participants concur that the perceived impact is that ICTs promote change and fosters skills development which allows increased opportunities for teaching.

Online resources have up-to-date information that can be improved upon when needed, thus saving time.

The availability of digital resources and frequent professional development on improvement of skills for ICT integration promotes change to fulfil objectives. The current findings seem to be consistent with the PanAf (2011) research which showed that, not every teacher trainer considers Information and Communication Technologies central to teaching and learning purposes. For these teacher trainers, there are clear goals that must still be established by the institution with regard to ICT pedagogic integration, especially because ICTs are used differently in general. This is because, for each subject expertise, they will also be utilised differently. It is therefore a challenge for them to have a generalised training with regard to utilising technologies for teaching purposes.

It emerged from the interviews that ICTs change and enhance the role of teaching through the use of blogs, Microsoft Office, podcast and other different technologies. The findings reveal that ICTs enable interactive learning though the use of digital technologies which supports facilitated knowledge production and well thought of educational content.

### 5.3. Pedagogical approach of ICT use

It is clear from the findings that teacher trainers who are at different levels at The Wits School of Education have had some form of training offered by the institution. It has emerged from the study that the University has a general ICT policy, as stated in Chapter 2, which governs the entire institution, so that there is not especially tailored for the School of Education. Training and staff development is meaningful but individual teacher trainers must use their own initiatives in ensuring effective use of ICTs in their teaching.

The findings indicate that (see Chapter 3) the ICT Committee consists of a member from each division. This suggests the opportunities, motivation, clear educational goals and vision with teaching and learning objectives the institution has. This approach demonstrates the ICT framework which is a vital component for level of knowledge and production within the institution.

Contextual factors at the institution provide different forms of technology integration - for example, creating work digitally and having a high degree of collaborative learning by

utilising ICTs. While technologies can pedagogically improve teaching practices, they will improve ineffective teaching practices. However, teacher trainers' beliefs are one factor that still needs to be addressed with regards to technology integration. With collaborative guiding principles for teacher trainers, others will also realise that communication technologies are integrated to enrich and enhance teaching and to improve the delivery of quality education.

The findings in this study reveal that leadership and management at the WSoE has been essential in introducing innovation, ensuring professional development and encouraging teacher trainers to use ICT for teaching and learning. Using technology for communication amongst staff members has been found to be the drive towards utilising technologies. The School of Education has a continued professional development with each division represented in ICT committee, they facilitate collaboration. The culture of the institution enables change but more collaboration and communities of practice is needed. However, the issue of resistance towards ICT pedagogical integration still needs further research.

# CHAPTER 6
# DISCUSSION AND CONCLUSION

## 6.1 Chapter Introduction

The present study investigated the digital identities of teacher trainers at the University of the Witwatersrand, School of Education. The study is set out to examine the role that information and communication technologies have in teaching and learning and the affordances they provide. It explores the dispositions of teacher trainers in relation to digital technologies and the effect of habitus and perceptions of their conditions of existence. This chapter produced findings in relation to the primary research question which was about interesting and innovative uses of ICT in pedagogy by lecturers in the School of Education, Wits University. Some findings appeared to relate more to the research questions than others. The key findings will be discussed in relation to the research question. The significance and contribution to existing knowledge and practices is presented by examining the key findings in the context of habitus and identity. The limitations, key findings and conclusion are summarised and outlined

## 6.2 Discussion of key findings

Using a mixed method approach, the study was conducted to investigate and answer the question which is, "what is the relationship between the digital identities of the teacher trainers and their approaches to the use of ICT in teaching and learning?" The focus of the study was on investigating the digital identities of teacher trainers at Wits School of Education, and their approaches to using digital technologies for teaching and learning. The study examined digital identities using the notion of habitus as a framework. Data presented, is analysed in terms of variables covered and the analysis which highlight the main issues related to the study conducted. Findings are discussed for this study linking them to literature in order to determine the implications they have on data presented, analysis and the study as a whole. Varieties of documents from a public domain PanAf (2011)) were used as the starting point and quantitative analysis for this study.

Questionnaire records from The Wits School of Education ICT Committee were used to examine teacher trainers' use of digital media for teaching and learning purposes. Questionnaires and PanAf (2011) data are the quantitative data used for this study and interviews are the qualitative data. Individual interviews were conducted and enabled the

participant to interpret and discuss their views in relation to the current study. This was the key feature of the study because participants were elaborating their point of view from quantitative data previously collected. Rather than assessing the effectiveness of digital media, the focus was on the use of Information and Communication Technologies for teaching and learning purposes. Interviewed participants were selected from the questionnaire respondents. As per questionnaire request, respondents attached examples of coursework documents that form part of ICT integrated lessons. Both questionnaires and PanAf (2011) data has been a starting point for this study, as teacher trainers have provided records of their experiences in using technologies for teaching and learning. Bourdieu (1990) stipulates that habitus is a product of history which in turn produces history, with the system of dispositions. The findings show that teacher trainers' use or non-use of technologies have to do with their dispositions which is enabled by an individual's habitus to be practised socially. It is also about their human identity which relates to how they view themselves in a society. In order to build understanding and articulating knowledge, relevant literature was reviewed which provided the guideline in interpreting concepts related to the study.

To outline the analysis of the key findings the study produced, this section will compare and contrast the findings and provide proper justification. These findings will focus on the digital identities of the study and how it relates to the concept of habitus of an individual's identity. At this point, it is vital to reiterate that this study focused on teacher trainers at the University of the Witwatersrand, School of Education. The background of the study pointed out that each individual has a set of dispositions which influences individuals to become who they are. The notion of habitus, cultural capital and field is used to unravel teaching approaches teacher trainers' have in relation to teaching and learning. Findings regarding demographic details of teacher trainers reveal that, previous experiences and dispositions play a role and factors that contribute to conditions of existence or entities. The study revealed that notions of self are central to teacher trainers' confidence in pedagogic technology integration.

### 6.2.1 Access to Information and Communication Technologies.

Given the broad range of technological resources used for teaching and learning, it was essential understanding the role played by habitus and the digital identity possessed by each teacher trainer. Communications technologies remain in demand in teaching for their content and approach. Access to ICTs at the school of education remains largely the first point of content of guideline and principles of learning. Through cultural background and socio-

economic factors individual acquires type of knowledge, skills and dispositions. The cultural capital differs from one individual to the next. The findings revealed that all teacher trainers have access to a personal computer at home and/or laptop at home and at work. Access to computer and other digital media makes it easier to engage with technologies for teaching and learning. However evidence has shown that having access and training offers an individual with guideline but does not guarantee use. Belland's theory of habitus asserts that habitus generates perceptions, practices and action. Having access to technologies, as School of Education trainers have, does not guarantee that they will be integrated for teaching and learning. In the context of this study, use of technology is minimal but not limited to administrative tasks and duties. Within the institution, cell phones and e-mail remain the most used mode of communication for personal and professional use. This relationship between digital technologies and is in accordance with institutional culture and practices within the field. Findings reveal that if technology pedagogic integration becomes an institutional culture, teacher trainers' practices and approaches will change. This is because habitus and dispositions changes over time. Identities are reinforced by constructing identities which described role identity of an individual.

Communication Technologies are utilised differently by each teacher trainer and the choice to use or not to use technologies for teaching and learning lies with the teacher trainer concerned. Teacher trainer digital identity is not only about character conveyed in a digital environment but also the manner attitudes, beliefs and conceptions are developed. Determined by circumstances, habitus changes over time Similar to previous research, the finding indicated that leadership is imperative and relevant if innovation is to take place. Provided that the culture and habitus of the institution increases the culture of communities of practice; routines, practices of individuals will be reshaped. The study reveals that, the culture of the institution supports the utilisation of communication technologies for better collaboration amongst teacher trainers and within divisions. It shows that identities are shaped and influenced by social interaction.

### 6.2.2 Relationship between age and teaching with ICTs.

The findings revealed that age and institutional capital did not hinder the use of technologies for learning. To reiterate, data presented indicated that 4 of the interviewed trainers were within 40-50 age bracket, and the other two interviewees' are above the age of 50. As indicated by Goode (2010) that individual technology identity is based on belief system

which is about skills, opportunities and constraints, importance of technology, understanding and interaction. Findings revealed that between the two teacher trainers in Languages Division one was utilising technologies in her teaching because it adds value to students as they become informed about the technologies and the content taught. The affordances offered by technologies provide a sense of progress towards teaching and learning objectives. This finding indicates self-development in terms of knowledge, skills and self-confidence for the teacher trainer who uses technologies and is in the same age brackets with the one that doesn't. In this case not only personal development increases the notable digital identity but also habitus has an impact on each one of the teacher trainers. It incorporates practices that are embodied by each teacher trainer. In this case, lived experiences or lack of technology exposure defines ones digital identity for not using technologies for teaching and learning.

Findings revealed that linkages in terms of how technologies are utilised for different divisions and subject expertise have not yet been strengthened and therefore each individual will make own decisions on how to utilise technologies in their subject expertise. At Wits School of Education, skills development is in the forefront to ensure that competency and adequate teaching takes place. However, the University of the Witwatersrand ICT policy does not indicate pedagogic technology integration goals. Skills, knowledge, performance and competencies are pivotal components in teaching and learning at Higher Education institutions. Therefore, teacher trainers' use of digital technologies must be compatible with academic and individual digital identity. Habitus plays a pivotal role in allowing teacher trainers to use their internalised dispositions to develop own abilities through experience and social interaction. This is possible in the case whereby an individual was initially reluctant to use technology but later adapts to the culture of an institution.

### 6.2.3 Relationship between identity and subject technology integration methods.

Subject specified approach is used by teacher trainers' whose dispositions are influenced by their habitus. It is important to note that dispositions are formed by history. The history is imparted form the past to present. This means that, if teacher trainers hadn't used or weren't exposed to digital media, they are more than likely not to use it in their teaching. As earlier indicated, findings reveal that, habitus generates principles which drive teacher trainers' thoughts, perceptions and actions that enable them to decide about tasks, technologies and procedures for teaching and learning, regardless of whether or not they get training. The study revealed that they are confident in integrating technologies in their teaching. As a

product of history, habitus produces collective practices over time. Due to this, teacher trainers are not only confident but they are also capable. This capability increases their creativity thus strengthening the digital content and their teaching. On the whole the teacher trainers' habitus has a profound impact on their relationship with technology. Their dispositions contribute to the development of their habitus. Dispositions from the past are carried to the future and reproduce in the present.

ICT is well positioned at the Wits School of Education and the ability to be productive and using affordances offered by ICTs can maximise opportunities. The study indicated that teacher trainers have a deepened content knowledge. The differing teaching approaches have great emphasis on pedagogical content knowledge which is rich and consistent with students' learning. Skills, confidence and resource availability increases the pedagogical technology. There are differing views, as 83% of teacher trainers see a pedagogical benefit in integrating technologies as another way to curb digital divide. Internet access ensures that teacher trainers have access to frequently updated information.

One issue that emerges from findings is learning opportunities for teacher trainers, similar to professional development. There were rather contradictory findings, as 4 of the 6 (67%) interview participants acknowledged that there is professional development in the institution with regards to technology and pedagogic integration. However, 2 of the 6 (33%) interview participants dispute this claim. This inconsistency may be due to single training event related to technology pedagogic integration. Teacher trainers observe the need for a series of professional development spaced throughout the year. Some of the issues emerging from findings relate to onsite technology assistance that can alleviate problems experienced by teacher trainers' with regards to technology failure or challenges. Lack of immediate assistance leaves teacher trainers feeling inadequate about technology and pedagogic integration. Some teacher trainers claimed that their attitude changed and they view technology differently, whether positive or negative. Habitus changes over time due to change in attitudes and perceptions. The findings indicated that School of Education teacher trainers have a strong digital identity but on-going assistance and monitoring is essential in ensuring pedagogic technology integration.

Findings confirmed the high usage of a variety of technologies. Some of the technologies surveyed are extensively used while others are not often used. This data was supported by information gathered from the interviews. Integration of ICTs is deterred by different factors

which include technical support. It emerged from the study that technical support is a barrier to technology integration. As revealed in findings, that even high users of ICTs insist of quicker response of technical support because the wait inhibits technology usage.

## 6.3 Limitations

This is a small scale study which is conducted in a limited space of time. Limitations for this kind of study come when the researcher reaches the point where conclusions have to be generated and discovers that, the study and the research question may need a larger confirmatory study. The lack of biographical details on the questionnaires used was a limitation because it could have assisted in having a comparative view on the analysis of the results. The study has a limited scope of 46 questionnaire respondents. Therefore, findings cannot be generalised for the entire population at Wits School of Education.

## 6.4 Future research

Additional research is needed to determine pedagogical approaches adopted by current users of technology and to examine how subject content affects pedagogy used by teacher trainers. Literature takes notes of habitus of differing social class and status groups like gender, race, ethnic groups, etc. but more research in this area may lead to and prove to be useful and clarify some significant issues that need to be addressed. Further study with more focus on the teacher trainers' reluctance to respond to questionnaires should be done to establish the reasons behind this issue.

## 6.5 Conclusion

From the findings of this study, several conclusions can be drawn. It was revealed that Wits School of Education teacher trainers' digital identities present them with skills and expertise in utilising a variety of technologies for teaching and learning purposes. However, this variety is still minimal to some applications used. The study indicated that teacher trainers use a variety of communication technologies and cell phones are under acknowledged yet are mostly used for communication and learning purposes. Teacher trainers have diverse backgrounds and their habitus differs.

Through actions, daily practices and the social interactions in the field, similar concept will be encountered and dynamics will be changed. As a result, their digital identity becomes a social force which produces a structure that influences teacher trainers' habitus. In turn the

institutional habitus contributes to a wider identity context whereby identity roles are shaped by understanding the responsibilities within an institution. There is high usage of technology with differing preferences of the type of technology by each teacher trainer, although some technologies are used more than others. Leadership at the School of Education is playing a vital role in providing opportunities and affordances offered by technologies. Findings in this study indicate that technologies are viewed as uncertain environment by some teacher trainers due to frequent changes and upgrades. However, each individual is responsible for his or her digital identity because he/she must be open to change as perceptions change over time so is habitus.

In order to address the challenges faced by teacher trainers, there is a greater need of an approach which will focus on an emphasis of increasing teacher trainers' role identity. The role identity which enables an individual to act in accordance with a role desired within a social position. More interaction in communities of practice within divisions will encourage the maintenance of teacher trainers' identity and improving of own skills and expertise. Understanding of an individual's habitus is critical in dealing with circumstances affecting confidence levels of technology application for teaching and learning. The institution must aim to encourage teacher trainers so that they are driven towards the culture of technology integration. Thus, managing different technology demands, and to deliver area of expertise related to technical challenges within the aspects of each subject, division and the institution as a whole. The required technological skills can be developed over time. Habitus is able to change over time, due to a shift in cultural structure and through perceptions of an individual. This will lead to exploration of digital practices by teacher trainers. "Bourdieu's notion of habitus is not just about embodied forms of practice, but modes of thought that are unconsciously acquired, that are resistant to change and are transferable between different contexts" Mutch 2003:388). Overall, the results from the current study indicate that individual qualities, skills and habitus lead to professional primary goals set by each teacher trainer. Each teacher trainer has a unique habitus, which result in unique teaching strategies, planning and application based on individual experiences.

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