



**Social construction of pedagogical ICT discourse: the Case of a University of
Technology in South Africa**

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Abstract

The aim of this study was to investigate the ways in which Information Communication Technology (ICT) was structured in a teacher education institution to prepare pre-service students for effective ICT integration in their future classrooms. The study investigated how a particular subject, viz. Information Communication Technology Design in Education (ICTDiE), was integrated into the teacher education programme.

Adopting a social realist approach, which builds on the heritage of Bernstein and considers knowledge to be 'real' with emergent properties, tendencies and effects, I argue that what is privileged in this teacher education programme might enable or constrain the effective integration of ICTs by students once they become practising teachers. Bhaskar's concept of critical realism has been used as an under labourer through his in-depth ontology to account for the underlying structuring principles of the curriculum.

My aim was to understand the kinds of knowledge privileged in this course (i.e. the structure of the knowledge taught), how that knowledge was turned into and incorporated within a curriculum, and how it therefore influenced the preparedness of students for the future integration of ICTs in their classrooms. Pedagogic ICT design has thus been explored with the aim of understanding the current recontextualisation rules within the teacher education programme.

Using Maton's Legitimation Code Theory, in particular the concept of specialisation codes as a substantive theoretical framework, the study focuses on the so-called 'knower grammar', or what Maton calls the privileged 'gaze', to excavate below the practices of a teacher educator and to expose the underlying structuring principles. The study assumes that what is selected, sequenced and taught in ICTDiE as a subject is conditioned by the manner in which teacher educators were inducted (with regard to their professional dispositions) on how to integrate ICTs in education.

Employing a qualitative case study approach, semi-structured interviews were conducted primarily with the teacher educator, and these were supplemented by document analysis and

discussions with a student focus group. This helped build a holistic picture of the way in which knowledge was being structured in the course.

The study found that it is important to cultivate a technological identity or technological gaze for the effective recontextualisation of ICTs in a teacher education programme. The manner in which ICTs are conceptualized within such a programme can either enable or constrain integration. Two themes emerged from the data, namely, the knower grammar (trained gaze), which constrains student teachers, as they are subjected to context-dependent knowledge, and the knower grammar (social gaze), which could contribute towards the continued marginalization of students coming from previously disadvantaged backgrounds.

Recommendations for the programme are that it should be integrated in such a manner that it is used across the curriculum, instead of having only one subject attempting to teach ICT integration in education. Teachers should moreover have a sound grounding in ICTs, as well as sound knowledge of ICT pedagogy discourse. Only with a successful change of 'the gaze' of people in institutions and university programs will government's goal of improving the quality of teaching and learning in schools and across education and training systems become a reality.

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Plagiarism declaration

This work has not been previously submitted in whole, or in part, for the award of any degree. It is my own work. Each significant contribution to, and quotation in this dissertation of the work, or works, of other people has been attributed, and has been cited and referenced.

Signature

Date

Abbreviations and Acronyms

B Ed	-	Bachelor of Education Degree
CK	-	Content Knowledge
DHET	-	Department of Higher Education and Training
DOE	-	Department of Education
ER	-	Epistemic relations
FET	-	Further Education & Training
FO	-	Faculty Officer
GET	-	General Education & Training
HE	-	Higher Education
HEI	-	Higher Education Institutions
HoD	-	Head of Department
ICTs	-	Information Communication Technologies
ICTDiE	-	ICT Design in Education
IR	-	Interactional relations
IT	-	Information Technology
LCT	-	Legitimation Code Theory
MRTEQ	-	Minimum Requirements for Teacher Education Qualifications
ODL	-	Open and distance learning
PCK	-	Pedagogical Content Knowledge
PK	-	Pedagogical Knowledge
SITE	-	The Society for Information Technology and Teacher Education
SR	-	Social relations
SubR	-	Subjective relations
TCK	-	Technological Content Knowledge
TEI	-	Teacher Education Institutions
TEP	-	Teacher Education Programme
TK	-	Technological Knowledge

- TPACK - Technological Pedagogical Content Knowledge
- TT - Teacher Training
- TTI - Teacher Training Institutions
- UoT - University of Technology

Chapter One: Introduction and Background

1.1 Introduction

The use of Information Communication Technologies (ICTs) in education has been an important topic in recent years, driven by an assumption that educational technologies will solve most pedagogical problems. Educational technologies are often viewed as the most readily available solution to transform traditional authoritarian pedagogic modalities, because they have the potential to increase the productivity of pupils and improve their quality of work (Player-Koro, 2012). This is not surprising because the use of ICTs in education is supported by a theory of learning called constructivism, which views learning as a process in which individuals actively construct knowledge through interactions rather than sitting passively in traditional lecture halls (Haddad, 2003; Hartley, 2007). This is viewed as vital not only for critical thinking skills but also for fostering the key skills needed for the workforce of the 21st century (Looi, Chen and Ng, 2010).

Some scholars draw parallels between the integration of ICTs in education and the increasing popularity of computer games. As ICTs and computer games require similar skills, these scholars believe that these similarities should be focused on, because learners today are 'digital natives', meaning that they are more technologically savvy than in the past. Computer games are also seen by researchers and teachers as a way to help socialize and entertain learners (Annetta, 2008; Annetta, Murray, Gull-Laird, Bohr, Park, 2006). These games are viewed as important pedagogic tools to make learning interesting (Annetta et al, 2006; Irvine, 2004). Researchers further argue that such games can make learning more meaningful, by creating a "learning culture that is more in correspondence with student interests" (Minocha, 2009; Rosas, Nussbaum, Cumsille,

Marianov, Correa, Flores, 2003). Further studies have also looked at how emerging technologies such as Facebook could be used both as an information sharing pedagogic ICT tool and as a learner management system (Rambe and Ngambi, 2011; Wang, Woo, Quek, Yang, Liu, 2011). However, although there has been an increase in the use of these emerging technologies (Johnson, Smith, Willis, Levine, Haywood, 2011), in some cases this might require radical changes within educational practices to align traditional authoritarian institutional cultures with the needs of a new generation of 'digital natives' (Prensky, 2001). This highlights an inherent disjuncture between the needs of the technologically savvy student generation and their lecturers, who are (admittedly simplistically) viewed as 'digital immigrants'. And yet, this sets up a dichotomy of old-fashioned, out-of-date and traditional teachers who belong to an older and more authoritarian generation on the one hand, and young, trend-conscious, technologically literate learners— a dichotomy that may in fact overly simplify and distort the reality of the situation.

Prensky put it this way:

The single biggest problem facing education today is that our Digital Immigrant instructors, who speak an outdated language (that of the pre-digital age), are struggling to teach a population that speaks an entirely new language (2001: 2).

However, Prensky's (2001) views and those of the group of constructivists mentioned above (viz. Annetta, 2008; Minocha, 2009; Rosas et al, 2003) can be dangerously misleading, as Bennett and Maton (2010) rightly observed. For instance, they argued that knowing (learning) is privileged more than knowledge. This view moreover "de-privileges education, teachers and knowledge while valorizing the proclaimed attributes of the tech-savvy students" (Bennett and Maton, 2010: 325). They are very critical of this fallacy of conflation, where everyday technology-based activities are conflated with academic practices, as if they were the same. For instance, Jenkins (2004) does not believe that computer games and other technologies in daily use play a significant role in equipping students with the essential skills privileged in academia, as determinists

would want us to believe. While determinists call for the blurring of boundaries between formal and informal learning, skeptics call for differentiation.

Bennett and Maton (2010) are of the opinion that we need to consider formal education and everyday contexts as different, because different symbolic 'capital' is privileged in each context. They thus caution that we should avoid privileging one over the other; they argue that we should avoid creating unnecessary dichotomies between everyday contexts and education, and instead strive to understand,

...what knowledge and assumptions students bring to academic context from other aspects of their lives, and what that means to teaching and learning (2010: 326).

Instead of simply discarding the important role that teachers play, Bennett and Maton (2010) highlight their role: to select knowledge, to re-arrange it within the curriculum and to recontextualise it within specific contexts. In other words, the role of the teacher is to relate the students' current learning activities to what they have previously learned as well as to what they will learn in future. The role of a teacher is thus most crucial for integrating ICT into education, because teachers effectively serve as mediating agents between the technological tools and the subject matter being taught in any given context.

Granberg (2011) and Player-Koro (2012) calls for the social construction of ICT pedagogical discourse as an important symbolic break from the technicist approach of ICT implementation. Instrumentalists do not take context into consideration and simply believe in on a 'one size fits' all approach. This is echoed captured by Granberg (2011):

The process of introducing new ideas into new environment has been of great interest to stakeholders and advocates of new ideas and new technology. This process is often described as implementation, which implies that the innovation will be spread or to some extent forced, almost as it is, throughout an organization (2011: 25).

Unfortunately, technology and ideas may not be as easily accepted or implemented as their initiators intended. The process of dissemination tends to be messier than anticipated, because new technology and ideas are often met with a mixture of enthusiasm and resistance, depending on the context. Bhaskar's (1979) transformational model shows that structures can either enable or constrain human agents and that, through their actions (agency), agents (people) may transform or reproduce social structures. This is not a simple or linear process as naïve realists technicians would want us to believe, but a complex multi-faceted process, which requires rigorous academic engagement. Unfortunately, though, this engagement is not happening, because the increasing use of ICTs in education is being accelerated by the information society, in the context of globalization and the imperatives of economic growth. As a result, national states throughout the world have been investing in educational technology because they do not want to be left behind in an increasingly competitive global world. The negative repercussion of this is that ICTs in education have been taken up without critical engagement with what such ICTs can really do.

The use of ICTs in education is, therefore, described as a "young field" (Czerniewicz, 2008: 171), with researchers constantly seeking to find new knowledge on ICT usage as well as enhancing the knowledge of teachers and educators (Brown and Czerniewicz, 2008; Chai, Lim, So, Cheah, 2011; Divaharan, Lim, Tan, 2011; Koehler, Mishra, Yahya, 2007).

It is vital to acknowledge that, although ICTs are by no means a panacea for all teaching and learning problems, ICT's they can provide many opportunities to extend teaching and learning opportunities and improve outcomes (Jaffer, Ng'ambi and Czerniewicz, 2007). Claims have been made about the inclusion of ICTs within the teaching and learning process and how these should enhance learning by students (Culp, Honey and Mandinach, 2005; Zhou, Brouwer, Nocente and Martin, 2005). ICTs have become a

fundamental part of teaching and learning within higher education institutions in South Africa (Czerniewicz and Brown, 2005). The driving force behind this is the perceived potential of ICTs to boost economic growth; in addition, HEIs have to respond to the need to prepare students with the skills and knowledge they need to participate in a knowledge society (Czerniewicz and Brown, 2009). This puts pressure on academics too, as they are expected to keep pace with a rapidly changing world in order to prepare future citizens who will be able to contribute and compete as equals in the global society. ICTs in education, and in particular in higher education, also present us with an opportunity to bridge the digital divide and open up opportunities for the poor (Brown, Muller and Soudien, 2009). It is therefore not surprising to observe that much of South African literature focuses on the extent to which ICTs can contribute to reducing massive socio-economic inequalities. While this is an important focus, given South Africa's history, much of these studies focus on issues related to a lack of access to ICTs in general and a lack of teacher capacity with very limited focus on variables that could be used as predictors of ICT use in order to focus limited resources more effectively, as Drape, Howie and Blignaut, (2011) observed. While it is important to raise concerns about the lack of redress and the pervasiveness of socio-economic inequalities, despite post-apartheid policies focusing on redress and social justice and substantial increases in funding for previously disadvantaged schools, it is also equally important to focus our attention on the integration of ICTs into the curriculum, so that we can maximize opportunities presented by ICTs in education.

The integration of ICTs into the curriculum has been a central issue worldwide (Looi et al, 2010). This is because of the role it is professed to play in changing the curriculum and its ability to encourage the active construction of knowledge (Maholwana-Sotashe, 2007). However, there is a wide range of literature to suggest that these objectives are not achieved in practice. For instance, while the literature shows that computers are used in teaching, there is concern about their effectiveness. As Zhou and Xu observed,

Through surveys...this study examines technology adoption at a large Canadian University ten years after setting a strategic plan ...Results showed that whilst 90% of respondents were using computers in teaching, there is still much to do in helping them to increase the effectiveness of their use of technology (2007: 25).

This shows that teachers mainly focus on the development of technical skills even though the ICT curriculum centers on the integrated use of ICT within the learning process. Russell, Bebell, Dweyer and O'Connor (2003) in their study, which looked at issues related to teachers' use of technology in their classroom, also discovered that technology is used on a limited scale in education practice, even though teachers were using technology outside school, albeit mainly for administrative purposes.

Teacher Education Institutions (TEI) worldwide has started to embrace the use of ICTs in preparing student teachers for effective integration of such ICTs in their future classrooms (Granberg, 2011; Player-Koro, 2012). The basic principles of ICT usage in teacher training, as expressed by the Society for Information Technology and Teacher Education (SITE), are:

Technology should be infused into the entire teacher education program. Throughout their teacher education experience, students should learn about, learn with, and learn to incorporate technology into their own teaching. Restricting technology experiences to a single course, or to a single area of teacher education, such as the methods courses, will not prepare students to be technology-using teachers. Pre-service teacher education students should learn about a wide range of educational technology across their professional preparation – from introductory and foundations courses to their student teaching or professional development experiences (2002:1)

A wide range of literature suggests that we need to better align teacher education programmes and ensure the proper integration of technology with pedagogic issues and curriculum(Draper, Howie and Blignaut, 2008 citing Agyei and Voogt, 2011; Ottenbreit-Leftwich, Glazewski, Newby and Ertmer, 2010; Sang, Valcke, Braak and Tondeur, 2010). However, studies have also shown that while in most cases technological skills are

privileged in most teacher education programmes across the globe, this is unfortunately not always followed by the confident take-up of such technologies by student teachers, as they do not feel sufficiently empowered to use technology effectively in their teaching. These studies show the importance of ensuring that pre-service teachers have internalized ICT use in a pedagogic situation (Draper, Howie and Blignaut, 2008).

1.2 Focal research question/problem

The purpose of this study is to understand the kind of knowledge privileged in a particular course by exploring the structure of the knowledge taught, how the knowledge was turned into the Information Communication Technology Design in Education (ICTDiE) curriculum as well as how the curriculum taught influences the preparedness of students to integrate ICTs in their future classrooms. The specific research question that framed and guided the study is:-

How does ICTDiE as a subject in a teacher education programme enable or constrain student teachers' preparedness for the integration of ICTs in their future classrooms?

This research question above prompted the following secondary question:

How does the teacher educator's technological identity influence his or her approach towards ICT integration in the teacher education programme?

1.3 Rationale

In our South African context, where the majority of the population was deliberately deprived of access to quality education during apartheid, the use of ICTs presents potential opportunities towards redress (Lelliot, Pendlebury and Enslin, 2000; Ravjee, 2007; Sofowora, 2009; Williams, Pitchforth and O'Callaghan, 2010). Most importantly, the effective integration of ICTs in teaching and learning presents an opportunity to facilitate epistemological access (Morrow, 2007) in particular for those who were

previously disadvantaged. It is exactly on that score that participation in the ICT field for members of marginalised communities is recognised as a priority by the government (Dalvit et al, 2007). This places enormous pressure on South African universities to consider possible ways of integrating ICTs in teaching and learning to open up access to knowledge.

This challenge is further amplified in teacher education programmes, as these teacher education programmes present an opportunity to address inequalities throughout the entire schooling system. Teacher education programmes that prioritize ICT integration can equip teachers with ICT skills so that they can act as pioneers for change when these teachers qualify. This is unfortunately not the case in practice, because in South Africa, just as in other developing countries, the usage of ICTs in higher education is still in its infancy.

Czerniewicz and Brown (2005) noted that ICTs are generally not used to enhance teaching but predominantly for administrative purposes. Their study looked at the uses of information and communication in teaching and learning in South African higher education institutions (HEIs) in the Western Cape. They found that ICTs were most often used to support the event of discovery. 90% of the staff involved in the study used computer-based interactive media for teaching, such as CD-ROMs, DVDs or web resources. They also used the internet to find information. They found, however, that the use of ICTs for communicative and adaptive activities for teaching and learning was surprisingly low. They observed that lecturers tended to use computers less frequently than their students did, even though they expected their students to use them. In support of this finding, Hodgkinson-Williams and Czerniewicz (2007) stated:

Elsewhere in the world, the uptake of ICTs to support the affordances offered by ICTs do not appear to have been exploited as extensively in one of the core functions of HEIs – teaching and learning (2007: 23).

In later research, Czerniewicz and Brown (2009) further explored ICT usage at HEIs. In an attempt to discover the enabling and constraining factors of ICT usage, they undertook a study at two technikons and three universities in the Western Cape, South Africa. Using a mixed method approach, they found that student ICT use was enabled when students had access to resources of personal agency as well as contextual and online resources. This usage was however constrained by technological resources. Staff usage, by comparison, was enabled by technological and online resources in addition to resources of personal agency; contextual resources, however, constrained the usage by staff. Czerniewicz and Brown (2009) further noted that these resources were used differently by people in different conditions and contexts. Even when they were adopted, the research shows that the actual impact of ICTs was contrary to the widely held assumption that it would produce radical change in learning and teaching.

Studies unequivocally show that ICTs have been introduced into higher education mainly as supplementary tools that serve to reproduce authoritarian pedagogy (Herrington, Herrington, Mantei, Olney and Ferry, 2009; Ng'ambi, Gachago, Ivala, Bozalek and Watters, 2012; Veletsianos, 2010; Zemsky and Massy, 2004). In the South African context, this is particularly significant because the apartheid education system relied heavily on authoritarian pedagogic discourse to exclude people from the domains of knowledge. As Le Grange (2008) observed, during apartheid, the intimate relationship between pedagogy and Christianity under the auspices of fundamental pedagogics provided "justification for authoritarian educational practices" (2008: 403). This authoritarian pedagogy was justified and underscored by religious doctrine and therefore viewed as infallible because it was supposedly derived from the God of the Dutch Reformed Church (Ensor, 1999). This study is therefore primarily interested in ascertaining how universities exploit the affordances of ICTs to provide transformative teaching and learning processes. The ways in which ICTs are integrated into education are therefore real (in critical realist terms) with their own emergent properties and

tendencies (Bhaskar, 1978). They can either enable or constrain this transformational agenda.

This is even more serious in an unequal society like South Africa, because students from previously disadvantaged backgrounds often lack basic technological experiences. Thinyane (2010) believes that students coming from disadvantaged backgrounds are generally struggling with ICTs. She noted that students coming from privileged backgrounds have an advantage, as they are considered to be part of the global digital native populations. Those coming from disadvantaged backgrounds, in contrast, were only introduced to ICTs in their first year of university education. The impact of their background and living conditions at home significantly influences students' level of preparedness for higher education studies, as Czerniewicz and Brown (2006) noted, and thus cannot be discounted when seeking to repair an unequal distribution of education outcomes.

In South Africa, studies have demonstrated that educational outcomes remain racially skewed despite the demise of the apartheid in 1994 (Scott, Yeld and Hendry, 2007). The findings of Scott et al's (2007) study indicated high failure, attrition and dropout rates in most South African universities, and students coming from disadvantaged background are the most affected and remain marginalized. The current study sought to understand how the potential benefits presented by ICT tools could be maximized in the South African classroom, at primary, secondary and tertiary level. This study thus demonstrates the importance of the social construction of teacher preparation programmes in preparing future teachers to integrate ICTs effectively in their teaching practices.

1.4 Research context

This study takes place within a University of Technology (UoT). The UoT is a young institution which was established when a number of technikons merged. This was done as part of a national process to transform the landscape of higher education. With these heritage institutions came “diverse histories, experiences and expectations which create a colourful backdrop full of possibilities” (CPUT, 2010: 5). At the same time, the institution has been challenged to construct an identity which is relevant and responsive to the South African context first, followed by more broader African and international context. Epistemological transformation and re-curriculation is an added challenge that faces this institution. Much time and focus has been spent on managing harmonisation processes as well as physical consolidation while CPUT reported that there has been limited engagement on the potentials of “creating new curricula and, better still, explorations on redefinition of what knowledge is and how it can be produced differently” (2010: 13).

1.5 Overview of thesis

This thesis consists of five chapters. **Chapter One** has provided an overview of the study. **Chapter Two** will provide an overview of the relevant literature, including theoretical debates in the field.

Chapter Three outlines the research methodology, which includes the research design, the research site, the stages of collecting the data, and the method of data analysis used; it also describes the analytical framework employed in the study.

Chapter Four analyses the data that was obtained.

Chapter Five concludes the study by summarizing the findings of the study. This chapter also discusses the implications of the study and offers suggestions for future research.

All the literature used within the study is listed in the References, and supplementary research materials such as consent letters are attached as appendices to this thesis.

Chapter Two: Literature Review

2.1 Introduction

A wide range of literature suggests that pre-service teacher programmes should create learning environments, where pre-service teachers can investigate relevant issues and develop pedagogies that are effective for teaching (Jump, 2011; Player-Koro, 2012; Thinyane, 2010). This research suggests that we should look at ways of designing and implementing a curriculum that facilitates the learning process through ICT technologies, so that student teachers can internalize this process for future practices in their own classrooms. Teacher education institutions across the globe have chosen different strategies to introduce ICTs into their pre-service training. In some institutions this entails increasing access to ICTs, and offering ICTs courses, with some integrating ICTs into all courses (Granberg, 2011).

In order to understand and conceptualize the role of ICTs in teacher education programmes, a wide range of literature was reviewed. In doing so, I have looked at the literature on ICT usage in education institutions and the higher education sector. This is relevant in this study because teacher education programmes are offered within such institutions of higher education. I have also considered literature on issues around ICT integration within teacher education programmes both locally and internationally, including ICT integration in pedagogy more broadly. ICTs are generally understood to include equipment and services that facilitate “the electronic capture, processing, display, and transmission of information” (Torero and Braun, 2006: 3). In broader terms this includes hardware (computers, projectors and digital recording equipment), software applications (both generic and multimedia), telecommunications (mobile phones, teleconferencing, and so on), information systems (Internet, Intranet) and audiovisual equipment (such as digital cameras, MP3 players, video and television).

Therefore in this review ICTs refers to both an array of tools as well as the principles for their effective application in teaching and learning.

2.2 ICTs in education

There have generally been two distinct perspectives on the increasing use of ICTs in education. Some researchers and teachers embrace its uses, showing that ICTs can change teachers' teaching styles and support more student centered approaches. The research that embraces its use suggests that it can aid in developing higher order skills and encourage collaborative activities (Divaharan and Koh, 2010; Haddad, 2003). More skeptical views, in contrast, believe that ICTs do little to transform education, and that the claimed improvements that they could bring to education are merely false promises (Dreyfus, 2001; Knapper, 2001; Noble, 1998). Although there are skeptics, governments across the world nonetheless support the integration of ICTs in education through initiatives that encourage their use; this is placing enormous pressure on education institutions to comply. For instance, the South Africa Department of Education explicitly states that,

...the introduction of ICTs in education represents an important part of government's strategy to improve the quality of learning and teaching across the education and training system. GET and FET instructions must reflect these realities (2004: 19).

In the late 2000s, the government view was that all learners must participate in the information society; by implication, this meant all South African learners in the General and Further Education and Training bands should be able to utilize ICT confidently and creatively to help develop the skills and knowledge they needed to achieve personal goals. Furthermore, learners needed certain skills to participate fully in the global community. Amongst the resolutions reached at an Open Learning System in Global Environment International Conference, it was stated boldly:

“Higher Education must scale up teacher education, both pre-service and in-service, with curricula that equip teachers to provide individuals with the knowledge and skills they need in the twenty-first century. This will require new approaches, including open and distance learning (ODL) and information and communication technologies (ICTs)” Unesco, 2009: 3).

Research has already shown that it is an enabling factor in the take-up of ICTs by institutions when national policies encourage its uses, funding bodies provides the necessary resources and quality assurance mechanisms both monitor and report on the use (White, 2007). Is this sufficient, though? The literature suggests that it is not, as will be demonstrated herein.

2.2.1 ICT use in HEI

In developed countries, the usage of ICTs to facilitate teaching has developed greatly. These countries usually do not lack the support, resources or materials to maintain ICTs. However, while there is enough evidence to suggest that ICT use in the Higher Education (HE) sector is increasing internationally and locally (Bozalek, Ng’ambi and Gachago, 2013), the literature shows that this has had unintended outcomes. The findings of studies that explored the impact of the use of ICTs in pedagogy reveal that they only serve to perpetuate traditional pedagogy rather than transforming it, as is envisaged by government (Granberg, 2011; Kirkup and Kirkwood, 2005; Player-Koro, 2012).

Tanner and Jones (2007) explored the process of interactive teaching and learning, both with and without ICTs. Their findings were that students could give a clear overview of the impact they felt ICTs had on their learning processes. In fact, students valued the impact of ICTs in enhancing learning in classes that centered on thinking skills and learning to learn. A key method used in Tanner and Jones’ (2007) study was video-simulated reflective dialogue, assisting teachers to reflect on vital moments in their

teaching. The techniques were further extended to encourage learners to reflect on their learning too.

Tanner and Jones' (2007) research shows how teachers can use video extracts of lessons to support collective reflection and also to make possible a method of communicating between the teacher and learners about the learning process. Thus their findings in respect of the case studies support the view that ICT usage encourages deeper and more conversational interactions in which learners can discuss their thinking and are able to reflect on their learning. Their study thus points to the importance of enabling environments as being central in the integration of ICTs in education; furthermore, this requires careful and well thought-out pedagogically sound ICT interventions, as was demonstrated in their case through the use of video-simulated reflective dialogue.

Jump (2011) explored the use of digital technology as a way of enhancing teaching within universities in the United Kingdom. He found that lecturers used technology to bridge the gap between lecturers and students and also to share knowledge between the lecturer, the student and other students by interacting with the active learning materials. A large-scale online survey given to lecturers in education facilities to ascertain how they embedded ICTs in their own teaching and learning found that the use of videos, learning objects, web pages, images, graphs and charts was very high. Slideshows, podcasts and robotics were, however, rarely used. Barriers that lecturers identified, which hampered their ICT usage, included slow and outdated computers blocked from using the internet, which also stopped them from using virtual networks, such as Second Life. Jump also determined that pre-service teachers valued the usage of email more than anything else. This was followed by forum postings, but other methods of communication, such as Twitter, Facebook, blogs, chatrooms, websites, and Google groups were rarely used. Nonetheless, it did emerge from Jump's (2011) study that

most lecturers were at least attempting to use an assortment of applications and tools in their lectures.

Usluel, Askar and Bas (2008), whose study focused on ICT usage by faculty members, found that ICTs are rarely used for educational purposes, but mainly as a communication tool and as a search engine. They concluded that everyday technology based activities did not necessarily prepare students well for academic practice.

Bennett and Maton (2010) and Jenkins (2004) also reached a similar conclusion and argued strongly that against this common sense view. Bennett and Maton (2010) said:

...general information seeking strategies may have limited application to tasks requiring synthesis and critical evaluation. Writing a blog while travelling abroad may not equip students with skills they need to use the same technology to develop a reflective journal as part of their studies – the nature of tasks and forms taken by the knowledge being constructed are different. Norms and values may not transfer from everyday situations to academic work (2010: 325).

In support of this view, Granberg (2011) also cautions that the integration of ICTs is a complex task and that one cannot simply think that, if there is sufficient access to technology, if lecturers are willing and if there are policies that support technology use, then positive results will be yielded automatically: this is wishful thinking. The focus of research in this field (ICTs in education) is mainly on access to technology as well as on the beliefs that people hold about ICTs; the surveys done are thus mainly used to quantify the results. While these surveys provide us with useful information, this is not sufficient, however, because “access is a far more complex issue than mere provision of facilities” (Furlong, Furlong, Facer and Sutherland 2000: 94 cited in Bennett and Maton, 2010), because the availability of ICTs does not necessary mean genuine access.

2.2.2 Teacher Education and ICTs

The ways in which teacher education programmes are structured plays a vital role in either fostering or hampering the integration of technology in schools. These programmes aim to provide pre-service teachers with a good grounding in understanding the affordances and constraints of ICTs in education. Teacher education programmes should prepare service teachers to use technology to represent, construct and share knowledge in 'real life' contexts (Vrasidas and Mclsaac, 2001).

The literature shows that pre-service teachers with higher levels of skills in technology are more likely to use technology in their classrooms (Hammond et al, 2009; Paraskeva, Bouta and Papagianni, 2008). Also, findings in the literature suggest that pre-service teachers should have good role models during their studies in order to observe appropriate models of good teaching practices (Bullock, 2004; Kariuki, Franklin and Duran, 2001; SITE, 2002; Whetstone and Carr-Chellman, 2001; Yildirim, 2000). It is vital that educators of teachers are good role models for pre-service teachers by using ICTs in their own classrooms. Chigona and Chetty (2012) observed that teachers tend to teach the way they were taught. This implies that, because teacher educators are not using technology in their teaching, their students are not likely to use the technology in their own classrooms either. The literature also makes clear that there are still several gaps in the implementation and design of pre-service ICT integration programmes (Haydn and Barton, 2007; Lawless and Pellegrino, 2007; Mishra, Koehler and Kereluik, 2009).

The research distinguishes between two areas of technological courses that have been added to pre-service education (Zhiting and Hanbing, 2001), namely, ICT basics and educational technology. Some challenges exist, though, because ICT courses are usually taught by people from the computer science field and thus focus on technical issues rather than on pedagogical issues. So, although students do gain some experience in applying ICTs in their teaching, when they go out to the schools to teach, they are

unable to use ICTs in their classroom instructions. Although the courses do teach the use of ICTs, it is taught in rather traditional ways and rarely uses new technologies to support instructional innovations (Player-Koro, 2012). According to Zhiting and Hanbing,

Technology is taught in separation from the study of specialization, educational theories and education practice... (2001: 69).

They therefore developed a new curriculum of instructional technology which aimed to join theories, technologies and pedagogical practice “with a focus on pedagogical practice” (2001: 70).

Zhiting and Hanbing (2001) summarize their experiences in attempting an integrated approach to pre-service teacher education:-

- There should be an integration of in-campus training on ICT and field practice.
- Theoretical learning and pedagogical practices should be integrated. “Theories should be learned in the context of practice”.
- A “hands-on and minds-on” approach to learning is important.
- This includes brainstorming, peer evaluations, self-reflection and group sharing.
- ICT supported training and integrated elements of instructional innovation should be taught to enable students “to use these elements in the design of their own instructional processes later” (2001: 72).

This calls for what Maddux and Johnson (2005) called ‘disruptive technologies’, which have the potential to transform existing teaching and learning practices radically and to change relationships between students and lecturers. This is also known to emergent learning, which is in sharp contrast with prescriptive learning. According to Williams, Karousou and Mackness (2011) emergent learning distinguishes itself from prescriptive learning by its focus on openness and student centeredness. It promotes a collaborative environment and empowers students to exercise their agency. Prescriptive learning is shorthand for the teaching of authoritarian seemingly non-fallible knowledge, which is pre-determined for learners and regurgitated through traditional schools and universities. It is a tool used for what Bernstein calls ‘symbolic control’ and serves as machinery to reproduce inequalities through education.

In order to disrupt the reproduction of such a traditional authoritarian pedagogy, it is therefore vital to interrogate social construction of ICT-based pedagogical discourse. In our South African context, our government acknowledges the importance of technology to develop the country and to address past inequalities. There have been interesting moves by the Department of Education (DoE 2004), as these have recognized that the education system has a crucial role to play in bringing the advantages offered by new technologies to members of previously disadvantaged communities (Dalvit, Thinyane, Muyingi and Terzoli, 2007). More emphasis is put on the establishment of an ICT infrastructure, with computers and internet connectivity given priority, while minimal attention is paid to the effective integration of these tools in teaching and the development of the pre-service teachers for this challenge.

Some scholars like Brandt (2006) have decried what they perceived as 'dumping' of infrastructure into schools without a clear integration strategy. Czerniewicz (2004) also cautioned that it is not enough to provide physical access to computers and information without creating conditions conducive for students to maximize the benefits presented by new technologies effectively. While the provision of the ICT infrastructure does bring hope to many previously disadvantaged schools, a lack of fully equipped teachers who can effectively utilize these tools, inequalities of the past are more likely to be perpetuated than redressed (Broekman, Enslin and Pendlebury, 2002). It is on that score that the Education White Paper emphasized the importance of supporting ICT integration in teaching and learning and building educators, and thus improving students' confidence in the use of such ICTs (DoE, 2004).

The insufficient implementation of the above, however, is a serious concern, as previously disadvantaged students are still underrepresented in ICT-related fields of study, such as Information Systems and Computer Science, even after the end of

apartheid (Dalvit et al, 2007). It is therefore not surprising that ICT in education is a considered knowledge domain in the proposed Minimum Requirements for Teacher Educations Qualifications policy framework in South Africa. In terms of this policy, ICTs, together with knowledge of languages and academic literacy, are viewed as fundamental knowledge domains and thus critical in the proposed programmes Department of Higher Education and Training (DHET, 2011a).

However, in a study that looked at how ICTs are integrated in a teacher education programme in a UoT, Sosibo (2012) discovered that ICTs and computer literacy were not offered as major subjects and did not contain pedagogical knowledge. She found that ICTs were only taught for skills development without any consideration of pedagogical implications.

Furthermore, in a study commissioned by UNESCO (2003), it was emphasized that ICT competencies should not be the only consideration when integrating ICTs into teaching.

They say:

Appropriate selection, use, mix, fusion and integration of many sets of competencies including, but not exclusively, those in pedagogy and technology (Information and Communication Technology in Education, UNESCO; 2003: 18).

Any attempts to train teachers by means of teacher education programmes should employ different training efforts with the integration of skills with pedagogy being foregrounded (Jung, 2005). Jung further emphasizes the importance of ongoing support in what he calls “ongoing professional networking and development” (Jung, 2005).

She avers that it is not simply a matter of providing teacher educators with technology and the ability to use it with competence, nor simply supplying innovative projects and good examples at a pace that will keep up with the changes outside the educational

context. Neither is it about making teaching and learning more efficient by retooling the context.

2.3 Enablements and constraints for effective integration of ICTs in teacher education

Chigona and Chetty (2012) are of the view that personal, contextual and social factors are preventing teacher educators from realizing the potential capabilities, which teaching with technology can achieve (Chigona and Chetty, 2012). Their study was conducted in a teacher education programme at a University of Technology in South Africa. An interesting recommendation from the study was that institutions needed to invest more in the training of teacher educators on integrating technologies into their pedagogies. What was thus identified as a central concern in their study is the fact that teacher educators were not considering the potential benefits that ICTs could offer to enrich learning or to stimulate high-level thinking and reasoning. Discouragingly, the researchers discovered that few teacher educators were able to integrate ICTs into their subject teaching. Chigona and Chetty (2012) thus suggested that teacher educators should be encouraged to utilize ICTs in their teaching.

This assumes that, if lecturers are sufficiently motivated, then they will use ICTs in their teaching. The problem with this assumption is that it assumes that lecturers simply need motivation and training in order to integrate ICTs in teaching and learning. It is more complicated than that, i.e. motivation and training do not necessarily guarantee that they will make use of ICTs. On a similar note, a larger study (Gachago, Ivala and Kumalo, 2010), which explored perceptions of lecturers and students in respect of their access to and their use of ICTs in their teaching, learning and social life concluded that exposure to a variety of ICT tools (i.e. emerging technologies) enables the integration of ICTs in teaching and learning across a wide range of learning strategies. Here again seemingly, the problem is the lecturer who needs exposure to emerging technologies in order to be able to use ICTs in a variety of teaching learning strategies. While these studies point to

the importance of the effective integration of ICTs in teacher education, the assumption is that mere exposure to a wide range of technological affordances will motivate teachers to integrate ICTs effectively in teaching and learning. These studies construct an ideal lecturer as someone who has been exposed to emerging technologies and who is motivated to incorporate and integrate them.

Other studies (Becta, 2004; Bingimlas, 2009; Goktas, Yildirim and Yildirim, 2011) also highlight barriers, which they believe further hinder the effective integration of ICTs into education. These are resistance to change, people's negative attitudes, lack of confidence and competence as well as a lack of effective training.

Very few studies have engaged with the structure of the programme as being the potential constraint towards the integration of ICTs in teaching. This is despite the fact that international research clearly shows the impact that a programme structure can play on the subsequent successful integration of ICTs in the classroom (Granberg 2011; Player-Koro, 2011; Vrasidas and Mclsaac, 2001). Such studies emphasise that pre-service teacher preparation programmes should be better aligned with curriculum integration and pedagogical issues (Agyei and Voogt, 2011; Sang et al, 2010).

The literature shows that ICTs are used more frequently when they have been fully integrated in the curriculum (Stensaker, Maassen, Borgan, Oftebro and Karsetch, 2007). When they have been fully integrated in the curriculum, their use becomes internalised and part of the knowledge base for teaching. This phenomenon will be explained in depth when I discuss the theoretical framework. The goal should not be merely to teach different technology systems, but to provide pre-service students with opportunities to make instructional decisions and to employ good pedagogical practices (Vrasidas and Mclsaac, 2001).

In this study, I have engaged with the technological knowledge privileged in a teacher education programme to account for different levels of student preparedness for ICT integration in their future classrooms.

This study sought to answer the question: How does ICTDiE as a subject in a teacher education programme (TEP) enable or constrain the preparedness of student teachers to integrate ICT usage in their future classrooms?

2.4 Conceptual and theoretical frameworks

The current study revolves around the integration of ICTs in the social construction of the teacher education curriculum. The curriculum can also be understood as a re-contextualisation practice, where knowledge is selected, rearranged, and transformed to become pedagogic discourse. Bernstein's (2000) pedagogic device highlights the process by which such knowledge, competencies and practices are selected and transformed into school subjects and school activities. Agents then construct a pedagogic discourse that constitutes the basis of a teaching practice.

It is my assumption that what is selected, sequenced and taught in ICTDiE is conditioned by the manner in which teacher educators themselves were inducted on how to integrate ICTs in education. This demands more than merely the availability of ICT tools for the users and, most importantly, involves the internalization of the pedagogical ICT discourse. It is this internalization, which plays an important role in the full integration of ICTs in the teacher education programme (Granberg 2011). This internalization would lead to a sound pedagogical ICT design, which facilitates the integration of ICTs in a teacher education programme. The argument here is that the structure of the pedagogical ICT design is real with emergent properties, tendencies and effects. This phenomenon will be explained in more detail when I discuss the research philosophy (pg 48). It may therefore enable or constrain the preparedness of student teacher for

ICT integration in their future classrooms. In this B Ed programme, the pedagogical ICT design is framed within a subject called 'ICTDiE' that forms part of the teacher education curriculum.

The manner in which knowledge is structured in this subject influences the integration of ICTs in this teacher education programme as well as condition the preparedness of student teachers for such ICT integration.

2.4.1 Legitimation Code Theory (LCT)

I have used Maton's (2010) Legitimation Code Theory (LCT) as a substantive theory to account for the underlying structuring principles of knowledge privileged in this case. Maton (2000, 2007, and 2009) builds on Bernstein's theory of educational knowledge codes to conceptualize knowledge as real with emergent properties, tendencies and effects. The knowledge privileged in this subject, i.e. ICTDiE, might enable or constrain ICT integration in this teacher education programme and thereby condition student preparedness for ICT use once they have qualified as teachers.

LCT seeks to excavate below the practices characterizing fields to expose their underlying structuring principles. According to (Maton and Moore, 2010), LCT creates a theoretical lens through which knowledge can be viewed as the focal point or the central object of enquiry. Knowledge needed within the field of educational technology is best understood through the Technological Pedagogical Content Knowledge (TPCK) model (Koehler, Mishra and Yahya, 2007; Mishra and Koehler, 2006).

The TPCK model extends Shulman's (1987) Pedagogical Content Knowledge (PCK) model, in which he describes teachers bringing together content and pedagogical knowledge in their teaching practice. In the current context, the TPCK model serves as a way of thinking about the knowledge teachers need to understand and gain in order to

integrate technology effectively in their classrooms. The central argument in this model is that teachers' understanding of and familiarity with technology should be linked with their understanding of pedagogy and content. Mishra and Koehler (2008) assert that students need Technological Knowledge (TK), Content Knowledge (CK), Pedagogical Knowledge (PK), Pedagogical Content Knowledge (PCK) as well as Technological Content Knowledge (TCK) (see Figure 1 below). As Czerniewicz and Brown (2005) argued, effective and appropriate pedagogical practice should be achieved by offering students access to a wide range of media forms, balanced for their pedagogical value rather than chosen for their novelty or entertainment factor.

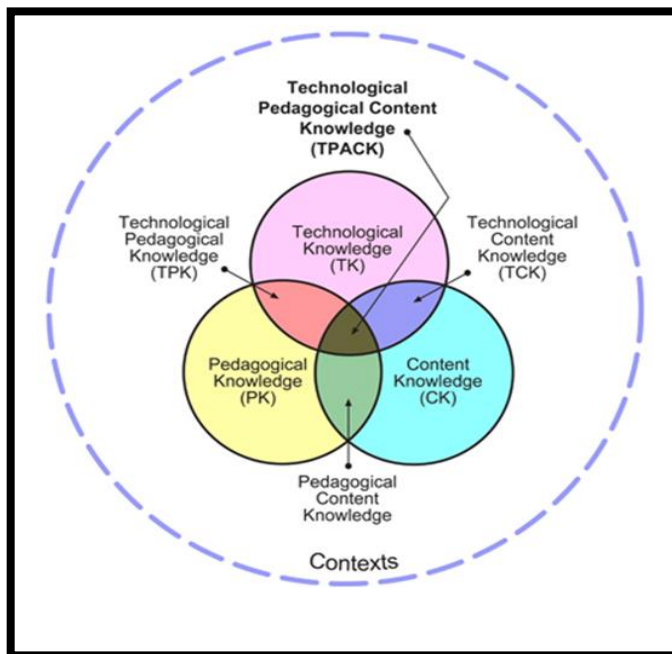


Figure 1: The TPACK Mishra and Koehler (2006)

However, the form which this knowledge takes is under-theorized, in my view and thereby remains problematic; Howard and Maton (2011) refer to this as 'knowledge short-sightedness'. Although TPACK provides useful insights, they believe it does need further development. Howard and Maton (2011) argue that we need to move beyond

the empirical description of knowledge practices to analyse the principles underlying those practices. They say that TPCK offers explanatory and insightful first steps but that it needs development to become a useful explanatory theoretical framework. They argued that it does highlight factors and relations to be explored but without a conceptual framework for systematically analysing similarities, variations and differences both within a set of factors (such as 'technological knowledge') and between factors (such as TPCK), "studies using these models remain at the level of empirical differences and locked into their contexts of study" (2011: 194). In exploring 'knowledge blindness' in the field of educational technology, Howard and Maton (2011) observed that studies, which account for the integration of ICT in education, are trying to develop a holistic account of contextual factors influencing the degree and kinds of use of technology within classrooms without engaging with 'what' knowledge is to be learnt.

Maton (2013) avers that an epistemic relation (ER) and a social relation (SR) are always present in a knowledge claim. An epistemic relation generates a knowledge structure and thus refers to the relation between the knowledge claim and its object of study. The social relation generates a knower structure and is thus the relation between the knowledge claim and its subject or knower. In order to understand the key to the LCT, we need to identify which code is dominant. Figure 2 below represents the four specialization codes.

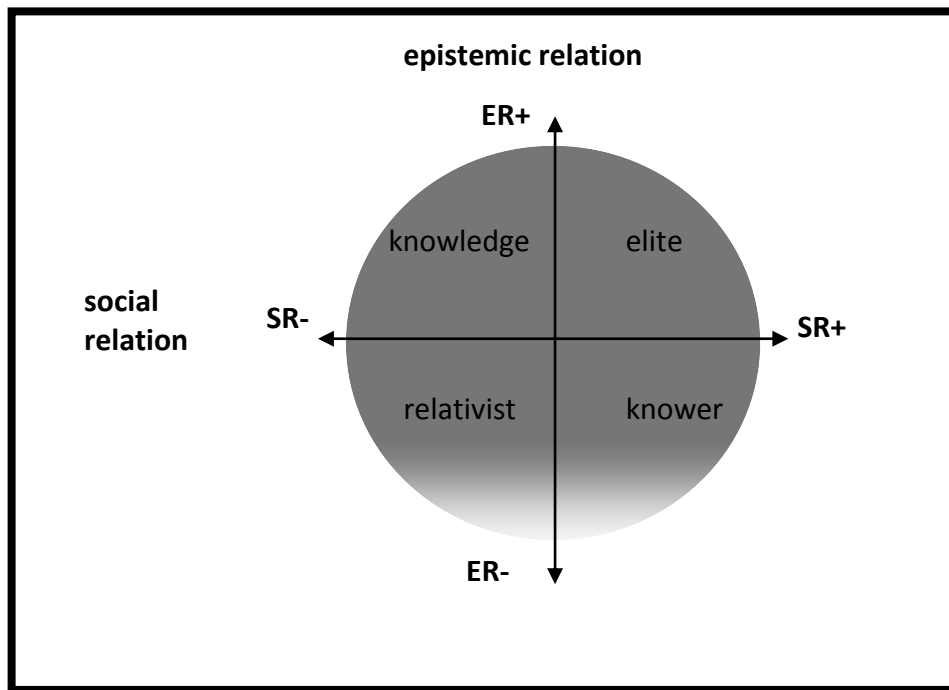


Figure 2: Maton's Specialisation Codes (2000, 2007, 2009, 2013 and 2014)

It is the relative setting of the epistemic and social relation, as well as the strength of their classification and framing (ER+/-, SR+/-) that establish the legitimation code of a particular knowledge form within any fields of the pedagogic device. There are four relevant codes:

- The knowledge code requires the possession of specialized knowledge, and procedures are emphasized as the measure of achievement (ER+, SR-). This means that the epistemic relation is dominant and the social relation is the subordinate. The epistemic relation generates a knowledge structure. This is the relation between knowledge and its intended object of study, viz. "that part of the world of which knowledge is claimed or towards which practices are oriented" (Maton, 2010: 43).

- In the knower code there is an emphasis on the dispositions or attributes of actors as the basis of achievement (ER-, SR+). Here the social relation is dominant and the epistemic relation is the subordinate. According to Maton (2010), the social relation generates a knower code. This is the relation between knowledge and its subject, actor or author “who is making the claim to knowledge or action” (2010: 44).
- In the elite code, there is an emphasis on both specialized knowledge and dispositions (ER+, SR+). In this code, both the social and the epistemic relations are dominant.
- In the relativist code, neither knowledge nor dispositions are strongly controlled (ER-, SR-). This thus means that both the social relations and the epistemic relations are subordinates.

Using these concepts, I have examined which relations were emphasized in the construction of ICTDiE and the implication of that for ICT integration in the curriculum. Therefore one can say that, if knowledge claims are made on the basis of the possession of specialized knowledge, skills and procedures, then a ‘knowledge code’ dominates. When knowledge claims are warranted on the possession of specialized dispositions and attributes, then a ‘knower code’ dominates.

In the case of ICTs in Education, it therefore became evident that teacher educators need to possess specialized dispositions to make judgments on when to integrate ICTs in teaching and learning based on sound pedagogic reasoning. This calls for the dominance of knower code specialization in the curriculum. However, within the knower code, Maton (2012) developed a fine grained analysis, which looks at different gazes possible in this code.

Maton (2009, 2013) has extended his analysis of the 'knower code' to include the concept of 'gazes'. This builds on Bernstein's concept of the 'acquired gaze'. Maton differentiates between born, cultivated, social and trained gazes (Maton, 2014).

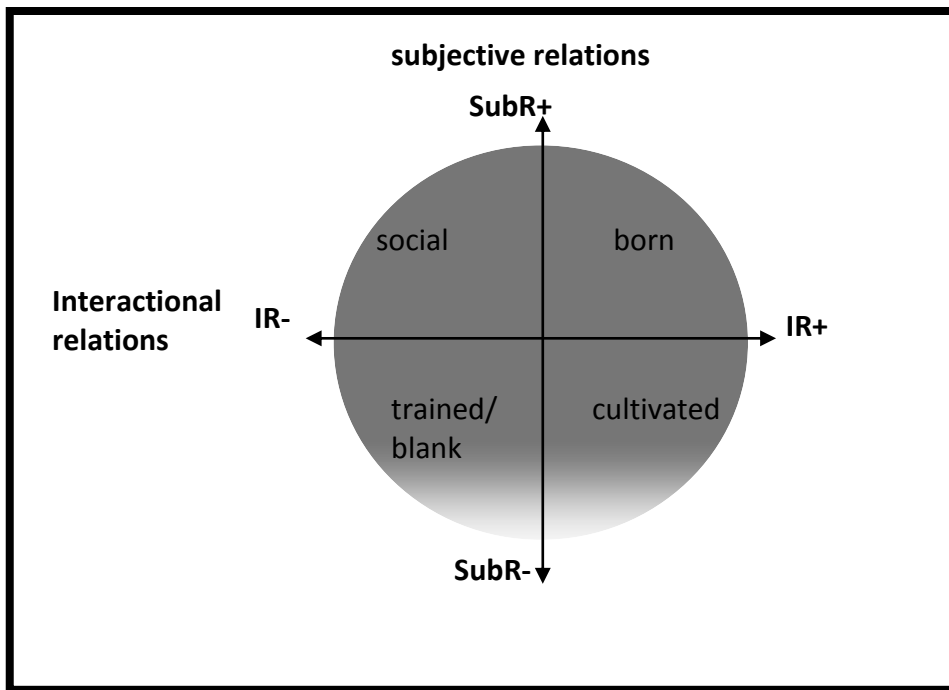


Figure 3: An illustration of Maton's concept of gazes (2014: 186)

Maton further distinguishes among the different gazes' underlying fields in terms of their strengths of knower-grammar (i.e. social relation) see Figure 4 below.

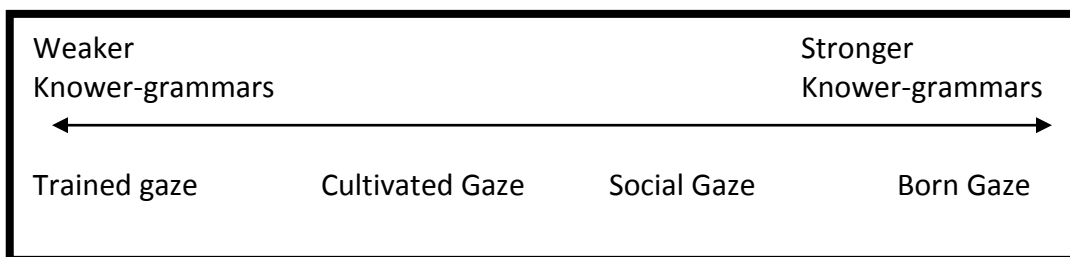


Figure 4: Maton's knower-grammars and gazes (2014: 99)

- The born gaze – this is the strongest knower-grammar. It refers to natural talent can be inheritance or biological explanations of practice. This is the most sought after knower-grammar, and also the most difficult to accomplish for someone who is not already a member of the privileged knower group.
- The social gaze – this gaze is based on social categories such as race, class and gender. It restricts potential knowers to specific social categories, which are difficult, if not impossible (in the case of race and gender), to join.
- Cultivated gaze – this is based on a cultivated disposition of the knower, which could be acquired by obtaining what is regarded as ‘the right sort of education’, which makes an individual more knowledgeable than another. Here there is the possibility of attaining legitimacy through lengthened engagement in a way of being, seeing or acting. This is in line with Goode’s (2010) conceptualization of digital technologies. Goode (2010) uses a technology-based identity as a theoretical concept to explain how our beliefs about ourselves and technology are developed. In terms of this framework, our experiences lead to the development of a technology-based identity; Goode (2010) therefore examines the impact of holding or not holding this identity on a person’s future endeavors. She argues that dominant sociocultural influences are important in developing such a technology-based identity. She draws this insight from Gee’s (2000/2001) understanding of identity, which is defined as “being recognized as a certain kind of person in a given context” (Gee, 2000/2001: 99)]. According to Goode (2010), people have multiple identities that are connected not to their internal states but [to their] performances in the society Goode (2010) draws on Wenger’s arguments about the inherent relationship between identity and experiences. Goode (2010) thus cites Wenger who says, “layering of events of participation and reification by which our experiences and social interpretation form each

other” (Wenger, 1998, cited in Goode, 2010: 151). Participation and non-participation implies inclusion and exclusion. Participation relates to the concept of communities of practice; these are viewed as networks of people who have a similar identity, and this can either enable or constrain ICT integration within a teacher education programme.

- Trained gaze – this is the weakest knower-grammar. Its focus is on training with regard to specialized methods and procedures, mainly based on following a master-apprentice approach (i.e. ‘do as I do’), without applying any inquiry or reasoning (i.e. asking ‘why are you doing something in this way’). This means that the knowledge that is accumulated is constrained and limited to a particular context.

The strengths of knower-grammars help to shape the circumstances for “entry, positions and trajectory within a field’s hierarchies” (Maton, 2010: 166). These gazes are also real with emergent properties, tendencies and effects, as argued by Maton (2010).

The successful integration of ICTs in teacher education programmes depends on how well teacher educators were inducted into the field of education technology. Bourdieu’s concept of *‘habitus’*, which he defines as a “structured and structuring structure” (1994: 170) assist us in conceptualising the dispositions which teacher educators bring into various contexts. Bennett and Maton (2010) further elaborate on Bourdieu’s concept of *‘habitus’* as a conceptualisation of,

...the embodied dispositions that actors carry across the varied context of their daily lives, drawing attention to such issues as social and educational backgrounds, how actors come to be involved in particular practices, and how they learn their practices (2010: 326).

A teacher educators *‘habitus’* is structured by their backgrounds and experiences (therefore, historically conditioned), structuring in shaping their identity as well as

present and future practices (consequently, still conditions), and is a structure which is systematically ordered.

Therefore to simplify, your history influences what you know or are able to do. The knowledge (*habitus*) which teacher educators draw on plays a role in what is re-contextualised in a teacher education programme and therefore conditions student teacher preparedness for ICT use in their future classrooms.

Figure 5 below illustrates how ICT knowledge is recontextualised from outside the teacher education context (origin context) by teacher educators into a pedagogic ICT discourse, later shaping the ICT design within teacher education.

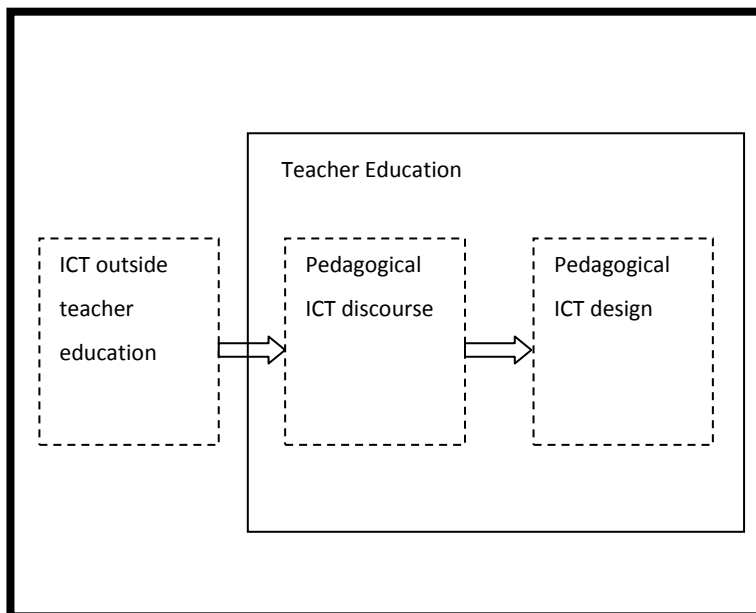


Figure 5: The re-contextualisation of ICT knowledge, ICT use and ICT policy etc outside teacher education into a pedagogical ICT discourse and design within teacher education (Granberg, 2011: 32).

The origin context represents the '*habitus*' which active agents such as teacher educators, students and leaders bring from outside the field of teacher education and the impact it has on the social construction of a pedagogical ICT discourse. In teacher

education as a field of social practice, there are dominant discourses, struggling for positional takings as explained by Granberg (2011):

...struggles between discourses will emerge whenever members from different fields, supporting different discourses, and holding different social positions meet to collaborate or to engage in informal pedagogical discussions... Furthermore, and depending on their individual *habitus*, they will defend what they consider to be valuable and desirable (2011: 41).

The social construction of a discourse can be explained as the way people talk and represent their field (explicitly or symbolically) in a particular context. ICTs coming from the outside field can only be integrated when actors or agents have internalized the ICT discourse. What is expected is that when ICTs are not internalized, traditional ways of teaching and learning will prevail, in other words, reconstruction of the dominant pedagogical discourse and ICTs will be mere add-ons or completely excluded from a teacher education programme. When it is internalized, it conditions the structuring of pedagogic ICT design, and thus the pedagogic ICT discourse will be effective in preparing students for their future use of ICTs when qualifying as teachers.

2.5 Summary of Literature review

I have looked at issues relating to ICT integration and usage at HEIs as well as theoretical frameworks which could provide a lens to answer my research questions. In Chapter 3, I will introduce the research methodology and make clear my choice of research design.

Chapter Three: Research Methodology

3.1 Introduction

In this chapter, I give clear reasons for my choice of research design and explain the techniques that I used for gathering the data. This chapter therefore sets out the methodology, which includes the research design, the research site, the stages in collecting the data and the method of data analysis. I must emphasise that the research took place within the department in which I work at the particular HEI in the Western Cape; this gave me ample opportunities to make observations.

3.2 Contextual Background

This study was conducted at a Faculty of Education within a University of Technology (UoT). The vision statement of this UoT is to be at the heart of technology education and innovation in Africa, with ICTs in education being central in this agenda. In the Faculty of Education, this vision is translated to mean the preparedness of a new generation of teachers that is comfortable with and capable of teaching with a range of advanced technologies to meet the needs of the new generation of students.

However, despite this vision statement, there is a general lack of ICT usage at the Faculty of Education and this is cause for concern, especially if one considers the important role that ICTs could play in enhancing student learning (Gachago et al, 2010). In their research, Gachago et al (2010) found that researchers at this institution invested much time researching technologies in order to acquire the best available and that there was also plenty of support available for their implementation, but without fruitful gains. Despite the lack of implementation of ICTs, she concluded that such technology could

foster creativity, encourage innovation and create more opportunities for the institution.

In their recent survey on ICT usage at this site, they identified a lack of equipment (e.g. missing data projectors and slow internet connections) in various venues as one of the major challenges (Gachago et al, 2010). She also found evidence of a lack of software, a lack of access to computers and poor technical support, all of which were hampering ICT usage. These shortcomings were furthermore putting pressure on the institution, because the Minimum Requirements for Teacher Education Qualifications (MRTEQ, 2011), state boldly that teacher education programmes should foreground “the ability to use Information Communication Technologies (ICTs) competently” (2011: 54). At the present moment, however, the Faculty of Education at this UoT is re-designing and restructuring its curriculum so that programmes can be aligned with the requirements of the MRTEQ. The current study, similar to that of Gachago et al (2010), is also influenced by this restructuring process. My aim herein is thus to explore the extent to which the current ICT integration strategy in the B Ed programme serves either to enable or to constrain ICT usage by student teachers.

In my role as an ICT laboratory technologist, I anticipate that the result of this research will make an important and meaningful contribution to the department and the institution as a whole in assisting them to evaluate and improve their programmes. According to Maxwell (2013), by studying people in their natural setting, particular contexts and their impact on the participants’ views and behaviors’ can be explored. This is what the study intended to do.

3.3 Research Strategy

The research strategy employed herein is a case study approach. The purpose of this case study is to interpret and describe individuals, courses and institutions in depth. It does not aim to be representative, but rather to offer a manner of achieving an understanding of the behavior and experience of a individual” (Tellis, 2007). The purpose of a single case study, in other words, is “not to prove but to improve” (Stufflebeam, Madaus and Kellaghan, 2000: 283).

This current study thus seeks to improve the re-contextualising rules within a specific subject (ICTDiE). A common criticism of case studies is that they lack statistical generalisability, that they are non-representative, and that a range of different interpretations and ‘researcher bias’ might emerge (Comford and Smithson, 1996). Yin (2003) counters this view by arguing that case studies are used for analytical generalizations, which means that the researcher can generalize particular results to broader theoretical propositions. However, in the light of these conflicting perspectives, the best approach is for the researcher to obtain data by using multiple research methods.

The case study approach was deemed the most suitable approach for this study, as it allowed much detail to be revealed, as well as for the unique perceptions of the individual participants in their natural setting to be ascertained. The following approach was thus used.

This case study took place within a Department of Further Education and Training (FET) at a UoT. This is the only UoT in the Western Cape and also the largest suburban university in the region, with a student populace of 32 000, of which five percent are postgraduate students. This young institution was created in 2005 as the result of a merger between two technikons in the Western Cape. The institution has campuses

throughout the Western Cape, viz. in Bellville, Cape Town, Mowbray, Wellington and Granger Bay.

The aim of the particular FET programme that was the focus of this study is to equip students with the skills and knowledge to be effective professional educators in their selected field of specialization. Most students specialize in Life Sciences, Computer Science, Entrepreneurship, Mathematics, Mathematical Literacy, Physical Science, Technology and languages: Xhosa, English and Afrikaans.

At the end of a four-year programme, students graduate with a Bachelor of Education (B.Ed.) degree. This teacher education programme (TEP) is placed within a Faculty of Education (FoE) at a higher education institution (HEI) in the Western Province. The programme itself consists of various modules. Some of these subjects the students can select (i.e. they are optional), while others are compulsory. Teacher educators teaching the mother subject (content) also teach the subject didactics related to that subject. For example, a teacher educator teaching Entrepreneurship would also teach the specific subject didactics associated with Entrepreneurship. The term 'subject didactics' refers to the pedagogical knowledge students need in order to teach the subject. This is a module on its own. Thus students are taught the specific teaching skills relating to their major subjects.

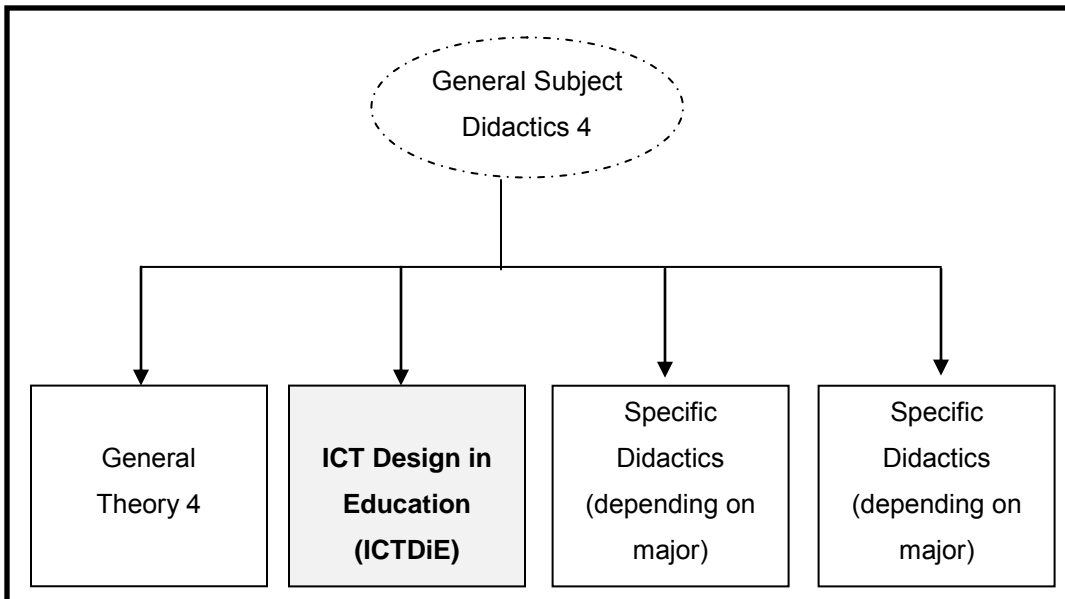


Figure 6: Structure of Computers in Education Module

As is illustrated in Figure 6 above, in General Theory 4, students are taught general pedagogical knowledge, in other words, how to teach (classroom management); they are also taught teaching and learning theories and strategies. Depending on the major chosen, the two subject specific didactics will focus on specific pedagogical knowledge relating to that subject. For instance, ICT Design in Education (ICTDiE) teaches students the Pedagogical Knowledge (PK) and the Pedagogical Content Knowledge (PCK) relating to the integration of ICTs into education.

The ICTDiE module discussed below is compulsory for the fourth year students.

ICT Design in Education (ICTDiE) is one of four compulsory modules attached to the subject of General Subject Didactics 4, which is regarded as the 'mother subject' (see Figure 6). Each module bears a weighting of 25%. In order to pass this module, students need to obtain at least 40% for this module. The same applies for the other three modules. If students fail to obtain 40% for any subject, they would fail the sub-minimum; if the student fails to obtain an average of 50% for the mother subject,

General Subject Didactics 4, it will also equate to a fail. If a student fails a module, and as such fails the mother subject, he or she could redo the module in the following year, without having to repeat all four modules.

According to the course outline, the purpose of the module is to enable students to use computers in the classroom, as well as to assist students in the development of a subject laboratory. The outcomes are the ability to apply computers skills effectively in the classroom environment, the ability to use computers for teaching and learning, the skills to integrate multimedia and educational software in the classroom, and the proficiency to develop and equip a media centre in any of the student's subjects or learning areas. The module is offered in a laboratory setup (see Appendix 1). Each student is seated behind a computer, with the teacher educators' computer at the front of the class being connected to a data projector, displaying on a projector screen. The computers have a range of software installed on them, such as Microsoft Office, various media players and Facebook. Students also have access to the Internet as well as to the Department's shared network drives.

The next section introduces the research philosophy and methods used in the study.

3.4 Research Philosophy

3.4.1 Ontological lens

In this study, I am using Critical Realism (Bhaskar, 1978) as an under labourer. More specifically, I am using Bhaskar's depth ontology to account for the underlying structuring principles of the pedagogical ICT design (viz. ICTDiE, in this case). Bhaskar's (1979) depth ontology explains reality as stratified into three ontological domains, namely, empirical, actual and real.

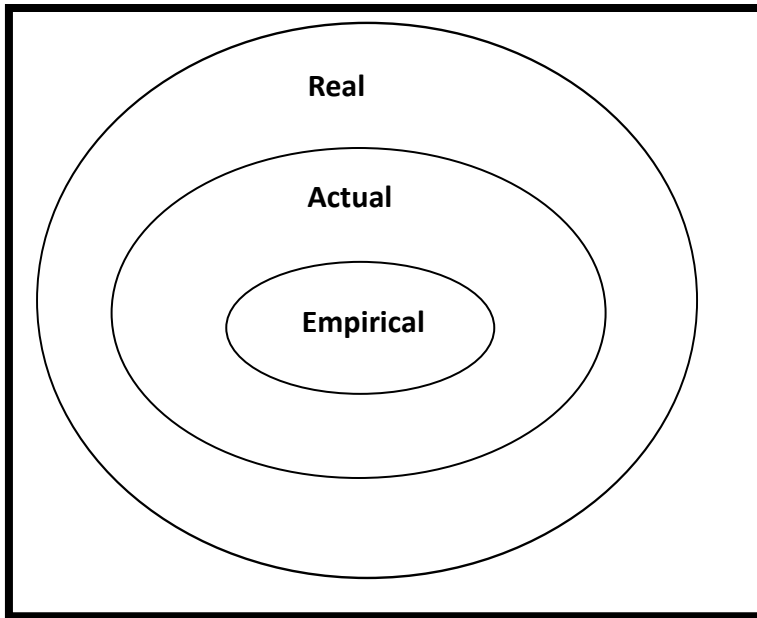


Figure 7: Bhaskars' three ontological domains (1979)

The third domain, the real, is "... the causal mechanisms and structures that produce actual events a subset of which then is empirically observed." Klein (2004: 31). It could therefore be said that this real layer refers to causal mechanisms and structures which produces the actual.

The second domain, the actual, refers to what events actually happen, whether observable or not.

The empirical the domain that is observable or that could be sensed by people; in other words, this is the layer of our experiences or observations.

This meta-theoretical framework enabled me to identity what happens in the real domain (powers, mechanisms and tendencies) to uncover the factors lying behind integration of ICTs in this particular teacher education programme. It could be argued that people are not using technology as they should, by citing contextual and observable

factors. However, this empiricism fails to account for the underlying factors, which lie in the 'real' domain and which may be preventing them from using the technology – or alternatively enabling them to use it.

The important element of critical realism, according to Danermark, Ekström, Jakobsen and Karlsson (2002), are its critique of flat empiricism. Flat empiricism can be seen as the view of external realists who believe reality is flat, i.e. there is no deeper level beyond what we can observe on the surface. In other words, critical realists believe ontology transcends the empirical level as explained in Figure 7. The philosophy of Critical Realism views knowledge as real (with emergent properties, tendencies and effects) but still fallible in both the natural and social world. As Maton and Moore, explain knowledge fallibility being fallible “rather than absolute or merely relative” (2010: 2). This type of philosophy has assisted me to identify what happened in the real domain (with regard to powers, mechanisms and tendencies) to uncover the factors lying behind the re-contextualisation of ICTs in the teacher education programme.

3.5 Methods

Two data collection methods were used, namely, document analysis and semi-structured interviews.

a) Document analysis

The documents used in the document analysis were:

- Doc A - course outline (*Appendix 2*)
- Doc B - assessment tasks (*Appendix 9*)
- Doc C - prescribed textbook, i.e. Teachers discovering computers: Integrating technology and digital media in the classroom.

The Head of Department (HoD) and the faculty officer (FO) provided me with access to these documents, which served as the basis for analysis.

b) Semi-structured interviews

Semi-structured interviewing is a valuable method for gaining interpretive data. It is defined by its flexibility and fluid structure (Mason, 2004) and involves an exchange of dialogue in a fairly informal style. The approach could be thematic, biographical, topic-centered or narrative. Semi-structured interviews done in this study relied on the ethnographic style. This involved interviewing the person in their natural setting, often times while performing their tasks. This allowed the researcher to question the interviewee about their activities and their particular ways of carrying out such activities at their place of work. This brought to light important behaviors, and created an opportunity for self-awareness and self-reflection

- Vital information was gained from the lecturer involved in the teacher education programme (interview 2 hrs.), which was supplemented with brief focus group interview discussions held with four pre-service teachers in their final year of study (30 mins each). The questions asked in these semi-structured interviews are listed in the appendices as well as the raw transcripts, namely: Doc D – Teacher educator interview (see questions and raw transcripts in Appendix 3)
- Doc E – Focus group discussion/ interviews (see questions and raw transcripts in Appendix 4)

3.6 Research Participants

The main participant in the study was the teacher educator responsible for teaching the subject 'ICTDiE', in order to interrogate her basis of claims of legitimacy. This was

supplemented by focus group interviews with four fourth year students doing the subject 'ICTDiE', who were selected randomly.

Additional information was gathered from the HoD and from FO regarding the subject module and the weightings.

3.6.1 Summary of research participants

Teacher educator

The teacher educator interviewed (Jane, pseudonym) is a middle-aged woman (40-45years old), who initially learned about computers during her last year studying towards a teacher qualification in the early 1990's. This involved learning about word processors, graphics and printing. Her passion for the use of ICTs started at that time, and she would eagerly try to find out more about computers, primarily by means of self-teaching. She later formally enrolled in a degree programme, which specializes in ICTs. After teaching a number of years in a school setting, she was approached to help out at the particular HEI, the UoT that is the setting for this study. This is where we met, viz. while she was teaching the specific subject of ICTDiE. We became colleagues.

Four student teachers

Focus group interviews were conducted with four participants, who were randomly selected from the pool of students doing their teaching practice (internship). These students were all keen to participate in this study; after the purpose and rationale of the research project was explained to them, they signed the consent forms.

Bathilwa (pseudonym), a mature female student with two children, had been teaching at a primary school for many years, before she decided that she wanted to study further

to get a formal qualification. At her school, she was using a computer to do administrative work, and she had also purchased a computer for her household.

Suzie (pseudonym) came from a small town outside Cape Town and had never used a computer before enrolling at the UoT. She enrolled the year following her Grade 12 year. She did not own a personal computer, although she carried a smartphone. Her exposure to computers was limited to on-campus access, and she did not have a personal computer at home.

Ryan (pseudonym) was very enthusiastic about learning about ICTs in education. Like Suzie, he was exposed to computers for the first time in his life, when he started studying at the UoT. After completing his Grade 12, he had stayed at home for four years before deciding to enroll to become a teacher. He was keen to do a postgraduate degree after completing his undergraduate studies and was already looking for a suitable course and HEI.

Vivian (pseudonym) was a female student who had received her first computer when she was at primary school. She was quite technologically savvy and wanted to become an Information Technology (IT) teacher. She was up to date with all the latest technologies and had her own laptop.

3.7 Validity

By gathering rich data through these interviews, the validity of the qualitative data obtained is strengthened (Maxwell, 2013). According to Maxwell (2013), there are two broad threats to qualitative studies, viz. researcher bias and reactivity. Research bias refers to how impartial a researcher is while collecting the data, and reactivity is the effect that a researcher has on a particular setting or on the individual being studied.

In this study, the data recorded was transcribed verbatim. This was done in order for the researcher to avoid bias and to select only what the researcher felt was significant. The respondents were given an opportunity to validate their transcripts. In order to distance the researcher from the interviews, the Legitimation Code Theory was used in line with Bhaskar's (2002) theory of transcendental rationalism, which calls for a move beyond what people say or their perceptions of the world to account for the underlying generative mechanisms of events. It was therefore possible to distance myself from the data.

The researcher also relied on triangulation to overcome any bias in the research. Altrichter, Feldman, Posch, and Somekh, (2008: 115) define triangulation as giving "a more detailed and balanced picture of the situation". In this study, I used interviews as the main source of data, but supported this with document analysis to triangulate the data, and to strengthen the reliability of the research (Hussein, 2009).

3.8 Research Limitations

In this study, I have only used a single case study, and my intention is therefore not to make generalisable claims. However, although the results cannot be generalized, they can be used to make theoretical propositions, which I will be presenting in Chapter 5.

3.9 Ethical Issues

The participants in this study were informed that their participation was completely voluntary. If they wished, they could withdraw from the study at any time. The confidentiality of the information gathered was explained. In addition, pseudonyms were used to ensure participant anonymity. A letter of consent (see Appendix 5) that provided detailed information about the study, its objectives and its procedures, was given to participants before the interviews. After reading these letters of information,

participants were required to sign the document. In addition, ethical clearance was obtained from the UoT's Research Ethics Board.

3.10 Data Analysis

3.10.1 Transcribing the data

Henning, Van Rensburg and Smith (2004) propose that researchers should do their own transcriptions. They aver that, in so doing, researchers become familiar with the data and are therefore in a better position to make more sense of the data during analysis. In view of this recommendation, the researcher transcribed the audio recordings herself, and did so verbatim.

3.10.2 Organising the data

After transcribing the interviews from both the teacher educator and the focus group, the results of the transcription of the data amounted to about 20,000 words. In order to organize and manage this data, in addition to the observation notes, the researcher attempted to use the NVivo 10 software package. This NVivo programme was useful in organizing the data into different categories. It also allowed one to view the different data sources simultaneously, which made it easier to make comparisons. Working with NVivo, however, was time-consuming, as the researcher lacked formal training with the software package.

In view of the time constraints, the researcher decided not to use Nvivo further but rather to manually code the data into broad categories and themes. This involved reading through the transcripts and attempting to summarize the important points (Maxwell, 2013). Recurring patterns that could be grouped together were highlighted. The data relating to a particular theme was grouped together in one location, and a broad theme was then assigned to this data. As Maxwell (2013) avers that these

categories can usually be deduced from theory, inductively generalized (grounded theory) or drawn from the categories of the people studied (“emic” categories), the researcher was mindful to do this before engaging with the theory, so as not to force the theory to fit to the data. This method allowed the researcher to gain an understanding of the data.

Organizing the data in this manner made it a little easier to work with the data. The researcher was “prepared to live in the muddle which is unordered data, and enjoy the pleasure of its potential, in order to be able to generate the theoretical apparatus which is specific to it”, as Moss (2001: 18) puts it eloquently. Chen and Maton (2014) are also avid supporters of this method of organizing data, as they too believe that a researcher is more likely to get the stories from the rich data gathered than by ‘smothering it’ too soon by imposing a theory on the stories. Descriptive labels were given to the coding categories. In doing so, a number of themes emerged that might otherwise have been lost in the theory. After organizing the data, the next step allowed the researcher to look at the data through an analytic lens.

3.10.3 Analytical framework

In this study, I drew on LCT’s concepts of specialization codes, specifically, the epistemic and social relations (Maton, 2013). However, the knower code became significant because ICTs in education entails inducting people in a certain field of social practice (Czerniewicz, 2008) and therefore requires one to have a particular ‘feel’ or ‘taste’ for the game – what Maton (2013) calls a ‘gaze’.

An external language of description was developed to code the data using LCT’s concepts.

Social Relation Category (SR)	
Subjective Relations (SUBR)	Interactional Relations (IR)

Figure 8: Social Relation Category

Figure 8 above shows how the Social Relation category can be divided into subjective- and interactional relations. The values of SUBR and IR differ between knower codes and therefore allow for the possibility of various combinations, as shown in Figure 9 below:-

Social Relation Category (SR)							
Born		Cultivated		Social		Trained	
SUBR+	IR+	SUBR-	IR+	SUBR+	IR-	SUBR-	IR-
SR: SUBR+, IR+		SR: SUBR-, IR+		SR: SUBR+, IR-		SR: SUBR-, IR-	

Figure 9: Social relation category explained

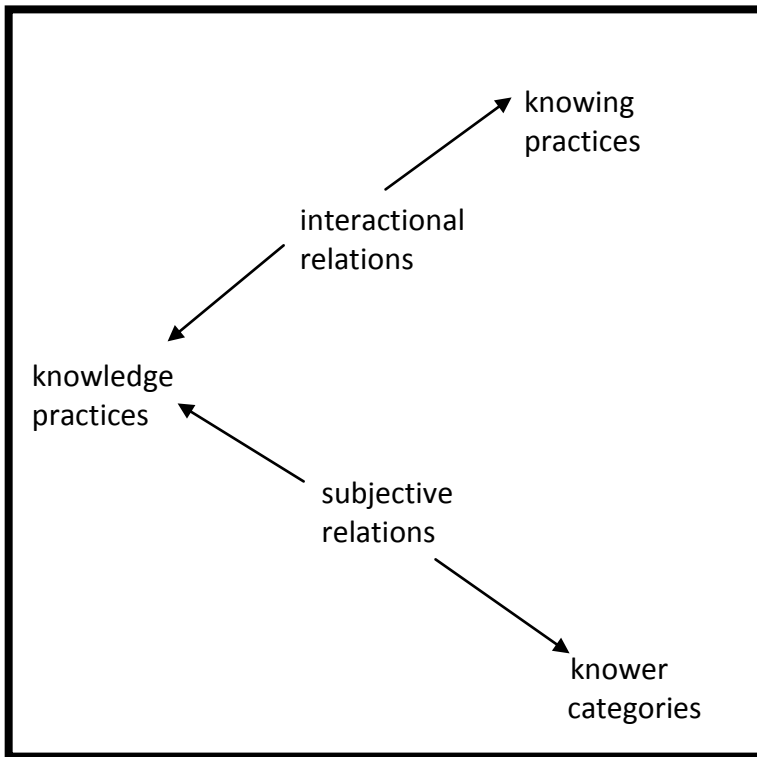


Figure 10: Knower codes – Social Relations (Maton, 2014, p.185)

Figure 10 above depicts how strongly knowledge claims control and bound legitimate kinds of knowers, which is referred to as subjective relations. We also see how interactional relations are shown to be legitimate ways of knowing through interacting with significant others. According to Maton,

...for knowledge claims these become subjective relations between knowledge and its subject; and interactional relations between knowledge and practices of knowing subjects (2014: 184)

To recap these relations can be strongly or weakly classified and framed and in turn creates what Maton (2014) refers to as a social plane with four gazes (see pg. 27), as illustrated in Figure 11 below:

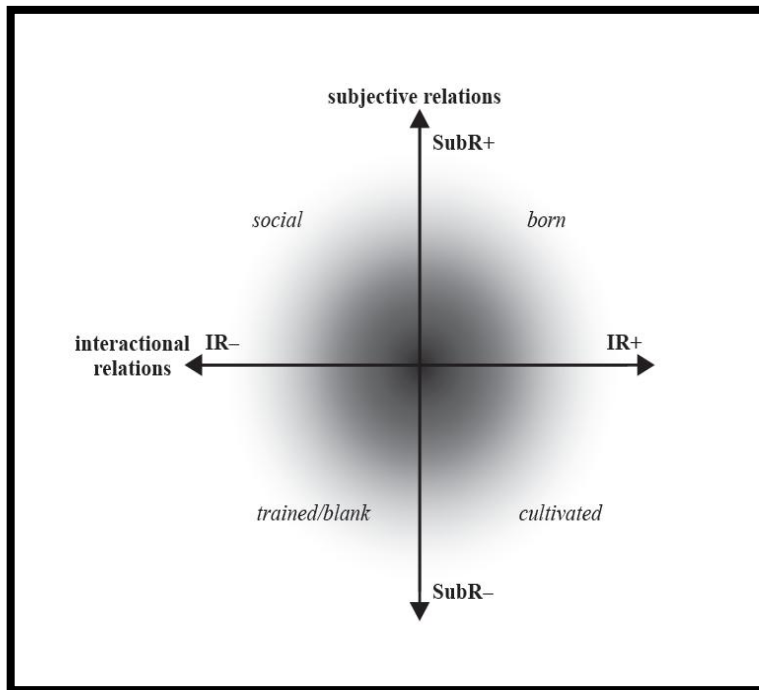


Figure 11: Social plane representing gazes (Maton, 2014, p.186)

3.10.3.1 Translation device

Drawing from Bernstein approach (2000) where he suggests that from theory, (which he calls the internal language of description) we can develop the external language of description, where we are looking for theoretical empirical referents in the data. This is crucial in Bernstein's approach because it opens up what he calls the 'discursive gap' for something new to emerge and therefore a gap of possibilities where contribution to knowledge is possible. Table 2 on page 53 depicts how an external language of description was developed to look at the interactional and subjective relations within the data.

External languages of description for interactional and subjective relations

Knower Code			
Subjective relations (SubR)		Interactional relations (IR)	
Emphasis is on kinds of knowers or who you are ...		Emphasis is on ways of knowing or how they know ...	
Symbol	Insight based on:	Symbol	Insight based on:
+	Social category and knowing practices strongly bound and control kinds of knowers.	+	Strongly bound and control interaction with knowledgeable others.
-	Knowing practices weakly bound and control legitimate categories/kinds of knowers.	-	Limited ways of knowing or practices that weakly bound or control ways of knowing.

Table 1. Translation values

Data	Indicators	Examples of quotes or extracts from the data	Indicators	Examples of quotes or extracts from the data	Code	Type of Gaze
Course Outline	<p>Sub R+ A students' previous background with computers is privileged.</p>	<p>Everyday based technological skills are emphasised.</p>	<p>IR- No indication of scholarly work in the field of ICTs in education and the focus is primarily on tools or instruments teachers might use for various tasks in a school setting (administrative tasks). Limited interaction with more knowledgeable other in terms of ICTs in Education discourse.</p>	<p>Module 1: Communication networks, the internet and World Wide Web and electronic mail</p> <p>Module 2: Software and hardware for teachers</p> <p>Recommended sources for learning: www.wikipedia.com www.wced.wcape.gov.za http://www.yahoo.com http://www.google.com</p> <p>Referencing in the course outline shows that the teacher educator does not display the knowledge of conventional ways of academic referencing, for example "Instructional Technology for teaching and learning: Timothy J Newby and others" (no year of publication) and Teachers, Computers and the curriculum: Microcomputers in the classroom Paul Geisert, Futrell (also no year of publication).</p>	SubR+; IR-	Social

Research design and Methodology

Course Outline cont...	SubR- Emphasis is on developing technical skills, students learn through procedures that does not draw from, or build on past experiences.	The purpose of the module is to enable students to use computers in the classroom and to create a subject laboratory and media centre.	IR- No differentiation between using ICTs in the various school subjects as a result no subject specific ICT pedagogic discourse is being taught (a one size fits all or very generalised approach to teaching is observed).	See term schedule Pg 3 of Appendix 2	SubR-; IR-	Trained
Assessment Task	SubR- Emphasis is on procedures. 'Who you are' is not significant as anyone can be assessed on following procedures.	<i>Jane explained, the first assessment is rather practical... how to setup a laboratory,.., setting up a budget, writing letters.. using a wordprocessor, going onto the internet, making use of excel .. so it is the computer skills themselves ... pg. 126</i> Also see Appendix 9	IR- Students are not learning from more knowledgeable others in the field ¹	A overview of a assessment task given: <ol style="list-style-type: none"> 1. <i>Create a lesson plan for a specific grade at your school.</i> 2. <i>Create a PowerPoint slide show with your lesson.</i> Also see <i>appendix 9</i>	SubR-; IR-	Trained
Interview with lecturer	SubR- The teacher educator does not value 'who she is' as a basis for legitimacy when selecting a particular	<i>Jane says, I don't have any particular theoretical approach ... (pg.128) and I look at doing something hands-on by demonstrating things for them, for example</i>	IR- Dominance of common-sense discourse. While showing creativity and a passion for ICTs in education there is a	During the interview when describing her first lecture, she introduced students to the subject very creatively using various colours and symbols to represent the	SubR-;IR-	Blank²

	<p>theoretical approach to use in her teaching, as a result she focuses on practical examples because she lacks a 'field of expertise' where she could draw from.</p>	<p><i>how to embed a video I would demonstrate that, also from a approach from a particular subject and then I would give them once again a class assignment where they now have to go look for something video's etc. I am just making an example (pg. 122)</i></p>	<p>general lack of academic backup and as such the teacher educator draws from her everyday discourse. Her general knowledge of computers is used as a resource to teach everything she thinks might be relevant or useful to teach.</p>	<p>knowledge, skills, values and attitudes embedded within the subject without any theoretical backing. She draws from what she calls her theory. For instance, she taught the value of colours and she had this to say, "...just raising awareness of how to be observant. And even when they do things without thinking, other people might think things of them, if they for example prepare a lesson and everything is pink i mean? Ya it is very feminine isn't it?" (pg. 136)</p>		
<p>Interview with</p>	<p>SubR+ 'Who you are' is privileged as the teacher educator encourages students to not only depend on the teacher educator for knowledge but to also look elsewhere for "other expertise". This shows a lack of understanding that ICTs is a field of expertise and encourages students to draw from their</p>	<p>Jane says, <i>expose yourself and not wait for other people to teach or train you</i></p>	<p>IR- An extension of students' basic understanding of ICT concepts, tools and procedures which are derived from the American textbook which Jane inherited from her predecessor³.</p>	<p>He says, <i>well not, not really, obviously the only resource is this particular textbook and obviously the other things are more practical.</i> He further says, <i>...it's all about integrating computer technology in the environment of education... but I like the approach of the book and it links with the title of the course and it contains very valuable things that one actually can contextualise to the South-</i></p>	<p>SubR+; IR-</p>	<p>Social</p>

lecturer cont...	everyday experiences and exposure.			<i>African context...</i> These are procedures to be followed by students in doing various tasks.		
Textbook	SubR+ Emphasis is more on students' previous experience and knowledge about computers (everyday based knowledge is privileged).	<i>"Computer based training is popular in business, industry and education to teach new skills and enhance existing skills of employees" Pg 285, Textbook</i> Athletes, for example, use digital media computer-based training programs to practice baseball, football, soccer, tennis, and golf skills, while airlines use digital CBT simulations to train employees.	IR- Emphasis is on practices (general ICT repertoire) that limit ways of knowing. Knowledge is weakly classified for instance; there is no distinction between ICT skills/use for education, business or entertainment.	Computer-Based Training (CBT) Electronic Books and References How-To Guides Digital Media Newspapers and magazines Entertainment and Edutainment Virtual Reality Information Kiosks Digital Media and the World Wide Web Web-Based Training (WBT) "A digital media application involve the use of digital media technology in education, business, and entertainment. " Pg 284, Textbook Students were given an example of interactive advertisements and job and skills training applications.	SubR+; IR-	Social

Textbook cont...	SubR- 'Who you are' is irrelevant as acquiring the necessary skills and procedures would allow you to teach/ be an expert in this subject.	Example of an exercise: Your high school Spanish class is studying cities in Spain. To reinforce reading and writing Spanish while learning about the country, students will create a newsletter written in Spanish...If you are not fluent in Spanish, select another foreign language... If you are not fluent in a foreign language, research three cities in Spain and create a newsletter presenting travel and tourist information written in English. (Doc C: 379)	IR- Emphasis is more on gaining technical/ procedural computer skills rather than the integration of ICT in education, therefore limited ways of knowing.	Students are required to create their own dynamic animations using graphic animation software package-instructions are given. <i>See appendix 6, 7 and 8 for more examples.</i>	SubR-; IR-	Trained
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Table 2. Translation device

Notes:

¹ A one size fits all approach is used when assessing students this is due to a lack of understanding that integrating technology into different subjects, such as mathematics, technology and life sciences requires different conceptualizations (eg. as understood through the TPCK model) and thus lead to students being assessed on what they know and not how to use pedagogic ICT knowledge specific to the various subjects. Therefore 'how they know' is weakly classified.

² They are unable to reason why they are doing what they are doing in a manner in which they do it. Therefore it is also referred to as a blank gaze. Based on the old master apprentice (do as I say or do as I do) model.

³ The textbook lacks pedagogic issues in the field as such do not cultivate students learning as intended.

3.11 Summary

The research for this study falls within the philosophy of critical realism and uses a qualitative approach with a case study research strategy. The research methods involved a combination of semi-structured interviews and document analysis. One of the limitations of the study is that it cannot be generalized to other teacher education programmes due to the small number of participants. In the next chapter, the data will be analysed and discussed.

Chapter Four: Data Analysis and Findings

4.1 Introduction

This chapter presents the findings from the data collected, as described in the previous chapter. The main objective of the study was to explore the pedagogic ICT design within a specific subject (ICTDiE) to account for integration of ICTs in a teacher education programme. The way in which the curriculum is re-contextualised is conditioned by the manner in which teacher educators were inducted on how to integrate ICTs in education.

This study therefore marks a significant shift away from a technician or instrumentalist understanding of ICT integration in education and considers this process as a structured human activity. It is my contention that the way in which ICT is integrated in a teacher education programme will have a significant effect on whether new teachers will eventually use ICTs in their future classrooms. It is therefore important, if we are to transform authoritarian traditional talk-and-chalk teaching methodologies and to open access to powerful knowledge (Muller, 2005), or epistemological access, to use the words of Wally Morrow (2007) to most South African children, in particular, those coming from previously disadvantaged backgrounds.

In this study, I have analysed the legitimisation practices in the TEP in order to understand the underlying structuring principles of a teacher education pedagogic discourse that eventually shapes the pedagogical ICT design. I have therefore used the LCT specialisation code proposed by Maton (2000, 2007, 2009, 2013 and 2014) with a particular focus on the so-called knower grammar or what he called the privileged

'gaze'. This gaze represents the principal underlying legitimation practices and therefore the 'feel' for the game. Therefore, to simplify, 'to know is to gaze' or this gaze simply shows your particular 'taste', as Bourdieu (1998) would like to remind us. In basic terms you acquire your 'taste' through your everyday family life as well as your educational formation. Bourdieu argues that "taste classifies and it classifies the classifier" (1984: 6). In terms of this argument, Bourdieu explains that social subjects are somehow classified by their classifications and therefore distinguish themselves by the distinctions they make.

Maton (2013) used this rich theoretical tool of Bourdieu (1984) and subsumed it in his strongly dense theoretical corpus of knower grammar in what he called 'gazes' with much more explanatory power. According to Muller (2007), the strength of a theory lies in its verticality and grammaticality. Verticality refers to the ability of a theory to develop through integration and subsumption, where knowledge at the lower level is subsumed by more powerful symbolic language in what can be symbolised by a broad triangle with sharper apex. The sharpness of this apex symbolises the movement of theory towards more integrative or general propositions with more explanatory power. Grammaticality refers to the ability of theory to speak about something other than itself. Maton's (2013) concept of 'knower grammars' fits exactly the category of theories to which Muller (2007) is referring here. I therefore developed the external language of description (viz. the empirical referents of a theory) from the abstract powerful internal language of description (gazes) to make sense of my messier data. I developed the translation device as indicated in Table 2 (page 53). I could therefore conceptualize different kinds of gazes (or legitimation practices) underlying the interviews with Jane, classroom activities, assessment tasks and focus group discussions, as well as the documents in terms of the strengths of their knower-grammar (or social relation).

The following themes emerged from my analysis of the data:-

- The trained gaze (weaker knower grammar)
- The social gaze (stronger knower grammar)

These are discussed in detail in the sections below.

4.2 Knower grammar – trained gaze (SubR- ; IR-) = weaker grammar

This theme looks at how specific kinds of knowers were cultivated in the field of ICTs in education. Legitimation practices (viz. their claims to knowledge) represent the underlying structuring principles and in this case, these are demonstrated through ‘knower grammar’ or knower ‘gaze’. Maton (2000) and Bernstein (2000) maintain that education practices ‘specialise’ or ‘shape’ the identities and ways of seeing the world of those who participate in them. Bernstein emphasised that a “gaze has to be acquired, i.e. a particular mode of recognising and realising what counts as an authentic ... reality” (1999: 165). This gaze refers to the degree to which our ways of knowing or doing (i.e. our gaze) relates to a specific base. In this case study, this gaze refers to the way in which legitimation practices as seen through interviews and documents relate to the field of ICT in education or educational technology. In this study, legitimation practices reveal weaker grammar or the dominance of what Maton (2013) called a ‘trained gaze’.

For instance, in my interview with Jane (Doc D), she did not assign much importance to theoretical knowledge within her teaching approach. When asked about the theoretical approach or literature she drew on in teaching ICTs, she responded as follows:

Well not, not really, obviously the only resource is this particular textbook and obviously the other things are more practical.

She was further assuming that her students already had particular skills as well as knowledge from the related fields of education, didactics, subject didactics and their subject knowledge. In other words, she felt that the student was already an expert in his or her field, and she was viewing that knowledge as a separate entity from that being

taught in her course. The students were thus depicted as legitimate knowers already, and any specialist knowledge that they might need within the course was downplayed. This is in contrast to the literature, which suggests that a ‘horizontally segmented field’ like ICTs in education has to have a “strong grammar” (Czerniewicz, 2008: 12). Jane, the teacher educator is of the view that it is not her responsibility to teach her students any particular theory or to use a particular theoretical approach in the course. She says:

I assume that they see these as separate entities and I see my responsibility to integrate. (Doc A)

This clearly manifests weak knower-grammar as she only sees her role as one of training students to use ICT tools in their teaching, but not as teaching them how this should be done in the various subjects that her students will eventually teach. This is also evident from the course outline (Appendix 2), which states that the module “enables students to use computers in the classroom”. Here again we see weaker interactional relations (IR-) manifesting, as the use of the phrase “to use computers in the classroom” is a rather general statement. This implies a limited understanding of the fact that computers can be used as a pedagogic tool to enhance learning. The following activity illustrates this point:

Activity 1

Follow (click) the following links – as an example to find web sources for a particular subject

URL: www.yahoo.com

In textbox, type “Yahoo directory”, click Search button, click “Yahoo directory” (dir.yahoo.com)

Locate and click Education, K-12, Mathematics, Ask Dr. Math

When the page appears, explore the site to see what this type of Web site has to offer ...

Other examples:

Virtual Dissection/ Dissection game, frog, cat ...

Gears and levers games

Java programming tutorials

In this activity, the teacher educator expects her students to follow a set of procedures. The students are thus sitting behind the computer and following her instructions. The procedural way of teaching is ineffective in teaching future teachers about the powerful potential of using ICTs in the classroom.

Similarly, the objectives of that module (Appendix 2) show that the teacher educator is simply imparting technical skills onto the learners in the class. The objective from the course outline read as follows:-

- It also assists students in the development of a subject laboratory or media centre.
- The student should be able to develop and equip a media centre in his/her learning area or subject.

It is not clearly specified what is meant with this objective. The question is whether the course is really aiming to equip students with the necessary practical skills in their specific subject area to create a laboratory. What seems to be the case, however, is that the course (or module) is offering a range of unstructured, in the sense of ‘everything goes, as long as it relates to computers’. It is therefore fair to say, based on what happens in Jane’s classroom, student teachers are being socialized into the field as

computer lab technicians or administrators, i.e., instead of equipping these students with the pedagogical knowledge on how to integrate ICTs in their future classrooms thus enabling these students to adapt to different situations (contexts), they are merely being taught computer skills.

What is lacking within the teacher educator's approach is what exactly is being taught, why such material is being taught, how and why it is relevant, the sequence in which it is being taught, and how the taught material is structured, and why.

This type of trained gaze is further illustrated below in an extract from the prescribed textbook (Doc C). Here students are shown how to create a school activity flyer.

1. Creating and Formatting a School Activity Flyer

Problem: As a seventh-grade class trip sponsor, you need to create a flyer to notify parents and students of an upcoming informational meeting. Open your word processing software and create a new flyer as described in the following steps. Use the flyer shown in Figure 1.41 on the next page as an example. (Hint: If you do not have the suggested font, use an appropriate font.)

Instructions: Perform the following tasks:

1. Select a class trip destination/title for the project. Display the title in the first heading line centered in 36-point, Comic Sans MS font.
2. Select a school name and display the second heading line centered in 22-point, Arial Narrow, bold font.
3. Choose an appropriate picture, image, or clip-art graphic and insert it centered on the page.
4. Describe the field trip in three lines of text. Display the text in 14-point, Times or Times New Roman font.
5. Create a bulleted list that provides specific information about the meeting. Display the bulleted list with a one-half-inch margin in 12-point, Arial, bold font. Display a portion of each bulleted phrase in orange.
6. Provide contact information at the bottom of the flyer (your name, e-mail, address and current date). Display the information in 14-point, Times or Times New Roman, blue font.
7. Save the document to the location of your choice with a name of your choice. Print the document and then follow your instructor's directions for submitting the assignment.

The prescribed textbook also shows a dominance of the trained gaze or weaker grammar, as it is dominated by basic procedure driven exercises, and as it is largely based on our everyday understanding of computers. This is captured in this textbook review, where the reviewer displayed frustration with the dominance of this common sense discourse:-

I think probably the first edition of this book (I read the sixth) was likely very helpful. However, although the authors have made cursory attempts at updating

the text, by adding newer technology definitions like "smartphone" and "iPad", it is largely outdated. For example, this book spends inordinate amounts of time defining terms that any teacher today should know and recognize. For example, I hardly think it necessary to define terms like "mousepad" and "keyboard." It's particularly ironic since I read this book as part of an online class. It would have been pretty difficult to access the online syllabus to even learn that I needed to purchase this book without being able to navigate rudimentary technology understanding that this book pretends to educate teachers on. It's difficult to imagine many educators really benefitting from this outdated, and far too lengthy, text of common everyday technology definitions (Beth, 2013: 1).

The prescribed textbook is ostensibly teaching students about information technologies, such as hardware, software, and the internet. It discusses operating systems and applications. It also contains a detailed step-by-step explanation of how to design a website for the classroom, and in this regard, it is very detailed and enlightening. However, much of the information is common knowledge. It is my contention that it is aimed at people who want to learn how to use computers; its focus is not really on how to integrate ICTs pedagogically into teaching.

For instance, an integration exercise taken from the textbook (Doc C) is shown below:-

Integration in the classroom

Your students are studying various careers. They conduct research on the Internet and gather information about pay scales, educational requirements, and other benefits of their chosen profession. The students then prepare a flyer to share their information with the class. Create a flyer to present as an example for your students. Use appropriate font styles, font sizes, font colors, and images. Include the current date, your name, and e-mail address on the bottom of the flyer.

The analysis of this activity in the textbook suggests a trained gaze (SUBR-, IR-), because it is basically extending the students' knowledge of existing tools. The subjective

relations are being dominated by a requirement to adopt a procedural or trained gaze. Morrow (2007) highlights the importance of not teaching material elements, as he feels that this confines students to specific subjects and teaching methods. The same applies here; students are confined to specific procedures. However, this also limits them to specific contexts, rather than teaching them to be context-independent.

The marked assessment sheets (see Appendix 9) also show the dominance of the trained gaze. The assessment task (see below) displays a strong emphasis on technical and procedural skills, thus indicating weaker subjective and weaker interactional relations.

Overview of the assessment task

Create a compact disk with 3 sections containing the following files.

Section 1:

1. In Excel create a budget and inventory list to setup and equip a laboratory in the subject area of your choice.
2. Write a donation letter to a company requesting funding for this venture.
3. Create a floor plan with pictures showing how you intend to setup this laboratory.
4. Write a proposal letter to the principal at your school, highlighting and requesting permission to arrange some fundraising efforts at your school.
5. Obtain the necessary quotations for computer and equipment you may need in your laboratory.

Section 2:

Create a flyer in Microsoft Publisher inviting/informing others of your intended fundraising efforts.

Section 3:

1. Create a lesson plan for a specific grade at your school.
2. Create a PowerPoint slide show with your lesson.

You can add a picture of yourself on the cover of the compact disc.

While there is indeed a dominance of the trained gaze, which might constrain cumulative knowledge (i.e. where students are able to use any acquired knowledge when the context changes), the intended objective of the module was to illuminate critical thinking skills with regard to technology use in learning, as Jane explains:-

ICTDiE [the subject] moves in a different direction ... for me, it's more than just skills. It should entice thinking, deeper thinking in the students in terms of how to, why and what kind of technologies to use for which particular kind of environment ... with the focus on learning and not so much on teaching (Doc D).

This shows Jane's enthusiasm in helping her students to not only to be trained in computer skills but unfortunately her *habitus* (where she draws from) has unintended

consequences. For instance, as we've seen with both the textbook and class activity computer skills are being taught. Archer (1998) says that victims of education are not victimized by their lack of discursive penetration of the circumstances in which they find themselves, but by the circumstances that limit what they can do and what rules they are able to follow.

This was echoed by the students (Focus Group, Doc E) who expressed their concerns. Students saw the skills that they were gaining within the course as more administrative in nature, as indicated by this student:

Like if you want to enter your marks, the marks are already there. So you just punch them in, *voilà*. You have your marks. If you have, want a lesson plan you just type it and you save it; when you want it for the following year, when you teach you just go to your pc, you open it, you change the dates and you present the lesson. That is how we were taught. (Vivian, Doc E)

The same student expressed fear, even distrust, in the skills she had obtained in the course, and said that she did not see learning taking place, and was fearful that, because she had not been taught to do these things in her class at university, she would not cope with teaching this to learners at the school. Since she herself did not feel that she understand the material sufficiently, she would rather not confuse her learners by trying to teach them, because she might lose their respect for the whole year.

Clearly, this has serious implication for curriculum recontextualisation because some legitimation practices might serve to further marginalize the already disadvantaged, even though the intentions may be otherwise.

4.3 Knower grammar – social gaze (SubR+; IR-) = stronger grammar

In this study, a common-sense understanding of the role ICTs in teaching played a major role in the conceptualization of ICTDiE. In this section, I illustrate how the legitimation practices were primarily uninformed by theoretical underpinnings of the field in this case.

During the interview, Jane showed a lack of theoretical understanding:

So that is my own framework ... but the textbook supports me in that particular approach. That framework, my own framework. (Doc D)

This suggests that Jane was under the mistaken impression that one could construct a theory without taking into cognizance theories that have driven the field for many years. This shows a limited understanding of the entire academic enterprise and therefore contributes towards the confusion experienced by the students in her class, as highlighted in the focus group interview, where one of the students said:

One lecturer, I am not going to say names, one lecturer teaches you theory, theory is important. When another one comes in, he says, no, speak about your everyday experience. And what do we do? We forget about theory, you put it aside and then you concentrate on what?... On my everyday knowledge. And then another lecturer comes and says, I want theories. Where are we standing now? Can't the university speak one language? (Bathilwa, Doc E)

This common sense approach is also evident in how Jane thinks about content selection and content sequencing, which suggests weakly classified and framed educational knowledge. When she describes how she works with the students, it portrays a learner centered approach : =

... from time to time I would refer students to particular websites... to get particular resources for a particular subject and not only resources in terms of content knowledge but say multimedia, that might assist them in teaching a particular topic in their particular subject. So I lean a lot on the internet...

Jane added that the module was viewed by the department as a way of integrating students' prior computer skills with knowledge of their other subjects. The module thus

assumes that students will have basic computer skills, but it also begins to integrate their skills, which they already have, with the knowledge of their subject didactics; this integration focuses more on the learning side. She said:

I see myself and my learner and this technology as a partnership and together we will sit and discover, we will look for knowledge.

Although this is interesting what Jane is missing is that students need guidance from knowledgeable individuals in their respective fields on how to integrate ICTs in pedagogy. In other words, learning how to use technology is different from learning to use technology as pedagogical resource. She is assuming that students only need to be exposed to computers for them to know, automatically and instinctively, how to teach using computers. This is evident from her accounts of the assessments used in her module.

During the interview (Jane, Doc D) explained that one assessment task (viz. group work) entailed setting up a subject laboratory while taking into consideration the costs as well as the communication with the principal and suppliers. This included writing letters to these stakeholders. The students would thus need the ability to draw up a budget, to do an inventory of the stock, and to use computer software to assist them in all the different aspects, such as using a word processor, going onto the internet, making use of Excel etc. She believed that, not only were they using their computer skills, but they were also developing softer skills, such as communication and negotiation skills, in particular, price negotiation. She was convinced that this exercise would eventually allow the students to reflect on what would be needed if they were required to create a laboratory for their teaching subject within their schools. The second part of the assessment task revolved around marketing activities and included making use of a graphical software package. The recommendation was for them to use Microsoft Publisher to create a flyer, which they would then have to convert to PDF or to create a graphical image. Another assessment task involved setting up lesson plans while

embedding a video into MS Power Point, a slideshow package. According to Jane, these assignments allowed her students to gain a mixture of skills and knowledge. However, the relevance of these assignments for teachers in the classroom was questionable.

The way in which Jane made random comments with regard to the criteria she was using, as well as her inexplicit articulation of what was required from the students (for example, she did not have a rubric to allow her to compare student performance) suggested that her instructional and evaluating rules were likely to be weak (and thus a weak manifestation of the social gaze). Students were simply expected to acquire a social gaze that was necessary for them to express themselves in original and creative ways, using background knowledge. Although the assessment was supposed to be based within a school environment, it was rather generic, in other words, there was no reference to a particular subject and how to integrate it within this subject; this was indicative of weak interactional relations. Thus for this knower to be considered legitimate would require creativity within this particular assignment (SubR+, IR-).

Jane maintained during the interview that she did not think that there was anything explicitly expected from the students in the course, and that she felt that perhaps everything was geared towards equipping the students to start teaching, depending on their underlying approach as a teacher educator.

This lack of explicit outcomes is echoed in the marked student assessments (see Appendix 9). A closer look at the way in which the assessment task was assessed showed that its focus was mainly on practical skills, such as writing a letter to a principal at school, using Microsoft Word, creating a Flyer in Microsoft Publisher, and using Microsoft Power Point to create a slide show. Students were required to save all these documents to a Compact Disc (CD) and to put any appropriate picture on the cover. All the students had printed a color picture of themselves on the cover. It appears that

students were assessed based on their creativity, such as using embedded videos and appropriate pictures. While looking at 30 randomly selected marked assessments, the marks ranged from 32% to 67%. On the assessments, the teacher educator wrote comments, such as “page numbers”, “spelling”, “detail??”, “font color”, “very small”, “font too small”, “vague”, “slide numbers”, “too much text, bullets, slides”, “files not saved in right format”, “cold empty spaces”, “lack of coherence”, “too informal”, “no imagination”. The only positive comment was “packaging very good”, therefore suggesting that the student had done something right. The point here is what does “page numbers”, “spelling” “detail” even “very good packaging” et cetera have to do with giving students guidance on integrating ICTs into education? This shows that the students were assessed on the skills (i.e. their level of exposure) that they had prior to attending this course; they were not really assessed on the integrations skills that they would require in order to use ICTs successfully in a real-world context.

This type of social gaze is also manifesting itself when I consider the value attached to academic literacies within the programme. For instance, a recommended reading list given in the course outline (see Appendix 2) lacked basic knowledge of good academic writing. The lack of a recognized referencing style was indicative of the fact that the teacher educator was an ‘outsider’ in the academic field. This is ironic, seeing that the TE was supposed to be familiar with the academic environment and its rules and expectations. For example, the following references were mentioned:

(a) Instructional Technology for Teaching and Learning: Timothy J Newby and others.

(b) Teachers, Computers and the curriculum: Microcomputers in the classroom, Paul Geiosert, Futrell.

The course outline also points students to various recommended websites. However, some of these recommended websites were somewhat frowned upon by respected writing organizations and HEIs, namely:

- <http://www.wikipedia.com>
- <http://www.yahoo.com>

When attempting to access the Western Cape Education Department's website (which provides access to information about the WCED and its services) and the Khanya website, which were recommended (Doc A, see Appendix 2), it appeared that both urls had been incorrectly typed, namely:

- <http://wced.wcape.gov.za>
- <http://khanya.gov.za>

These obvious errors might have deleterious effects. Jane does appear to be placing much emphasis on self-learning and self-study: "I would say self-exposure, self-study" (Doc D) are important. She cannot distinguish between what constitutes academic text and what is not, and it is my contention that this is the result of the *habitus* on which she herself is drawing. When Jane started to teach, her parents bought a personal computer for their household; she would sit at 'this machine' (as she put it) throughout the night, attempting to find out various things. She thus affirmed that:

I actually encourage that kind of learning to look for things, to play with it, to have fun with it, to expose yourself as much as possible. (Doc D)

This emphasis on informal learning seems to stem from her conviction that knowledge was not only passed on in formal training situations. Rather, she felt that students should expose themselves to whatever technologies were available, rather than being dependent on others to teach or train them. When she was questioned about the methods of acquiring new skills, she accentuated her ability to gain knowledge through self-studying:

I basically apply the same principles that I've mentioned earlier in terms of exposing myself. So if the need arise I would read, I would google, I would do some research on it. I would install software and then I would play around with it. It happens with me all the time, even with my work teaching (this particular programming language). (Doc D)

She further pointed out that, when she was first employed in the department as a teacher educator, she lacked the skills to teach the subject that had been assigned to her. It was only because of her everyday knowledge and self-study that she was able to cope. She taught herself how to program in (this particular programming language); fortunately, her background in (another particular programming language) and many other programming languages aided her in learning more rapidly. She would read many formal textbooks and also train herself by coding (both working and non-working) programs hands-on. She reiterated:

So the principle for me is still the same: expose yourself and do things hands on. (Doc D)

This suggests that Jane, who was responsible for structuring the curriculum, was coming from a socialized gaze. She was familiar with the tools *per se*, but was not familiar with the field of ICTs in education. As a result, she was training her students based on her own knowledge and background. Those students, who had previously been exposed to ICTs, were thus likely to flourish in her class, whereas the rest would remain average and even struggle to cope. However, even though the students who had prior technological skills might excel during tests and assignments, this unfortunately did not mean that they would be able to integrate ICTs effectively in their own teaching practice and thus to transform traditional pedagogies.

4.4 Summary

The data collected was presented in this chapter in relation to the questions posed. Two gazes were dominant and grouped under two themes. Data from the interviews

with from Jane and the focus group, assessment tasks, document and activity extracts was presented to illustrate what was revealed in this case study.

The findings from the research suggest that though not intentional, more practical skills is taught in the subject (ICTDiE) therefore the intended objective of teaching pedagogical ICT design within ICTDiE is not met. This suggests that ICTDiE is not properly conceptualized and it is therefore not surprising that students are questioning what they are being taught. The final chapter reflects on the entire study and provides recommendations for the teacher education programme as well as the institution.

Chapter Five: Discussion and Conclusion

5.1 Introduction

This chapter details the main findings in terms of the research question, viz. how ICTDiE as a subject either enables or constrains ICT integration in a teacher education programme. The study shows the importance of cultivating a technological identity or technological gaze for the effective re-contextualisation of ICT in such a teacher education programme.

5.2 How does ICTDiE as a subject in a teacher education programme enable or constrain student teacher's preparedness for the integration of ICTs in their future classrooms?

From the study, we can see that the recontextualising agent has an enormous responsibility, because what is selected and brought into the teacher education programme rests squarely on their *habitus*. The manner in which the use of ICTs is conceptualized in such a teacher education programme can either enable or constrain integration. To use Bhaskar's (1978) terms, it is therefore real with emergent properties, tendencies and effects. This affects the level of student teacher preparedness for the future use of ICTs in their classrooms once they have qualified as teachers.

Today's society needs teachers who have the necessary skills to deal with different contexts and learners. Unfortunately, the findings revealed that the knowledge students acquired in this case was context-dependent. The teacher educator appeared to have what Maton (2010) called a trained and social gaze. Her social gaze had been

acquired through exposure to various modes, both formal and informal, but not related to ICTs in education.

Moreover, the knowledge privileged in this programme by the teacher educator might in fact have a negative effect with regard to the effective integration of ICTs in teaching. In other words, students subjected to this trained gaze are unable to apply the knowledge to different contexts. A trained gaze constrains cumulative knowledge building and is therefore not suitable for preparing student teachers in becoming effective teachers who will be capable of integrating ICTs in their subjects at school. The data reveal a variety of context dependent tasks within this module. This is an expression of the weakest knower-grammar, as students are trained on methods and procedures, but such knowledge will stay context-bound. Analyses of the data confirm that the curriculum structures do indeed constrain cumulative learning and that therefore students will struggle to go beyond their current contexts.

Furthermore, the socialized gaze might contribute towards the continued marginalization of those students coming from previously disadvantaged backgrounds. This is because the program is focusing too much on everyday technological knowledge, which benefits only those students who already possess the right capital or resources. However, this is not recruited as pedagogic foundational ICT knowledge but rather as an end to itself. It can thus be argued that, even though middle-class students may be at an advantage, this is not the case, as there is no evidence of rich theoretical educational knowledge to supplement what they already know. Middle-class students' everyday skills may be polished by the course, but they will still be excluded from being taught a powerful pedagogic ICT discourse that they can implement in their future classrooms.

The recontextualising agent (viz. the teacher educator) privileged proceduralized ICT discourse, thus making it impossible for students to think critically and to use

professional judgment on how and when to use or not to use ICTs in their teaching. It is to be expected that students could only draw from the limited repertoire of examples that had been demonstrated in her teaching, which further constrained students from using the wide variety of ICTs tools that might be relevant and available in their respective disciplines. Students alluded to this point as they felt un-empowered to face challenges in their future classrooms. Furthermore, this has the potential of reproducing traditional and authoritative pedagogic practices, despite the fact that ICTs are known for their potential to transform teaching and learning.

In conclusion, therefore, as illustrated in Figure 11 below, when ICT is not internalized during recontextualisation, it will not be internalized within the teacher education programme, as in this case, and it therefore cannot be fully integrated, therefore reproducing inequalities and traditional pedagogies. Thus, although this department has a subject that is intended to teach students about ICT integration, it is not fulfilling its objectives, because it is conceptualized in a limited way and more importantly being implemented in a limited way.

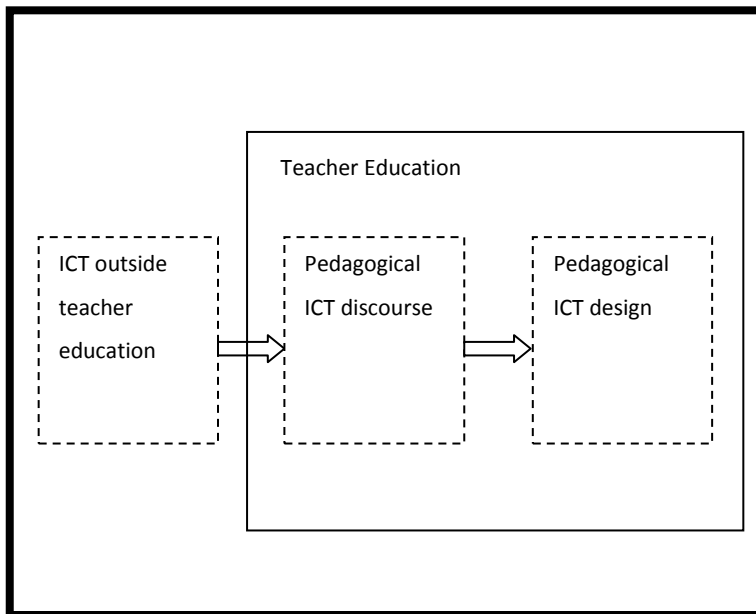


Figure 11: The re-contextualisation of ICT knowledge, ICT use and ICT policy etc outside teacher education into a pedagogical ICT discourse and design within teacher education (Granberg, 2011: 32).

The following section looks at findings with regard to the secondary research question.

5.3 How does the teacher educator's technological identity influence his or her approach towards ICT integration in the teacher education programme?

The study revealed the important role played by recontextualising agents in the process of developing the educational curriculum. Who the lecturers are and the *habitus* which they draw on condition the way in which ICT pedagogic discourse is conceptualized in a TEP. Goodes' (2010) concept of a digital identity draws from Wenger to argue that there is an inherent relationship between identity and experiences. Both Goode and Wenger seem to privilege subjective relations, which is in contrast to Maton (2009), who talks more about the need to be inducted by more knowledgeable others, namely, to cultivate a particular gaze for a particular field of practice. Maton thus believes in privileging stronger interactional relations, which entails being inducted in a field of practice by more knowledgeable others. It is clear from the findings (which reveal that the TE has more of a social gaze than a cultivated gaze i.e. that what is taught in the curriculum is shaped by the interests of the recontextualising agent (the teacher educator) who mediates between knowledge and other structures to construct ICT pedagogic discourse. What would be better suited is a cultivated gaze (Maton, 2013), which would have been acquired through the right type of education with a knowledgeable other. Although the research has identified a crucial barrier to the successful integration of ICTs into the curriculum, because of a lack of key players such as teachers having a significant input into the design and implementation of the ICTs (Bingimlas, 2009; Hennessy, Ruthven and Brindley, 2005; Goktas et al, 2009), this study also highlights the negative impact that academic autonomy might have for institutions with weaker academic identities like UoTs'. The lack of a strong institutional cohesion means that teacher educators are left to fend for themselves and this is as if universities

in South Africa are the same. We tend to forget that we inherited unequal and racialised universities, which might require different approaches, most especially with regard to the curriculum. However, as there is no guidance, TEs are left to design their own niche areas, or fields of specialization, according to their own preferences.

5.4 Summary of Conclusion

This study does not refute the validity of other studies mentioned in this research, as they all raise important points regarding barriers to integrating ICTs into teaching. These barriers include resistance to change, lack of good role models, negative attitudes, not enough exposure to ICTs, gaps in implementation and design, lack of competence, lack of confidence and lack of training (Bingimlas, 2009; Chigona and Chetty, 2012; Gachago et al, 2010; Haydn and Barton, 2007; Lawless and Pellegrino, 2007; Mishra, Koehler, and Kereluik, 2009; Goktas et al, 2009). This study, however, highlights the most important issue around the conceptualization of ICT design that has been neglected in most studies of ICTs in South Africa. The main most important and meaningful contribution of these findings is to help the department and the UoT to improve their programmes. Specific recommendations are made below.

5.5 Recommendations

- ***Teacher education programme***

The implications for the programme studied herein, is that ICTs in education should be internalized in such a manner that it is used across the curriculum, and thus in all the subjects, instead of having only one subject, which in this case privileges only procedural practices and skills. In a teacher education programme, it could, for instance, be conceptualized through TPACK (Mishra and Koehler, 2006). TPACK provides useful insights, but does need further development. As Howard and Maton (2011) argue, TPACK needs to move beyond the empirical description of knowledge practices to

analyse the principles underlying those practices. In their view, TPACK is an explanatory and insightful first step, but it needs further development to become an explanatory theoretical framework. Howard and Maton (2011) observed that studies, which are trying to account for the integration of ICTs in education, should try to develop a holistic account of the contextual factors that might be influencing the degree and kinds of use of technology within classrooms and to engage with the ‘what’ in the knowledge to be learnt.

I agree with Zhiting and Hanbing (2001) when they state technology cannot be taught in isolation (i.e. as a specific stand-alone subject); it has also been shown in my findings instead, this teacher education programme should look at creating a new curriculum that merges theories, technologies and pedagogic practices.

- ***The institution***

The institution should take cognizance of who is teaching technological courses within pre-service education (Zhiting and Hanbing, 2001). The person employed should have a sound grounding in ICTs, as well as a sound knowledge of ICT pedagogy discourse. Such person should not only be focusing on technical issues, as shown in the findings, but they should also realize the importance of pedagogical issues.

Only with a successful change of the so-called ‘gaze’ of people in institutions and university programs, can government’s goal of improving the quality of teaching and learning in schools and across education and training systems become a reality. If this does not happen, then the government could provide as many ICT tools as it wishes, but it will not achieve the expected results – a transformation of education. Like Sosibo (2012), this study found that skills development is still being taught without considering its pedagogical implications. One might ask the question, is it possible for the teacher educator to change her ‘gaze’? In conclusion, it is surely possible to change this gaze

through interaction with new ideas (culture). This implies that a 'gaze' is not static and although it is enduring, it does change.

5.6 *Limitations of the Study*

The study is limited by its sample size, as the data was drawn from only one TEP at this UoT. Therefore the results cannot be generalised to other TEPs. Nevertheless, the study did offer a rich and in-depth theoretical engagement with the social construction of pedagogic discourse relating to the use of ICTs in education.

References

- Agyei, D. D., and Voogt, J. M. (2011). Exploring the potential of the will, skill, tool model in Ghana: Predicting prospective and practicing teachers' use of technology. *Computers and Education*, 56(1), 91–100.
- Altrichter, H., Feldman, A., Posch, P., and Somekh, B. (2013). *Teachers investigate their work: an introduction to action research across the professions*. London and New York: Routledge.
- Annetta, L. (2008). Video games in education: Why they should be used and how they are being used. *Theory Into Practice*, 47(1), 229–239.
- Annetta, L. A., Murray, M., Gull-Laird, S., Bohr, S., and Park, J. C. (2006). Serious games: Incorporating video games in the classroom. *Educause Quarterly*, 29(3), 16–22.
- Archer, M.S. (1998), "Introduction: Realism in the social sciences", in M.S. Archer, R. Bhaskar, A. Collier, T. Lawson, and A. Norrie (Eds), *Critical Realism: Essential Readings*, pp.189-205. Routledge: London.
- British Educational Communications and Technology Agency (BECTA). (2004), A review of the research literature on barriers to the uptake of ICT by teachers. Becta. [Online]
Available:http://dera.ioe.ac.uk/1603/1/becta_2004_barrierstouptake_litrev.pdf
(Accessed 13 February 2014).
- Bennett, S. J., and Maton, K. (2010). Beyond the 'digital natives' debate: Towards a more nuanced understanding of students' technology experiences. *Journal of Computer Assisted Learning*, 26(5), 321-331.

- Bernstein, B. (1977). *Class, codes and control: Towards a theory of educational transmissions*. London: Routledge and Kegan Paul.
- Bernstein, B. B. (2000). *Pedagogy, symbolic control, and Identity: Theory, research, critique*. United States of America: Rowman and Littlefield.
- Beth, S. (2013, July 15). [Review of the book *Teachers discovering computers: Integrating technology and digital media in the classroom*, by G.G. Brown, T. J. Brown and G. A. Gunter]. [Online]. Available: https://www.goodreads.com/book/show/2434226.Teachers_Discovering_Computers (Accessed 1 January 2014)
- Bhaskar, R. (1978). *A realist theory of science, 2nd edition*. Harlow Essex: Harvester Wheatsheaf.
- Bhaskar, R. (1979). *The possibility of naturalism: A philosophical critique of the contemporary human sciences*. Hassocks: Harvester Press.
- Bhaskar, R. (2002). *Reflections on meta-reality: Transcendence, emancipation and everyday life*. New Delhi: Thousand Oaks and London: Sage.
- Bingimlas, K. (2009). Barriers to the successful integration of ICT in Teaching and Learning Environments: A Review of the Literature. *Eurasia Journal of Mathematics, Science & Technology Education*, 5(3), 235-245.
- Bourdieu, P. (1984). *Distinction. A social critique of the judgment of taste*. Cambridge, MA: Harvard University Press.

- Bourdieu, P. (1994). *In other words: Essays towards a reflexive sociology*. Cambridge, Polity Press
- Bozalek, V., Ng'ambi, D., and Gachago, D. (2013). Transforming teaching with emerging technologies: Implications for higher education institutions. *South African Journal of Higher Education*, 27(2), 419–436.
- Brandt, I. G. (2006). *Models of internet connectivity for secondary schools in the Grahamstown circuit*. (Master's thesis).Rhodes University, Grahamstown.
- Broekman, I., Enslin, P., and Pendlebury, S. (2000).Distributive justice and information communication technologies in higher education in South Africa. *South African Journal of Higher Education*, 16(1), 29-35.
- Brown, C. and Czerniewicz, L. (2008). Trends in student use of ICTs in higher education in South Africa. 10th Annual Conference of WWW Applications. Cape Town. 3-6 September. [Online] Available: www.cet.uct.ac.za/files/file/ResearchOutput/2008_wwwApps_UseTrends.pdf (Accessed 13 February 2014)
- Louw, J., Brown, C., Muller, J., and Soudien, C. (2009). Instructional technologies in social science instruction in South Africa. *Computers in Education*, 53(2), 234-242
- Bullock, D. (2004). Moving from theory to practice: An examination of the factors that preservice teachers encounter as the attempt to gain experience teaching with technology during field placement experiences. *Journal of Technology and Teacher Education*, 12(2), 211–237.

- Chai, C. S., Lim, W. Y., So, H. J. and Cheah, H. M. (2011). *Advancing collaborative learning with ICT: Conception, cases and design*. Singapore: Ministry of Education, ETD. [Online] Available:
<http://ictconnection.edumall.sg/ictconnection/slot/u200/mp3/monographs/advancing%20collaborative%20learning%20with%20ict.pdf> (Accessed 5 February 2014).
- Chen, R. T-H. and Maton, K. (2014) LCT and qualitative research: Creating a language of description to study constructivist pedagogy, in K. Maton, S. Hood and S. Shay (Eds.), *Knowledge-building: Educational studies in Legitimation Code Theory*. London: Routledge.
- Chigona, A. and Chetty, R. (2012). Integration of ICTs in Teacher education programs in South Africa. In P. Resta (Eds.), *Proceedings of Society for Information Technology and Teacher Education International Conference 2012* (pp. 2748-2753). Chesapeake, VA: AACE.
- Cochran-Smith, M., and Lytle, S.L (1999). Relationships of knowledge and practice: Teacher learning in communities. *Review of Research in Education*, 24, 249-305.
- Comford, T., and Smithson, S. (1996). *Project research in information systems: A student's guide*. Basingstoke, UK: Macmillan.
- CPUT. (2010). *Response to the report of the ministerial committee on transformation and social cohesion and the elimination of discrimination in public higher education institutions*.

- Culp, K. M., Honey, M., and Mandinach, E. (2005). A retrospective on twenty years of education technology policy. *Journal of Educational Computing Research*, 32(3), 279-307.
- Czerniewicz, L. (2004). Cape of storms or cape of good hope? Educational technology in a changing environment. *British Journal of Educational Technology*, 35(2), 145-158.
- Czerniewicz, L. (2008). Distinguishing the field of educational technology. *Electronic Journal of e-Learning*, 6(3), 171-178.
- Czerniewicz, L. (2010). Educational technology - mapping the terrain with Bernstein as cartographer. *Journal of Computer Assisted Learning*, 26(6), 523-534.
- Czerniewicz, L., and Brown, C. (2005). The uses of information and communication (ICT) in teaching and learning in South African higher education practices in the Western Cape. Research: information and communication technologies. *Perspectives in Education*, 23(4), 1-18.
- Czerniewicz, L., and Brown, C. (2006). Gendered access to and uses of information and communication technologies (ICTs) in South Africa: Higher education experiences in the Western Cape. In P. Kommers and G. Richards (Eds.), *Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications* (pp. 30-39). Chesapeake, VA: AACE.
- Czerniewicz, L., and Brown, C. (2009). A study of the relationship between institutional policy, organizational culture and e-learning use in four South African universities. *Computers and Education*, 53(1), 121-131.

- Dalvit, L., Thinyane, M., Muyingi, H., and Terzoli, A. (2007). The deployment of an e-commerce platform and related projects in a rural area in South Africa. *International Journal of Computing and ICT Research*, 1(1), 9-18.
- Danermark, B., Ekström, M., Jakobsen, L., and Karlsson, J. C. (2002). *Explaining society critical realism in the social sciences*. London and New York: Routledge
- Department of Education. (2004). White Paper on e-Education: Transforming learning and teaching through information and communication Technologies (ICTs).Government Gazette (Vol 1869, No. 26734) [Online]. Available: <http://www.education.gov.za/LinkClick.aspx?fileticket=Keu0%2FBkee%2BM%3Dand...> (Accessed 10 October 2013).
- Department of Higher Education and Training. (2011a). The minimum requirements for teacher education qualifications. Government Gazette. (Vol. 583, No. 34467).
- Department of Higher Education and Training. (2011b). The national qualifications framework Act 67 of 2008: Policy on the minimum requirements for teacher education qualifications. Pretoria.
- Divaharan,S., and Koh, J. (2010). Learning as students to become better teachers: Pre-service teachers' IWB learning experience. *Australasian Journal of Educational Technology*, 26 (Special issue, 4), 553-570.
- Divaharan, S., Lim, W-Y., and Tan, S-C. (2011). Walk the talk: Immersing pre-service teachers in the learning of ICT tools for knowledge creation. *Australian Journal of Educational Technology*, (Special issue, 8), 1304-1318.

- Draper, K., Howie, S., J, & Blignaut, A. S. (2008). *Pedagogy and ICT use in South African Science Education*. Paper presented at the 3rd IEA International Research Conference, 18-20 September, Tapei, Taiwan [Online] Available: http://www.google.co.za/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=1&ved=0CCgQFjAA&url=http%3A%2F%2Fwww.iea.nl%2Ffileadmin%2Fuser_upload%2FIRC%2FIRC_2008%2FPapers%2FIRC2008_Draper_Howie_etal.pdf&ei=PFH9UozeM6iL7Ab1uoGYCw&usg=AFQjCNE3BdLpPTXYWWhhbQdJryyKkOe7Fg&sig2=WcVKKK_geu84r7oJn4Kk2A (Accessed 12 February 2014)
- Dreyfus, H. L. (2001). *On the Internet*. London and New York: Routledge.
- Ensor, M. P. (1999). A study of the recontextualizing of pedagogic practices from a South African pre-service mathematics teacher education course by seven secondary mathematics teachers. *Collected Original Resources in Education*, 24(3).
- Gachago, D., Ivala, E., Kumalo, S. (2010). ICT survey: Staff and students perceptions on ICT access and use. [Online] Available: <http://www.slideshare.net/dgachago/2010-cput-ict-survey>. (Accessed 12 February 2014)
- Gee, J.P. (2000/2001). Identity as an analytic lens for research in education. *Review of Research in Education*, 25, 99-125.
- Goktas, Y., Yildirim, S., Yildirim, Z. (2009). Main barriers and possible enablers of ICTs integration into pre-service teacher education programs. *Educational Technology*, 12(1), 193-204.
- Goode, J. (2010). The digital identity divide: how technology knowledge impacts college students. *New Media and Society*, 12(3), 497–513.

- Granberg, C. (2011). ICT and learning in teacher education: The social construction of pedagogical ICT discourse and design. (Doctoral dissertation). Umeå: Interaktiva medie rochlärande (IML), Umeå universitet.
- Haddad, W. D. (2003). Is instructional technology a must for learning? (Editorial). Oakton, VA: Knowledge Enterprise, Inc. [Online] Available: http://www.techknowlogia.org/TKL_active_pages2/CurrentArticles/main.asp?IssueNumber=19andFileType=HTMLandArticleID=455 (Accessed 31 January 2013)]
- Hammond, M., Fragkouli, E., Suandi, I., Crosson, S., Ingram, J., Johnston-Wilder, P., and Wray, D. (2009). What happens as student teachers who made very good use of ICT during pre-service training enter their first year of teaching? *Teacher Development*, 13(2), 93–106.
- Hartley, D. (2007). Review essay: Bringing knowledge back in: from social constructivism to social realism in the sociology of education. *British Journal of Sociology of Education*, 28(6), 817-822.
- Haydn, T. A., and Barton, R. (2007). Common needs and different agendas: How trainee teachers make progress in their ability to use ICT in subject teaching. Some lessons from the UK. *Computers and Education*, 49(4), 1018–1036.
- Hennessy, S., Ruthven, K., and Brindley, S. (2007). Teacher perspectives on integrating ICT into subject teaching: Commitment, constraints, caution and change. *Journal of Curriculum Studies*, 37(2), 155–192.

Henning, E., Van Rensburg, W., and Smit, B. (2004). *Finding your way in qualitative research*. Pretoria: Van Schaik.

Herrington, J., Mantei, J., Herrington, A., Olney I., and Ferry, B. (2008). New technologies, new pedagogies: Mobile technologies and new ways of teaching and learning. In *Hello! Where are you in the landscape of educational technology? Proceedings ascilite. Melbourne 2008*. [Online] Available: <http://www.ascilite.org.au/conferences/melbourne08/procs/herrington-j.pdf>. (Accessed 1 February 2014)

Herrington, J., Herrington, A., Mantei, J., Olney, I., and Ferry, B. New technologies, new pedagogies: Mobile learning in higher education. Faculty of Education - Papers (Archive) (2009). Retrieved from <http://ro.uow.edu.au/edupapers/91>. (Accessed 31 December 2013)

Hodgkinson-Williams, C. and Czerniewicz, L. (2007). Educational technologists in higher education institutions in South Africa: Moving beyond random acts of progress. Presented at research based elearning, Hogsback. [Online] Available: <http://www.mendeley.com/research/educational-technologists-higher-education-institutions-south-africa-moving-beyond-random-acts-progr/>. (Accessed 1 February 2014)

Howard, S., and Maton, K. (2011). Theorising knowledge practices: a missing piece of the educational technology puzzle. *Research in Learning Technology*, 19(3), 191–206.

Hussein, A. (2009). The use of triangulation in social sciences research: Can qualitative and quantitative methods be combined? *Journal of Comparative Social Work*, 1(1), 1–12.

- Irvine, M. (2004, December 6). The life and times of an online gamer. (Editorial). The associated press. [Online] Available: www.msnbc.msn.com/id/6645959. (Accessed 13 February 2014)
- Jaffer, S., Ng'ambi, D., and Czerniewicz, L. (2007). The role of ICTs in higher education in South Africa: One strategy for addressing teaching and learning challenges. *International Journal for Education and Development using Information and Communication Technologies*, 3(4), 131–142.
- Jacobs, C. (2007). Towards a critical understanding of the teaching of discipline-specific academic literacies: Making the tacit explicit. *Journal of Education*, 40, 59–81.
- Jenkins, H. (2004). Game design as Narrative Architecture. In N Wardrip-Fruin and P Harrigan (Eds.), *First Person* (pp 118-130). Cambridge, MA: MIT Press.
- Johnson, L., Smith, R., Willis, H., Levine, A., and Haywood, K. (2011). *The Horizon Report*. Austin, Texas. [Online] Available: <http://net.educause.edu/ir/library/pdf/HR2011.pdf>. (Accessed 1 February 2014)
- Jump, L. (2011). Why university lecturers enhance their teaching through the use of technology: A systematic review. *Learning, Media and Technology*, 36(1), 55-68.
- Jung, I. (2005). ICT-pedagogy integration in teacher training: Application cases worldwide. *Educational Technology and Society*, 8(2), 94–101.
- Kariuki, M., Franklin, T., and Duran, M. (2001). A technology partnership: Lessons learned by mentors. *Journal of Technology and Teacher Education*, 9(3), 407–417.

- Kirkup, G., and Kirkwood, A. (2005). Information and communications technologies (ICT) in higher education teaching a tale of gradualism rather than revolution. *Learning Media and Technology, 30*(2), 185-199.
- Klein, H.K. (2004). Seeking the new and the critical in critical realism: Deja vu? *Information and Organization, 14*, 123-144.
- Knapper, C. (2001). The challenge of educational technology. *The International Journal for Academic Development, 6*(2), 93–95.
- Koehler, M.J., Mishra, P., and Yahya, K. (2007). Tracing the development of teacher knowledge in a design seminar: Integrating content, pedagogy, and technology. *Computers and Education, 49*(3), 740-762.
- Lawless, K. A., and Pellegrino, J. W. (2007). Professional development in integrating technology into teaching and learning: Knowns, unknowns, and ways to pursue better questions and answers. *Review of Educational Research, 77*(4), 575–614.
- Le Grange, L. (2008). The didactics tradition in South Africa: A reply to Richard Krüger. *Journal of Curriculum Studies, 40*(3), 399–407.
- Lelliott, A., Pendlebury, S., and Enslin, P. (2000). Promises of Access and Inclusive: Online education in Africa. *Journal of Philosophy of Education, 34* (1), 41-52.
- Looi, C.K., Chen, W. and Ng, F-K. (2010). Collaborative activities enabled by GroupScribbles (GS): An exploratory study of learning effectiveness. *Computers and Education, 54*(1), 14-26.

- Luckett, K. (2009). The relationship between knowledge structure and curriculum: A case study in sociology. *Studies in Higher Education, 34*(4), 441–453.
- Luckett, K. (2010). Knowledge claims and codes of legitimation: Implications for curriculum recontextualisation in South African higher education. *Unisa Press, 40*(1), 6–20.
- Maddux, C. D., and Johnson, L. D. (2005). Type II Applications of Technology in Education. *Computers in the Schools, 22*(1-2), 1-5.
- Maholwana-Sotashe, N. (2007). *Challenges faced by secondary school teachers in integrating ICT into the curriculum: A multiple case study in the Grahamstown circuit*. Master's thesis, Rhodes University, South Africa.
- Maton, K. (2000). Recovering pedagogic discourse: A bernsteinian approach to the sociology of educational knowledge. *Linguistics and Education, 11*(1), 79–98.
- Maton, K. (2006). On knowledge structures and knower structures, in Moore, R., Arnot, M., Beck, J. and Daniels, H. (Eds.), *Knowledge, power and educational reform: Applying the sociology of Basil Bernstein* (pp. 44-59). London: Routledge.
- Maton, K. (2007). Knowledge-knower structures in intellectual and educational fields, in F. Christie and J. R. Martin, (Eds.), *Language, Knowledge and Pedagogy*. (pp. 87 – 108). London: Continuum.
- Maton, K. (2009). Cumulative and segmented learning: exploring the role of curriculum structures in knowledge-building. *British Journal of Sociology of Education, 30*(1), 43–57.

- Maton, K. (2010). Canons and progress in the arts and humanities: Knowers and gazes, in K. Maton and R. Moore (Eds.), *Social Realism, Knowledge and the Sociology of Education: Coalitions of the mind* (pp. 154–178). London: Continuum.
- Maton, K. (2013). Making semantic waves: A key to cumulative knowledge-building. *Linguistics and Education, 24*(1), 8–22.
- Maton, K. (2014). *Knowledge and knowers: Towards a realist sociology of education*. USA and Canada: Routledge
- Maton, K., and Moore, R. (2010). Coalitions of the mind, in K. Maton and R. Moore (Eds.), *Social realism, knowledge and the sociology of education: Coalitions of the mind* (pp. 1–13). London, Continuum.
- Maxwell, J. A. (2013). *Qualitative Research Design: An Interactive Approach* (3rd ed.). Thousand Oaks, CA: Sage
- Minocha, S. (2009). A case study-based investigation of students' experiences with social software tools. *New Review of Hypermedia and Multimedia, 15*(3), 245-265.
- Mishra, P., and Koehler, M. J. (2006). Technological Pedagogical Content Knowledge: A Framework for Teacher Knowledge, in T. Bastiaens, J. Dron, and C. Xin (Eds.), *Teachers College Record, 108*(6), 1017–1054.
- Mishra, B. P., Koehler, M. J., and Kereluik, K. (2009). The song remains the same: Looking back to the future of educational technology. *The Midwest Journal of Educational Communications and Technology, 53*(5), 48–53.

- Mishra, P., Koehler, M., and Zhao, Y. (2007). *Faculty development by design: Integrating technology in higher education*. NC: Information Age Publishing.
- Morrow, W. (2007). Learning to Teach in South Africa, Cape Town. *Human Science Research Council Press, 0*, 26197.
- Moss, G. (2001). Bernstein's languages of description: Some generative principles. *International Journal of Social Research Methodology*, 4(1), 17-19.
- Mason, J., 2004, Semistructured Interview In M.S. Lewis-Beck, A Bryman, and T.F. Liao, T.F. (Eds.) *Sage Encyclopedia of Social Science Research Methods*, Available: <http://srmo.sagepub.com/view/the-sage-encyclopedia-of-social-science-research-methods/n909.xml>, [Accessed 24 June 2013].
- Muller, J. (2000). *Reclaiming Knowledge: Social theory, curriculum and education policy*. London: RoutledgeFalmer.
- Muller, J. (2007). On splitting hairs: Hierarchy, knowledge and the school curriculum, in F. Christie, and Martin, J. (Eds.) *Language, Knowledge and Pedagogy* (pp65-86). London, Continuum.
- Muller, J. (2009). Forms of knowledge and curriculum coherence. *Journal of Education and Work*, 22(3), 205–227.
- Ng'ambi, D., Gachago, D., Ivala, E., Bozalek, V., and Watters, K. (2012). Emerging Technologies in South African Higher Education Institutions: Towards a Teaching and Learning Framework. In *Proceedings of the 7th International Conference on e-Learning*.

- Pam, P. (Eds.). The Chinese University of Hong Kong: 21-22 June. pp. 354-362. ISBN: 978-1-908272-43-0.
- Noble, D. F. (1998). Digital diploma mills: The automation of higher education. *First Monday*, 3(1). [Online] Available: <http://uncommonculture.org/ojs/index.php/fm/article/view/569/490>. (Accessed on 25 November 2013)
- Ottenbreit-Leftwich, A., Glazewski, K. D., Newby, T. J., and Ertmer, P. A. (2010). Teacher value beliefs associated with using technology: Addressing professional and student needs. *Computers & Education*, 55, 1321–1335.
- Paraskeva, F., Bouta, H., and Papagianni, A. (2008). Individual characteristics and computer self-efficacy in secondary education teachers to integrate technology in educational practice. *Computers and Education*, 50(3), 1084–1091.
- Player-Koro, C. (2011). Marginalising students' understanding of mathematics through performative priorities: A Bernsteinian perspective. *Ethnography and Education*, 6(3), 325-340.
- Player-Koro, C. (2012). Factors influencing teachers' use of ICT in education. *Education Enquiry*, 3(1), 93-108.
- Prensky, M. (2001). Digital natives, digital immigrants part 1. *On the horizon*, 9(5), 1–6.
- Rambe, P., and Ng'ambi, D. (2011). Towards an Information Sharing Pedagogy: A Case of Using Facebook in a Large First Year Class. *Informing Science: The international Journal of an Emerging Transdiscipline*, 14.[Online]. Available

<http://www.inform.nu/Articles/Vol14/ISJv14p061-089Rambe579.pdf> (Accessed 14 February 2014)

Ravjee, N. (2007). The politics of elearning in South African higher education. *International Journal of Education and Development using Information and Communication Technology*, 3(4), 27-41.

Rosas, R., Nussbaum, M., Cumsille, P., Marianov, V., Correa, M., Flores, P., Grau, V., Lagos, F., Lopez, X., Lopez, V., Rodriguez, P., and Salinas, M. (2003). Beyond nintendo: Design and assessment of educational video games for first and second grade students. *Computers and Education*, 40(1), 71-94.

Russell, M., Bebell, D., O'Dwyer, L.M., and O'Connor, K.M. (2003). Examining Teacher Technology Use: Implications for pre-service and in-service teacher preparation. *Journal of Teacher Education* 54(4), 297-310.

Sang, G., Valcke, M., Braak, J. van, and Tondeur, J. (2010). Student teachers' thinking processes and ICT integration: Predictors of prospective teaching behaviors with educational technology. *Computers and Education*, 54(1), 103–112.

Scott, I., Yeld, N., and Hendry, J. (2007). A case for improving teaching and learning in South African higher education. Pretoria, SA: The *Council on Higher Education*.

[Online] Available:

http://www.google.co.za/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=2&cad=rja&ved=0CDUQFjAB&url=http%3A%2F%2Fwww.che.ac.za%2Fsites%2Fdefault%2Ffiles%2Fpublications%2FHE_Monitor_6_ITLS_Oct2007_0.pdf&ei=CkT9UvzQA-il7Aav3ICYDA&usq=AFQjCNHvvxR3cCZubqNhU13x8FiTsE360w&sig2=hntDWRPKsWNhXbpXpH3GwQ (Accessed 13 February 2014)

- Stufflebeam, D.L., Madaus, G.F., and Kellaghan, T. (2000). *Evaluation models: Viewpoints on educational and human services evaluation*. Boston: Kluwer Academic Publishers
- Shulman, L.S. (1987). Knowledge and teaching: Foundations of the new reform. *Harvard Educational Review*, 57, 1-22.
- Society for Information Technology and Teacher Education (SITE). (2002). SITE position paper: statement of basic principles and suggested actions ('Ames White Paper'). [Online] Available: <http://www.aace.org/site/SITEstatement.htm>. (Accessed 1 February 2014)
- Society for Information Technology and Teacher Education (SITE).(2004). SITE Statement of Basic Principles and Suggested Actions ('Ames White Paper'). *Society for Information Technology and Teacher Education (SITE)*. [Online] Available: <http://rd.aace.org/site/SITEstatement.htm> (Accessed 5 February 2014).
- Sofowora, O. (2009).The potential of using information communication technology for poverty alleviation and economic empowerment in Osun State, Nigeria. *International Journal of Education and Development using Information Communication Technology (IJEDICT)*, 5(3), 131-140.
- Sosibo, L. (2012). Exploring the views of educators and students on privileged knowledge domains in a teacher education programme: A case study. *Journal of Education*, 56, 139–161.
- Stensaker, B., Maassen, P., Borgan, M., Oftebro, M., and Karseth, B. (2007). Use, updating and integration of ICT in higher education: Linking purpose, people and pedagogy. *Higher Education*, 54(3), 417–433.

- Strauss, A. L. (1987). *Qualitative Analysis for Social Scientists*. Cambridge: Press Syndicate of the University of Cambridge.
- Tanner, H., and Jones, S. (2007). Using video-stimulated reflective dialogue to learn from children about their learning with and without ICT. *Technology, Pedagogy and Education*, 16(3), 321-335.
- Thinoyane, H. (2010). Are digital natives a world-wide phenomenon? An investigation into South African first year students' use and experience with technology. *Computers and Education*, 55(1), 406–414.
- Tondeur, J., van Braak, J., Sang, G., Voogt, J., Fisser, P., and Ottenbreit-Leftwich, A. (2012). Preparing pre-service teachers to integrate technology in education: A synthesis of qualitative evidence. *Computers and Education*, 59(1), 134–144.
- Torero, M., and Braun, J. (2006). Information and communication technologies for development and poverty reduction: The potential of telecommunications. Baltimore: The John Hopkins University Press.
- Unesco (2003). Final Report: The Workshop on the Development of Guideline on Teacher Training in ICT Integration and Standards for Competency in ICT, 27-29 September 2003, Beijing, China. Bangkok. [Online] Available: <http://unesdoc.unesco.org/images/0013/001356/135607e.pdf> (Accessed 14 February 2014).

- Unesco (2009). World Conference on Higher Education: The new dynamics of higher education and research for societal change and development, 5-8 July 2009, Paris.
[Online] Available:
http://www.unesco.org/fileadmin/MULTIMEDIA/HQ/ED/ED/pdf/WCHE_2009/FINAL%20COMMUNIQUE%20WCHE%202009.pdf [Accessed 14 February 2014)
- Usluel, Y.K., Askar, P., and Bas, T. (2008). A Structural Equation Model for ICT Usage in Higher Education. *Educational Technology and Society*, 11(2), 262-273.
- Veletsianos, G. (2010). Emerging technologies in distance education, in T. Anderson (Ed.), *Issues in Distance Education* (pp. 3–22). Athabasca University: Athabasca University Press.
- Vrasidas, C., and Mclsaac, M. (2001). Integrating technology in teaching and teacher education: Implications for policy and curriculum reform. *Education Media International*, 38(2/3), 127-132
- Wang, Q., Woo, H. L., Quek, C. L., Yang, Y., and Liu, M. (2011). Using the facebook group as a learning management system: An exploratory study. *British Journal of Educational Technology*, 43(3), 428-438.
- Wenger, E. (1998). *Communities of practice: Learning, meaning, and identity*. Cambridge: Cambridge University Press.
- Whetstone, L., and Carr-Chellman, A. A. (2001). Preparing preservice teachers to use technology: Survey results. *TechTrends*, 45(4), 11-17.

- White, S. (2007). Critical success factors for e-learning and institutional change – some organisational perspectives on campus-wide e-learning. *British Journal of Educational Technology*, 38(5), 840–850.
- Williams, R., Karousou, R., and Mackness, J. (2011). Emergent learning and learning ecologies in Web 2.0. *The International Review of Research in Open and Distance Learning*, 12(3), 39-59.
- Williams, C. D., Pitchforth, E. L., and O’Callaghan, C. (2010). Computer, the internet and medical education in Africa. *Medical Education*, 44(5), 485-488.
- Yildirim, S. (2000). Effects of an educational computing course on preservice and inservice teachers: A discussion and analysis of attitudes and use. *Journal of Research on Technology in Education*, 32(4), 479–495.
- Yin, R. (2003). Case study research, 3rd edition. Thousand Oaks, CA: Sage.
- Young, M. (2008). *Bringing knowledge back in: From social constructivism to social realism in the sociology of education*. Abingdon, Onox: Routledge.
- Young, M., & Muller, J. (2010). Three Educational Scenarios for the Future: lessons from the sociology of knowledge. *European Journal of Education*, 45(1), 11-27.
- Zemsky, R., and Massy, W. (2004). Thwarted innovation: What happened to e-learning and why. The University of Pennsylvania: The Learning Alliance. [Online] Available: <http://www.thelearningalliance.info/WeatherStation.html> (Accessed 31 December 2013).

Zhiting, Z., and Hanbing, Y. (2002). ICT and pre-service teacher education: Towards an integrated approach. In UNESCO-ACEID Report, *Using ICT for quality teaching, learning and effective management* (pp. 67–75). Bangkok: UNESCO Asia and Pacific Regional Bureau for Education. [Online] Available: <http://www2.unescobkk.org/elib/publications/aceidconf7/ICTPreservice.pdf> (Accessed 16 January 2014).

Zhou, G., Brouwer, W., Nocente, N., and Martin, B. (2005). Enhancing conceptual learning through computer-based applets: The effectiveness and implications. *Journal of Interactive Learning Research*, 16(1), 31-49.

Zhou, G., and Xu, J. (2007). Adoption of educational technology ten years after setting strategic goals: A Canadian university case. *Australasian Journal of Educational Technology*, 23(4), 508–528.

List of Appendices

Appendix 1: Laboratory Setup

Appendix 2: Course Outline

Appendix 3: Jane's interview questions

Appendix 4: Focus group discussion

Appendix 5: Letter of consent

Appendix 6: Textbook activity

Appendix 7: Textbook activity

Appendix 8: Textbook activity

Appendix 9: Assessment Tasks

Appendix 1: Laboratory setup



Appendix 2: Course Outline

Hidden

INFORMATION COMMUNICATION DESIGN in EDUCATION 4 COURSE OUTLINE: 2013

Subject: INFORMATION COMMUNICATION DESIGN in EDUCATION 4
Course: (Hidden)
Course Code: (Hidden)
Subject Code: (Hidden)
Lecturer: (Hidden)
Office: (Hidden)
Telephone: (Hidden)
Fax: (Hidden)
Email: (Hidden)

Venue: (Hidden)

Time allocation: **2 hours 15 minutes/ Three (3) periods a week**

Instructional offering: **Hidden**
Teaching and Learning Media Applications

Purpose of module: This module enables students to use computers in the classroom. It also assists students in the development of a subject laboratory or media centre.

Outcomes: At the end of this module you should:

- (a) Apply your acquired computer skills effectively in the classroom environment
- (b) Be able to use computers for teaching and learning.
- (c) Be able to integrate multimedia and educational software in the classroom
- (d) Be able to develop and equip a media centre in your learning area or subject

Evaluation: A system of continuous evaluation will be implemented in this course. **Attendance is compulsory and will be monitored through periodic class assignments (individual and group).**

Prescribed Books: Teachers Discovering Computers: Integrating Technology and Digital Media in the Classroom 5th, 6th, or 7th Edition. Complete. Shelley Cashman, Gunter, Gunter
Available from: Van Schaik campus bookshop and bookshops in (omitted) Approximate price: R400.00

Materials: A flash drive. **All tasks and assignments must be saved on both your flash drive and your H:\drive at all times.**
3 Rewritable CD's (CD-RW)

Recommended reading list and websites:

- (a) Instructional Technology for Teaching and Learning: Timothy J Newby and others.
- (b) Teachers, Computers and the curriculum: Microcomputers in the classroom, Paul Geisert, Futrell.
- (c) <http://www.wikipedia.com>
- (d) <http://www.yahoo.com>, <http://www.google.co.za> ,
<http://www.google/scholar>
- (e) <http://wced.wcape.gov.za>
- (f) <http://khanya.gov.za>

ASSESSMENTS:

- 1) One Practical Assignment (partly group-individual).
- 2) One Formal Test.
- 3) One School-Based Assignment.

ASSESSMENT CRITERIA

For this subject, you will be evaluated according to the system of continuous assessment/evaluation and the protocol below will be used. All assignments and tests will count towards your final mark. A pass mark of 40% is required for this module.

Please note that all late submissions of assignments and projects will be penalized with **10% per day**. No submissions will be considered after **five (5) days**. See Guidelines on intranet). **Assignments will be submitted and signed of a the Faculty office on (omitted).**

Course Outline

Assessment Type	Submission date	Scope	Weights
1. Group-individual Assignment	15 March 2013	Practical assignment on MSOffice applications	33%
2. Test	June Test week: Week of 18 June 2013	Modules 1-6:Textbook	33%
3. Individual Assignment	08 October 2013	School-based assignment on "Social Networking and Education"	34%

SCHEDULE – 2013

TERM 1	
04 February – 15 March	
First Lecture	Introduction Course Outline Attendance register
MODULE 1 Ch 1,2	A. Introduction to integrating technology into education B. Communications, networks, the internet and World Wide Web and electronic mail
MODULE 2 Ch 5	Integrating Multimedia and Educational Software applications
MODULE 3 Ch 3,4	A. Application software productivity tools for teachers B. Hardware for teachers
PRACTICAL ASSIGNMENT	
TERM 2	
08 April – 15 June	
MODULE 4 Ch 6	Technology and Curriculum Integration
MODULE 5 Ch 7	Evaluating educational technology
MODULE 6 Ch 8	Security issues, ethics and emerging technologies
CLOSED-BOOK TEST	
TERM 3	
SCHOOL-BASED ASSIGNMENT	

STUDENT NOTES:

Appendix 3: Jane's interview questions and raw transcripts

1. What are your beliefs/values about ICT integration in teaching?
2. How is the programme enabling students to use the tools effectively?
3. What are the current challenges? (Programme/practice)
4. What do you think can be done to improve the situation?
5. What subject do you currently teach?
6. Who is responsible for structuring the subject?
7. Can you provide me with some background on the subject (Computers in Education) for example module and weightings?
8. How do you teach the subject? (approach)
9. How do you view your role as a lecturer teaching students this subject?
10. What would you say is strengths and weaknesses (if any)? Do you have any strengths and weakness?
11. How do you assess your students and also support them as beginner teachers?
12. What do you think are your strengths and weaknesses? (if any)
13. Do you have any references in the form of theory/literature?
14. Have you done any training or studied something related to ICT's in education/teaching?
15. How was that helpful in your teaching today?
16. Do you think you might want to further your studies in the future?
17. (Would it be related to ICT's in education to maybe strengthen your knowledge base?)
18. Could you elaborate on the objective of ICTDiE, how does this subject benefit students?
19. Also please provide some background on the subject ICTDiE for example the module, the weightings and it's purpose?
20. Do have a prescribed textbook?
21. What would the costs be roughly?
22. What inspired the selection of textbooks?
23. How do you assess your students and also support them in their development as beginner teachers?
24. With your mention of moving campuses and restructuring programmes do you think some of the other education programmes might have a similar subject to ICTDiE?

25. Does the HOD of the programme provide input as to what should be put into the structure of the programme?
26. In your opinion if one of your students goes out to school, will you say they are equipped?
27. When students initially come into this class what do they basically think this course is about? Or how will you go about explaining to them what the course is about? Do you think they might have a different idea?
28. Is there any theoretical approach or literature that you draw from?
29. Is there any other unusual technologies that you use in teaching the subject?

Questions prompted by slide show?

1. What do you mean with technology and curriculum integration?
2. What theory informs this integration in particular?
3. Towards a learner centered approach ... who is saying this (where are you drawing from?)
4. Explain subject and introduction slide.

Transcription: Janes' interview

Blue font – interviewer

Black font – teacher educator (Jane)

When did you first start using a computer? How many years ago would you say?

The first using a computer, a personal computer was in my final year of teacher training in 1990.

1990 (clarifying)

Yes I was a fourth year student here at (a particular UoT) and we had our first computer very very simple computer course and that was the first time I've been working on a computer 1990 so that makes it almost 23 years ago.

That is long (laughing)...

How did you originally learn to use a computer? From who?

Okay, well it was suppose to be formal training because it was a course part of my qualification. At the time we had a lecturer .. should I mention his name? It was Mr Franklin Charles not Charles Mr Franklin Galant he was a lecturer at (a particular UoT), the faculty of Education, School of Education at the time .. so formally I was introduced and I was taught to do certain things such as word processing , printing, working with graphics in a very very simple way. Em .. so just to answer your question training in a formal way my first em .. em .. exposure to computers was then in a classroom setting being a teaching student an education student .

And informally would you say?

Well informally I would say self exposure, self study so the following year when i started teaching we bought a personal computer for our household and er .. and I would sit up through through nights on this machine, on this computer finding out things. Obviously the development was actually quite fast over the time because the one year when i was a student those computers didn't have harddrives but the following year when i acquired my first personal computer those machines had harddrives again you could save your programs as well as data on those machines but i still had a lot a lot a lot to learn.. em and it was like i say (clearing throat) self study , basically just playing around on the computer and i still actually encourage that kind of of of learning to to to look for things, to play with it, to have fun with it to expose yourself as much as possible. Expose yourself and not wait for other people to teach or train you. That same year when i started teaching, at the high school which i was teaching we introduced .. em .. the marks administration programme, remember it was people from Cape Town who came down to install the software, also to give us some training on how to use this marks administration. Where we would ... em .. automate the processing of our learners report cards for our schools, meaning student teachers would give us their marksheets for each of their subjects or classlist or groups and we would capture that and then from that we would run other other reports necessary reports required by the department of education as well as the report cards of the learners and other official documents that teachers needed to do and have. So that was some other exposure and I think through that my interest in computers it actually it started . Because i was could do the things and some of my work as a teacher on the computer on the machine it was the first time that people in my environment started using this thing and I was one of the first people and that actually em (clearing throat) triggered my interest in computers in such a way that i decided to further my studies formally in something

about computers. That is why I embarked on doing a (qualification specializing in Informatics) the development and implementation of the information systems in Business and I also did my Honours in that same field. So yes my early exposure to computers basically triggered my desire to further my formal studies. Something like that ...

At the moment, how do you acquire new skills when you need it? Or do you have all?

No I never think I have all the skills...

Em .. I basically apply the same principles that I've mentioned earlier in terms of exposing myself. So if the need arise I would read, I would google, i would do some research on it. I would install software and then I would play around with it. It happens with me all the time, even with my work teaching Java em .. which was a new thing for me when i started in this department like 4 years ago, yes .. and I had to teach myself how to program in Java. But fortunately I had the background of programming in C++ and a whole lot of other em programming languages. So I, I would read alot , formal textbooks and then also code programming handson doing things even programming that has been written and works, that other people have written I would recode them just to see the logic in the code etc but also see that I can actually also do it. So the principle for me is still the same expose yourself and do things hands on.

What are your beliefs about ICT integration in teaching?

Okay .. em .. i think you should add to that question in South Africa. Because it's .. em .. the context is different everywhere and the and the answer will be different. The answer is determined ... determined by the context. I would say in the context

in a university is different to the context in a high school for example and even the context in different high schools are different given the facilities and given the skills of of teachers in that school and also given the necessity, the urgency and the perception of the urgency in acquiring in using ICT in education. In my own environment where I work what is my believes in terms of that .. my beliefs and that is personally and I will not enforce it on anyone is to embrace information technology, em .. and as as far as is possible given once again the circumstances and the facilities and the context .. em .. try to integrate, try to use computers at the moment for me I use it as a teaching tool, obviously as a administration tool, but also as a teaching tool but I am moving towards this sphere where I want to use it as a tool for learning on the side of my students so instead of me just using it as a tool to teach to do administration I am moving towards this sphere where, where I can actually leave the students where they are with the help of the computer so through their interaction with the computer em .. learn to really really learn whatever it is they need to learn, interestingly here for us, our students need to obviously .. em obviously gain a lot of knowledge from their subjects but also em skills and especially teaching skills .. em .. or skills required to be a good teacher and good facilitator where the environment is education .. so as far as possible I will move, moving to that sphere where I can reach them and they themselves can , can through their engagement with the computer .. em .. learn whatever it is they need to learn, whether it is skill, or whether it is simply to to enhance their own teaching.
Ya

What motives you to use ICT's in your teaching and learning?

Okay, what motives me, what encourages me, I think it is just simply the realisation that .. em.. the facilities the tools, the capabilities em.. of of ICT's and employing it. I think that if I didn't know what this machine is capable of doing I would not have

embraced it or even used it. So simply the realisation that of what is available, what is out there and then also the capabilities em .. of the machine in totality. So for me it is that realisation that, knowing being informed that these things are there they are available and I can make use of it.

How to you think the programme is enabling students to use the tools effectively? The programme, our programme ...

So you mean the complete (a particular teacher education programme)?

Ya, the .. specifically the (particular teacher education programme you mentioned)

Okay, can you ask the question again?

How is the programme enabling students to use the tools effectively?

ICT's?

Yes

Enabling, them?

ya

okay

to use the tools that ICTs ...

In a formal way, well ... well formally the first and second years they do a course which we call computer literacy or computer skills they simply call it skills ... em .. which aims to equip our students with the necessary skills that they might need as a teacher, computer skills that they might need as a teacher general basic computer skills, to assist them with their normal work daily work as a teacher, lesson preparation, presentations .. em .. word processing, setting up test papers, memo's, memorandum, administrating marksheets, working on excel and so on so it is basic skills but those basic skills is actually quite valuable if you look at ways in which it can help and applied in practice for teachers. The feedback that I even get from second and third years even when they go to teaching practice is that teachers in practice would admire them and would make use of their skills, their abilities .. em .. in assisting the teachers with their own work, when it comes to computers. So I think it does, even that basic first, second year course it already adds value to the students. I also get feedback from the students especially 2nd years that has been out now on teaching practice and my exposure to them telling me that for many of them it was the first time that they would actually use the computer. And it is so essential for them in their own studies, completing assignments but also now that they have been doing teaching practice, lecturers requiring them to do their lesson plans on the computer for example on the computer, and presentations by making use of of ICTs. So yes that is the first attempt, that is the basic attempt, formal attempt and then the fourth year students do a course computers in education where it assumes basic computer skills but move into the sphere as you asked earlier integrating .. em ..their skills which they already have but with the knowledge of from subjects from their subject didactics and and the hole integration for them and as I said earlier focusing more on the learning side.

What would you think is the current challenges within the programme and in the practice of ...

Well I think the ... Well for me one of the challenges ... I think one of the challenges is that the course is just a module of a mother subject so its not a subject in full, its just a module, and the contact time which i have with students I also feel is insufficient. It is a big group of students, large group of students, they are 170. Yes 4th years and i only see them once a week and i would actually want to see more of them. I think at the moment my approach is a bit unfair. The intensity of the work that i do with them is much higher much steeper than the credits they get, that they get in the course itself. Because its just a module part of a another mother subject. Within another subject so i as one of the challenges i see is a few of the challenges is exposure to them, I would want more contact time, also more recognition for whatever it is that we do, so by increasing the credits of the course. That is on that side ... em ... The facilities (pause) at the moment there there are some some holes in terms of the facilities, i get requests em.. for certain skills for example the smart board etc, but at the moment that facilities are not available, because of other certain other certain reasons. Administrative reasons budgetary reasons, moving to another campus, so for this group of students for this year that is not possible so I would say that the fact that the department is in the process of moving is also a challenge in terms of the delivery of courses and things I can actually do with them.

What do you think can be done to improve the situation?

Yes as i said I mean i said the major problem is the moving so next year our students, all our students will be on one particular campus so then we can look at investment in technologies like for example, I've mentioned the smartboards and also investment in hopefully it is happening in very smart computer labs. That is able to run very sophisticated much more sophisticated software packages on those machines, so I would say ... er .. facilities is for me one thing .. obviously it is no use

having the facilities, but you don't have the attitude the right attitude .. but I assume that we have or i have a suitable attitude, so then one can just work on the facilities. Em ya that would already be a solution.

Does management support using ICTs in teaching? For example do they have policies or strategies or is there general support from the HOD, EM, or the Dean?

Personal experience, em ... from personal experience given my history in the department it is rather adhoc meaning you will get whatever you need on request ... em ... i'm not sure whether the department or even the faculty has an ICTs facilities strategy, strategy in terms of how they in vision or what they in vision to have within a number of years, and how they in vision to get there, especially in terms of all the student needs, I feel perception perhaps its mostly on a adhoc basis. I would get computers or upgrades on computers only after I have complained. Em ... then I would get but I am not convinced that there is a formal policy or I would prefer to call it a strategy. ICT strategy in the department or in the faculty. I know I am quite convinced that if I ask for something em ... and I motivate it that I will get whatever it is but that is still for me just on an adhoc basis. Its not ... its not strategic.

What subjects do you currently teach?

Omitted (She names the subjects which she teaches)

Some background on the subject ICTDiE. For example the module, the weightings and what it is.

Ok, ICTDiE is a module, it is not a full subject on its own .. em it is part of the mother subject em .. let me see, it is called general didactics or subject general didactics I am

not so sure, but with the other subject didactics which are also modules together they make this mother subject general subject didactics of which it is a pass. With regard to what the credits are within the degree I'm not so clear about that.

Who is responsible for structuring the subject?

Well I'm, I suppose the subject itself was structured when it was started em... and i would assume it was the lecturer or the lecturers that was working, working on the course. When I inherited the course em the beginning of last year 2012 I didn't do any restructuring at first, I would go through the course and then focus on things that I feel which is important. Em .. For me also, this comes also and touches on the facilities for example the smartboard that i've mentioned for me personally skills is like for example how to work on a smartboard basically it belongs in the skills course and not in computers in education because it is a piece of technology that you use to assist you in your teaching. So ICTDiE moves in a different direction to another level for me it is more than just skills. It should (it should) entice thinking, deeper thinking in the students in terms of how to, why and what kind of technologies to use for which particular kind of environment and as i said earlier on with the focus on learning and not so much on teaching.

How do you teach the subject, what approach do you use?

I try as far as possible to, not to use or follow the same strategy or approach week by week. Try a different approach week by week. Our periods is quite long, it is 2hrs 15min so to be lecturing for such a long time, different times of the day, some of my classes are even after 2 o'clock em .. I wouldn't prefer although I can, i am capable of doing it, sometimes i like doing it to just speak and lecture for 2hrs but i try to balance what i do and what the students do during the teaching time. I try to

maintain a balance in terms of that , my involvement and their involvement, but not doing the same thing all the time although not having the same approach all the time. So one week after an introduction of say 30 -40 min, sometimes i will give them group work, so they would have group discussions, there will be a write up on their discussion and they will give feedback verbally in the class, during in the class time, the groups and then also submit a piece of work their group has done. So its discussions, and the feedback because they are teachers i like the fact that they must stand in front of the class and do presentations. And then sometimes i will give them individual work em .. where they would do individual research for research projects for me in class. I will give them a scenario related to any of their subjects em... with a problem statement and then they will look for solutions in terms of how to address that particular problem statements individually. Sometimes I look at doing something handson by demonstrating things for them, for example how to embed a video I would demonstrate that, also from a approach from a particular subject and then i would give them once again a class assignment where they now have to go look for something video's etc. I am just making an example. There is lots of other things that i use .. so so just to answer your question i try to use a mix of strategies in terms of balancing what i do or what they do . I don't want to bore my students by just listening to me for two hrs because i said the course itself for me teaches learning teachers on the learning side emphasis is on the learning side. I actually apply it in my teaching.

How do you view your role as a lecturer teaching students the subject computers in education?

Given some of the other things ive already mentioned, I think also given the context em .. it is up to now it was save for me to have the approach of of raising awareness. Yes, yes yes to particular topics instead of trying and attempting to just to teach and

to show them all the skills. I think with the limited time we have and also the limited facilities that i have for now, yes it was good it was safe it was fine, it was appreciated that i have this attitude this approach of of raising awareness. So make them aware of certain issues regarding ICTs in education but also regarding what is available. Instead of having to be too intense in terms of them just doing doing just applying skills so raising awareness that is nogaal key for me in terms of my approach. It is fair is only safe and it is also acceptable and it is also i think it is effective em .. students cannot say I've never heard of this, so they can at least say i've heard of this I've thought of this i've reflected on it. I have been exposed to it in some way em. I think then i've reached something with them already. Because i can't teach them everything.

What would you say is strengths and weaknesses (if any)? Do you have any strengths and weakness?

Me personally? Strengths and weaknesses? Okay

Well are you really asking me that question?

That is why I included if any (laughing)

Obviously we all have our strengths and weaknesses em.. we don't necessarily talk about them all the time, we don't feel comfortable talking to. I think one of my major strengths is the fact that I am quite serious em .. at what I am doing and the fact that I have a passion for what I do here a passion for teaching. I have a passion for sharing. I think i am unselfish when it comes to knowledge sharing em .. I have a passion for empowerment em.. and its good, the reward for me is seeing the development in the students not in terms of age getting older 4 years being here

but also maturing em... intellequally there vocabularies mature em.. the way they think, the way they criticize, the way they analyze, that is seeing that transistion that transformation in them is for me a reward that encourages me more to to to to to empower, to share and once again to encourage them. So I thing ya those are a few of my my strengths the fact that I am serious (I am quite strict) em.. Yes..

You want to elaborate on the strictness, Or not?

Well yes, maybe not elaborating but just mentioning one or two things in terms of that. I think, I am strict with them initially because they are education students, they want to be educators, they want to be teachers. And i sometimes test myself, but i sometimes test the students em.. by saying and asking whether i will em.. let my own children go to schools where they teach. I will tell them and i will challenge them. Do you think i can trust my own kids to you? (laughing) So so so because the work of teachers are so very much important not only in terms of formal knowledge in scholastic teaching but in terms of protecting our children of making sure that own children are in safe environments, not only physically but also in terms of what they hear, and what they taught whether it is the truth em.. whether the teacher is knowledgeable on his particular subject. So I would also obviously the hidden curriculum the other morals the important morals that teacher need to adhere to em .. in order to set the example like em .. obedience, em, the ability to follow an instruction, the ability to think for himself em .. simple things like punctuality em.. punctuality simple things like respect, like if you are suppose to be in my class at 2 oclock, it means that we have an appointment with each other. That is scheduled that is in my diary so see that you are there before 2 or at 2 means that you respect our appointment, respect our relationship, respect me and have respect for yourself. But if you are late for our appointment it says something about you, you are disrespectful. So yes that is what i mean with being strict. Is reminding me once

again of the values that they themselves have to adhere to to be teachers in totality and not only to be transferers of knowledge. But to be teachers and setting the example right.. ya

Do you have a prescribed textbook that you use?

Yes we do have a prescribed textbook. It is all about integrating computer technology in the environment of education. It is a book that I have inherited but i like the approach of the book and it links with the title of of of the course and it contains very very very valuable things that one actually can contextualise to the South African context. It is an American book but em ... we have the internet and hopefully the tips, and the internet is world wide and everything that is mentioned in the book can be checked out online...and can be referred to online.

Do you have an estimated cost for the book?

Oh the textbook! The latest version new is around R400 and they do the whole book it is 8 chapters and of course covers 8 chapters.

How do you assess your students and also support them as beginner teachers?

Ok assessments, I have 3 assessments. The first assessment is not related to the textbook. Em. I will get back to the first assessment. The 2nd assessment is a closed book test which covers all the work in the textbook. So there is only one assessment then that covers the textbook. The first assessment is rather practical, partly group, partly individual but em .. i think its recapping on their skills, their existing skills and also trying to expose them to things they have perhaps not been exposed to software packages things like that it is quite hands on, just brief perhaps.

The first section is group work, how to setup a laboratory, subject laboratory em.. taking everything into consideration costs, communication with the principle, communication with suppliers , setting up a budget, writing letters em .. inventory of stock , but also this component using software to assist them in everything that they are doing. So using a wordprocessor, going onto the internet , making use of excel .. em .. so it is the computer skills themselves but also the softer skills of communication for example and negotiation, price negotiation and eventually also going through the exercise of reflecting on thinking on what is it that i need if i want a laboratory for my subject. Em. That is the first part, the second part is simply just doing something for marketing, making use of a graphical package they can decide for themselves, I recommend Microsoft publisher and then converting it to pdf or do a graphics image and the 3rd part is setting up lesson plans em embedding a video into a powerpoint and all the finer things of of of powerpoint so it is really a hybrid of skills and knowledge that they apply that the use in doing the first assessment, the 2nd assessment covers the textbook close book test and the 3rd assessment is normally a what do you call it, but they do it while they are out at the schools. It is a research assignment, normally i would say social media and from year to year the lecturer involved decides what area of social media will she have to be researched by the students. School based assignment.

And all of this is geared at giving them the necessary skills when they are out at school?

Yes, The 2nd part of your question was assisting beginner teachers. Em i don't think there is anything explicit expected, explicit maybe everything is geared at that at equipping them getting them ready to start teaching, maybe everything is aimed at that but then i can also say maybe there is nothing explicitly but underlying and as your approach as the lecturer you will always refer to them as em . refer them to or

refer in your discussions to this that or the other that needs to be taken into consideration.

For me at this stage em.. I am more seeing a picture of of while the teacher teaches whatever the teacher teaches what ever the subject area, whether it is maths or if it is a language that the teacher is basically standing next to his learner while his learner is busy on the computer, discovering something on the subject. You see i am seeing that in my head, in my mind, instead of a teacher standing in front and just teaching but the teacher standing next to the learner while the learner discovers. That is where i see teachers. And i do tell them and it is also very strict but very harsh very adamant that, so that i tell them you are 21st century teachers, that should be your mindset. 21st century teachers you work with 21st century learners so meet them where they are.

Do you get any instructional support for using ICT's in teaching? (mentions particular learning centers at the UoT)

Ok, on request i would get (pause) limited support from from e-learning. I partly make use of part of my course i make use of blackboard. Em. For different things but only for a limited em .. ya limited number of things. And getting me onto the system I have received assistance from e-learning in that regard. With regard to Fundani i have never make use them, I am not even sure what they do.

You said you use blackboard, do you use it for a particular purpose?

I would use blackboard to share resources, to share material with my students em.. the other resources have become unavailable, we usually have shared drives at the university on the networks where lecturers will upload and learners are able to

download but those facilities have become unavailable. So I have embarked on blackboard. So that is the first thing. But then i have also discovered that blackboard is also a way of encouraging students to actually work continuously so I would open up em . weekly assignments for them on blackboard for me to control whether they have done it, whether they were in class em .. I would instruct them to upload it onto blackboard. Em.. and i can personally keep track of who is participating and i can also threat them in terms of showing them graphically em.. you are suppose to have 4 assignments submitted for the 4 weeks you only have one, you only have the last one and that they will graphically see in different colors also on dates they have submitted or have not submitted and it is a nice way of just encouraging them, although i don't really do anything with it, it is just to show them that it is available but also as i say to encourage them to to basically tell them that i am in control. I know what is going on, i know what you are doing and what you are not doing.

Is there any other unusual technologies that you use in teaching the subject?

Well well not really I would from time to time but that is once again part of the of the curriculum , from time to time I would refer students to particular websites. Er .. to get particular resources for a particular subject and not only resources in terms of content knowledge but say multimedia, multimedia that might assist them in teaching a particular topic in their particular subject. So i lean alot on the internet, on the world wide web ... (inaudible)

Is there any theoretical approach or literature that you draw from?

Well not, not not really, obviously the only resource is this particular textbook and obviously the other things are more practical, but to be fair no i don't have any

particular theoretical approach only approach that i personally adopt with the course and that is only approach that makes sense for me is to assume that my students come into my course with particular skills but also with lots of knowledge from the field of education, didactics, subject didactics and also their subject knowledge. I assume that they see these as separate entities and i see my responsibility to integrate. The skills on the one pent and the knowledge integrate to bring it closer together. So that is my own framework. That is my own approach er... but the textbook actually if you look at it, the textbook supports me in that particular approach. That framework, my own framework.

Do you think you might want to personally do any further studies related to ICT's.

Further studies for the learners or myself?

For the students or myself?

For both...

If such courses are available and the courses has been credited, its not just about making money, and i am convinced that it can add value then i would go on such courses em obviously as i say it needs to add value. I feel very strongly about that em .. and i would say the same for my students. In this particular computers in education context I would advise them to go onto any further courses if like i said those courses are trustworthy and integrity, and adds value then i would say yes... It would obviously be related to ICTs in education.

Could you explain the objective of ICTDiE?

Okay, I am going to alter that question by saying i assume that you are asking me what are the formal objectives of the course.

Yes

The formal objectives that we wish to achieve. I am going to refer you to the study guide of the course. And in the study guide itself I distinguish between the purpose of what the module is but also certain outcomes. So I am briefly gonna run through those with you.

You were asking what the objectives was?

I am just referring to the purpose and then also to the outcomes. The purpose of the module is basically two-fold and this is actually quite formal. For me it is just a guide and I think personally the purpose i assign to the module is much broader than that ...but I think i've already touched on that but formally the purpose of the module is two-fold..

First of all to enable the students to use computers in the classroom, meaning the student teachers that we have they must be able to use the computers in their classroom environment. I know that is quite vague. Because you can tell me isn't that what skills do? Yes skills does that partly using a computer as a tool assisting you in your teaching but for me it is also about the learning it about learning and teaching and as i said and told you earlier on I see, i envision this, i see the student teacher standing next to the learner discovering things on the computer doing things on the computer, having fun at the same time, while learning is taking place. So yes how to use computers in your classroom. Not many teachers in South Africa knows that. Em we don't say it but it is a reality not many teachers in South Africa knows

how to use computers in their classroom. So if it is only for my students to be comfortable using this machine in their classrooms then it is enough, in their teaching but also on the learning side. And then secondly, em .. to assist our students in the development of the subject laboratory or media centre and part of their first assessment is a group assignment part where basically to let them go through this exercise of establishing of starting a laboratory for their particular subject and going through all the motions. And as i said earlier the soft skills working with money, communication, negotiation, budgeting but also hands on computer skills using these things and choosing appropriate software packages to do whatever is necessary. To know that i can use excel for budget, to know that if i want to do a presentation i can do powerpoint and make use of the functionality of powerpoint etc. So it is already bringing together the skills and the knowledge bringing it together but addressing a particular problem in terms of setting up subject laboratory.

With regard to the outcomes that was the purpose, the outcomes apply the students acquired computer skills effectively in the classroom environment i think we've already said something about that .. em .. Be able to use computers for teaching and learning I said alot about that, em .. teaching teaching for me is using as a tool in my general administration em .. assisting me while teach powerpoint, data projector pc, then we go to slide show, that is on the teaching side, but on the learning side em.. putting things infront of my learners and let them play, have fun with it, let them interact, engage with that particular software of the screen and in the process learn. See that is on the learning, on the learning side. Be able to integrate technology into the classroom for me that is basically the overall goal for me. This integration, bringing your knowledge and your skills, basically marrying them, getting them together. Em as a meaningful whole. Em and then once again its about the media

centre or the laboratory. So that is formally the purpose and the outcome of the module. You feel I should elaborate on any of this?

When students initially come into this class what do they basically think this course is about? Or how will you go about explaining to them what the course is about? Do you think they might have a different idea?

It is a very very valid question for me. It is one of the very first questions that I do ask the students. Whether they have heard about this ICTDiE subject? Obviously all of them have heard or seen it on their registration form or seen it on their timetable and then ask them now what do you think this ICTDiE is. I have to warn you then they would tell me what their expectations of the course is say I expect to be learnt to be taught how to work on a smartboard, you see, then i still have to tell them that is an expectation what do you think computers in education is all about?

And yes they have their perceptions but then i would tell them well I am going to make a hypothesis or an assumption or a hypothesis which is safer and say this is where you are, I will tell them that I know and you know that in 1st and 2nd years you have done computer skills, these are all the things that you have done in computer skills, we've done Microsoft word you have heard about hardware, software, there was excel, there was powerpoint, access, so you have all of these skills. Is it right? They respond yes sir... Then i tell them you also come into my class with knowledge on education, general didactics, subject didactics , knowledge of your particular subjects themselves, a whole lot of theories and i ask them to observe so they will look at this slide show, slide 4 in this presentation and then you tell me, i will ask them certain questions, what do you observe, and then they will tell me there are different colors, the one is pinkish the other one bluish. What else do you observe? These two entities are separate. I will tell them that is exactly how

i view where you are at the moment. You have computer skills, they are of a certain type, there are times you use them and you also have all the other knowledge but you never bring the two together and i would then tell them that that is the status quo and my intention my purpose is .. do you see that .. yes that color it is a combination of the previous two colors it is one color it is lilac or purple em ... and mathematically we would add the two things together computer technology and skills, we add education subject didactics and the equation will then be technology and curriculum integration and i would put emphasis on the term INTEGRATION. Which is a marriage between your skills, computer skills, technology and also really all your knowledge and integrate the two bringing it together and i tell them humouristically that this course is actually a marriage ceremony. There are two things that are getting married here, its your computer skills and all your knowledge, you are marrying them. You are integrating them, bringing them together.

An interesting observation that I am making is that is there a particular reason for pink and blue and ...

Yes there is a reason for everything, there is a reason for the different shades a reason for the different colors, the pink and the blue if you combine it then you will get something purplish ... So this is a combination of that and that, okay so that is on the color. And then also i will take them back to this title computers in education i will say that we will just see computers in education but each of these words have a significance. Computers refers to your computer skills, technology, education referring to all your knowledge and the in, that small word, which looks so insignificant is very significant, because that in represents the integration. It represents this marriage, it represents this bringing together. So computers integrating with all the education and knowledge stuff.

I think that is basically it.

I am looking at towards a learner centred approach can you expand on that for me?

Yes, the approach in computer skills was a teacher centred approach because it was all about equipping the teacher with skills to assist him in his teaching, in his conducting of being a teacher so I use powerpoint, i use the data projector, I use the PC, it assists me in teaching, in doing a presentation. I use MSWord and it assists me in setting up my lesson plan, my em. Question papers, memorandum. I use excel and it assists me as a teacher, and to administrate my marks to administrate my learners ... so that was the approach in skills to equip the teacher with skills to assist him in his job as a teacher, being a teacher and i tell the students when we speak about this, i tell them to reflect about this, i challenge them, i encourage them i say do you know we actually teach with the hope only with the hope that learning will take place. There is no guarantee that learning really takes place. We teach with the hope that learning takes place and my approach in this course is to make sure that learning does take place, to focus on the LEARNING side of the equation and not so much teaching side. So as a teacher how do i do that, I I see myself and my learner and this technology as a partnership and together we will sit and discover, we will look for knowledge. We will apply knowledge and in the process learning takes place, for me that is a more focussed on the learning itself so the learner is involved, the learner is touching the keys. It is not just me touching the keys, changing the slides, touching the keys, setting up the paper. It's the learner touching the keys, engaging with this computer, in the process learning, also in the process having fun, while learning. While discovering, while looking, while searching for knowledge. And also obviously applying knowledge. Do do do you see that? When it is a teacher centred approach my the teachers fingers are on the keys, on

the mouse, on the screen, the teachers voice, if it is a learner centred approach the learners fingers on the keys, on the mouse, on the screen.

So if one of your students go out to school, will you say they are equipped?

(laughing) In that case i can only say I teach with the hope that learning takes place, or has taken place as i said earlier on, my attitude is that of raising awareness. As human beings students our best characteristics are that we tend to forget. So we are just here, we do things for just the sake of doing it. Me lecturer with the hope of learning is taking place. But i am sure, convinced that once they are faced with these realities outside and faced with challenges that they can lean onto whatever discussions we had in class and whatever knowledge and experiences which they have gained through this course.

Thank you for allowing me to interview you. I am still interested/ fascinated in the purple and pink and all the other things you mentioned. So when you look at something you don't always see the bigger picture...

You won't find that in the textbook, hey, i came up with that myself. Because I am quite keen on also observation. For me it is important that to be a good student you need to be an observant student. Em .. You don't just assume things, there must be a reason things are the way they are. There must be a reason why I use this particular theme, and not only because i felt like it this morning. There must, might be a reason. I even just exercise students on just looking at a slide and the reasons and the change, and tell me what are the obvious, what are the not so obvious things that you do observe? Etc. But thats off the record mos now...Do you want it to be on record?

You can if you want?

Yes, but I am not sure how it relates to computers in education?

Its between me and my students just raising awareness of how to be observant. And even when they do things without thinking, other people might think things of them, if they for example prepare a lesson and everything is pink i mean?

Ya it is very feminine isn't it? Pink mood (laughing) Ya very very inlove or even its the month of love so therefore my theme is pink or maybe we are dealing with a poem that is all about love. That might be a reason why it is like that. And maybe also saying and telling them that whatever you do, make sure you know why you are doing it. Whatever you do, do it for the right reasons. For example there the I in the centre there, the green, the I they would observe and they would tell me what they see but some of them would tell me i see that I there, I would ask questions what , what about the I, it incursive, its green, its in a circle, its in the centre its not anywhere else its not blue its not pink and i would ask why do you think its green, and I would relate it to other things, it might represent the environment, green might represent recycling em.. green might represent sailing, being economical, green might also represent being fruitfull, go out and make children! (laughing) Green might represent sharing, sharing of knowledge, why the I its all about information, information on the course itself and information on the person presenting the course. What else do you observe? What is the predominant color on the slide, its black.. what is Black? Darkness .. its the absence of light, so meaning okay if there is black there is no light being used. Saving electricity, saving the environment.

Ya so that is just an example. Testing there observation skills, but it is also for me em.. a way of just meeting them, because this is the very first slide that I show them, right at the beginning of the year. So this is our "aanlopings punt" where we meet each other now for the first time, so lets start just speaking about what you observe. And in that way we break the ice. We meet each other again. Because I get them only in the 4th year, only i've seen them in 1st and 2nd year so there have been a year in between. So i first have to connect with them as well, that is important for me in teaching, there needs to be a connection there with students, there has to be that, if i don't have that connection i don't like it. I would do something to establish that connection. Even if that connection is that you disagree with me, that is fine but then we know that that is our understanding. You disagree with me even if the connection is that you don't like me then it is fine, i know that you don't like me. I will just do what I am suppose to do. Not that I am a very negative person, not at all, i am a very positive person , very optimistic person, em ... students they tend to know where they stand with me. I am not a very likeable person i think, when it comes to the students, but I am em .. approachable, I am also assessable, ya.

Its part of my identity as a teacher. Its part of my composition as a teacher. Its a part of who i am as a teacher. Its a healthy relationship with students, an informed relationship with students. Okay we need to find some common ground even if it is to disagree.

Maybe this is a way for me to show them that they don't have to go through life with closed eyes.

Whatever is on your eyes, open your eyes. To perceive things, to see things. I refer you smell, i refer to tasting, touching, we speak in this course also about multi sensory teaching. Multi sensory learning. So not only learning through listening to

what you are saying as a teacher in front. But learning through actually doing, learning through actually smelling. This is what economics smells like. And I am quite serious about that! The multisensory that's the importance of observation for me. It is the importance of being informed, being informed through, through all your senses and not traditionally 19th / 20th century where where you just are passive, part of a passive audience. But that you are an active participant in this whole process of learning.

Thank you very much.

Thank you I hope it adds value to you also through to your studies and so on.

Just a thought does the (person in a senior position) within the programme provide input as to what should be put into the structure of the programme?

To my knowledge it is entirely up to the lecturer em.. I think he trusts the integrity and the expertise em.. of of the lecturers. Em .. when it comes to (mentions various subjects) even using computers for himself he is not a very computer literate person and simply because there is no interest in whatever is going on here. You just do what you have to do. He trusts his staff. It's a good thing and maybe it's not from a management point of view it is not a good thing but it works because we can trust each other, he can trust me I can trust him, and luckily in a setup, in educational setup you can always have your students, and your students can complain if something is not satisfactory.

With your mention of moving campuses and restructuring programmes do you think some of the other education programmes might have a similar subject to ICTDiE?

I think it will stay within (his particular programme) other programmes aren't very keen on changing from who they are. I am sure if they can be convinced of the benefits not only from the academic perspective but from the student perspective, the benefits of this, I am sure they will be able to take this on, but normally people won't want to do more work. Because it means more work! Ya so that is my answer to that question.

Thank you

Appendix 4: Focus group interview questions and raw transcripts

How comfortable are you with computers and technology?

Could you tell me more about the subject ICTDiE?

When you came into the class at the beginning of the year and you thought about ICTDiE what did you expect to be taught within the classroom?

Have you done any specific theories?

Is the subject offered in a classroom or a laboratory?

Do you think your past ICT knowledge is helping you in this subject?

What type of activities do you do?

Are the assignments more practical or theory based?

Do you think you are adequately prepared to teach the subject at school next year?

Does this subject module somehow show you how to integrate computers in education?

In conclusion would any of you like to share any positives or negatives with me regarding the subject?

Transcription: Focus Group

Blue font – interviewer

Black font – teacher educator (students)

How comfortable are you with computers and technology?

I am quite comfortable with computers. I have my own laptop and I use it on a daily basis to do my assignments. **Student 1**

I still struggle a lot with computers. It is something new for me and I hope with time I will be as good as some of the other students. **Student 3**

In your subject ICTDiE have you done any specific theories?

No. **Student 4**

Could you elaborate please?

One lecturer I am not going to say names, one lecturer teaches you theory, ne theory is important, when another one comes in he says no speak about your everyday experience. And what do we do, we forget about theory, you put it aside and then you concentrate on what? ... on my everyday knowledge. And then another lecturer comes and says I want theories. Where are we standing now? Can't the university speak one language? **Student 2**

No theories, we only did chapters telling us OK in education you are suppose to link your computers and your working and OK computers must make your work easier. It is not for teaching only, it is also for you as a teacher to be able to teach very well. Like if you want to enter your marks, the marks is already there. So you just punch them in "voilà". You have your marks. If you have, want a lesson plan you just type it and you save it, when you want it for the following year when you teach you just go to your pc,

you open it, you change the dates and you present the lesson. That is how we were taught. We were never taught, I don't have a clue where to look, who are the theorists or where to look for theorists. ICTDiE or in technology I don't have a clue where or who am I going to look. And the other thing is ok in Education I know, I know Piaget is there, I know Vygotsky is there and Skinner is there I know a lot of people, but not in ICTDiE . And for me I find this thing very difficult. **Student 1**

When you say "thing", what are you referring too?

What when I think about what? **Student 1**

When you mention thing, what are you referring to, this assignment that you just received?

Yes **Student 1**

What do you think about this assignment?

For me when I look at this thing, this assignment. I got from 70% and this assignment weights 30%. I don't have to put alot of effort into it, and its difficult I don't have to put a lot of effort into it, so I have passed already and I can continue with my life, I don't have to do anything here. Because I don't need anything to survive, in order for me to pass. **Student 1**

Why are you so upset about this assignment?

Because I was never taught, the last time I was taught I went to this lecturer's class and we did the work that we did with the previous lecturer. And then we were going to have a class, there is a possibility that we may have a class, when all the students are gone, the chances of us have a class are like, what am I going to do this time? It is like what am i going to do this time. I don't see learning taking place for me. And I am asking myself since i was not taught to do this, in my class here at university, how am I going to teach this to my learners at school. Because myself I don't understand it, so what do i rather do? I rather not confuse my learner. Because if learners see that you don't understand what you are doing they tend to, not to listen to you anymore. You loose them completely for the hole year. So for the first six months when I am going to school I don't want the first month to be a nightmare and then the last 5 months to be I don't no what. Because that will hamper on my teaching and learning experience at schools. And it will affect my teaching and learning when I go out there

next year when I go to teach, how am i going to teach them? How am I going to look at them again? Because I am scared already of this. **Student 1**

When you came into the class at the beginning of the year and you thought about computers in education what did you expect to be taught within the classroom?

Well I was expecting things such like OK , last year and in 2nd year we spoke about we want to be taught how to use a smartboard. And the university agreed with us. They never did that. We thought that this year we will be taught how to use that. And then I was expecting to know what can a computer do for me as a teacher, what is new, because where I come from I use to use a computer and now it is like OK fine computers in education what role does the computer play in education. For me I feel like sometimes when we use the computers you spend most of your time sitting in the computer than doing your actual work. Taking for example when you do a powerpoint presentation, it is not like a cut and dry thing, ok fine this is what I am going to do. You are suppose to look for the relevant pictures, the wording, the colours, how you do your content, but when you do it on a chalk board it is easy, so for me when they say computers must make my life easier, I don't get that, because now i put a lot of effort in it. Not on the content, on how am i going to present it to the learners. So that they can understand it. **Student 3**

Does this subject module somehow show you how to integrate computers or ICTs in education?

No **Student 4**

It does not?

For me it is like alot of work. Even though i like to use my computer yes, but the way they are doing it, it is like I don't no where they are standing. **Student 3**

And how did you experience your classes from the beginning of the year? How were you generally taught?

The lecturer would come in, tell us what he wants to tell us and then give us the class work. Email it to him, that was it, and the next thing school based assignment. They said the school based assessment i must go and do. I think the way the lecturer did it teach somebody, after teaching them ask them to email me back what i taught them. **Student 4**

Do you want to elaborate on the style of teaching that you are use to?

With our lecturer, I had two lecturers they actually teach the same way. The stand and talk, the only difference is which the first one you were given the work before, we had it in our blackboard. So this time we don't have access to that and then we listen and sometimes we contribute and then after that we were given a classwork, email it to him immediately and then you can go. And we never got our results back. **Student 1**

Would you say learning took place?

No meaning some of us never even emailed it to him and he never said a word. Because some couldn't even email the stuff to him. So you see we weren't even taught how to email. And it was expected of us to email. And he never counted how many students emailed me and how many must still email me, who are they, and why did they not email me the stuff. **Student 4**

Appendix 5: Letter of consent



University of Cape Town
Faculty of Humanities

Consent Form

Title of research project:

Names of principal researchers:

Department/research group address:

Telephone:

Email:

Name of participant:

Nature of the research:

Letter of consent

Participant involvement:

What's involved:

- I agree to participate in this research project.
- I have read this consent form and the information it contains and had the opportunity to ask questions about them.
- I agree to my responses being used for education and research on condition my privacy is respected, subject to the following:
 - I understand that my personal details may be included in the research / will be used in aggregate form only, so that I will not be personally identifiable (*delete as applicable.*)
- I understand that I am under no obligation to take part in this project.
- I understand I have the right to withdraw from this project at any stage.

Signature of Participant / Guardian (if under 18): _____

Name of Participant / Guardian: _____

Signature of person who sought consent: _____

Name of person who sought consent: _____

Signatures of principal researchers: a) _____ (name)

b) _____ (name)

c) _____ (name)

Date: _____

Appendix 6: Textbook activity one

Downloading Image Files

Clip art images are graphical images that are available for you to use on your Web and curriculum pages. Clip art images are either free or available for purchase. In addition, Microsoft provides more than 120,000 clip art images that are available free from its Design Gallery Live Web site. You also can download free images from hundreds of Web sites. This project requires that you download an e-mail image from the World Wide Web. The image will be used to identify the e-mail link. You can save the image to a USB flash drive, your computer's hard disk, or a 3.5-inch disk. You also will want to save the Web page to the same location as the e-mail image. Perform the following steps to download an image file from the World Wide Web.

Steps to Download Image Files

- 1 **Start your browser, type the URL `scsite.com/tdc4` in the Address text box, and then press the ENTER key. When the page opens, click the Chapter 3 link, and then click the link for the Special Feature.**

The browser displays the Teachers Discovering Computers Word project Web page.

- 2 **Right-click the e-mail image and then point to Save Picture As on the shortcut menu.**

The shortcut menu is displayed (Figure 2). If you are using Netscape as your browser, point to the Save Image command. If you are using a Macintosh computer, press the mouse button for approximately two seconds to display the shortcut menu.

- 3 **When the Save As dialog box is displayed, click the Save in box arrow, select a location to save the image to, and then click the Save button in the Save As dialog box. Click the Close button in your browser window.**

The e-mail image file is saved to the selected location.

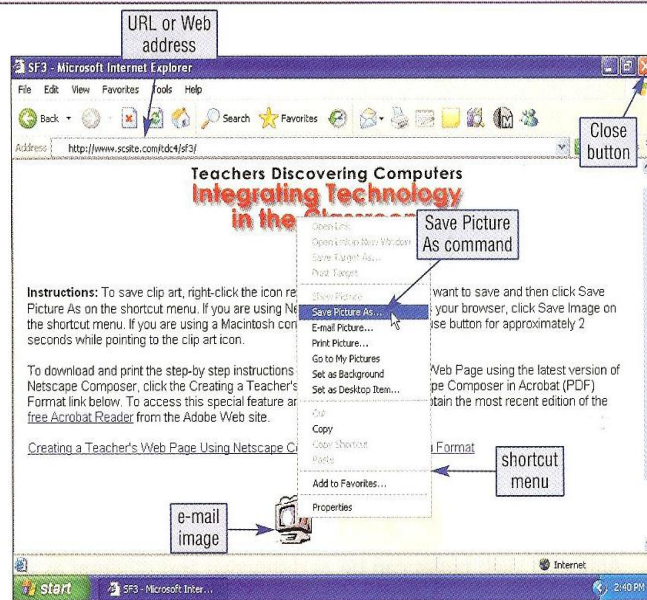


FIGURE 2

Appendix 7: Textbook activity two

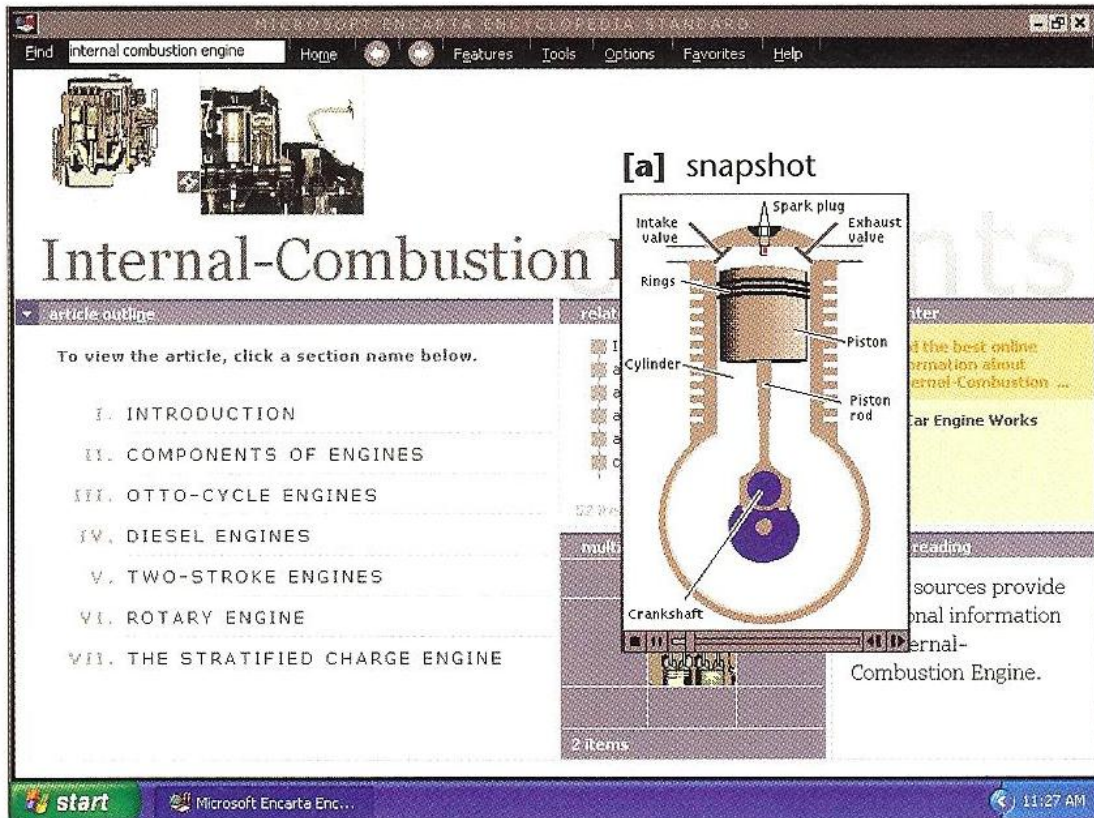


Figure 5-6 Microsoft's Encarta Encyclopedia contains numerous digital media animations, including a demonstration of how an internal combustion engine works. Figure 5-6a is a snapshot of the initial screen, Figure 5-6b shows that the piston has moved down during the intake stroke, and Figure 5-6c shows the piston moving up during the compression stroke.

Appendix 8: Textbook activity three

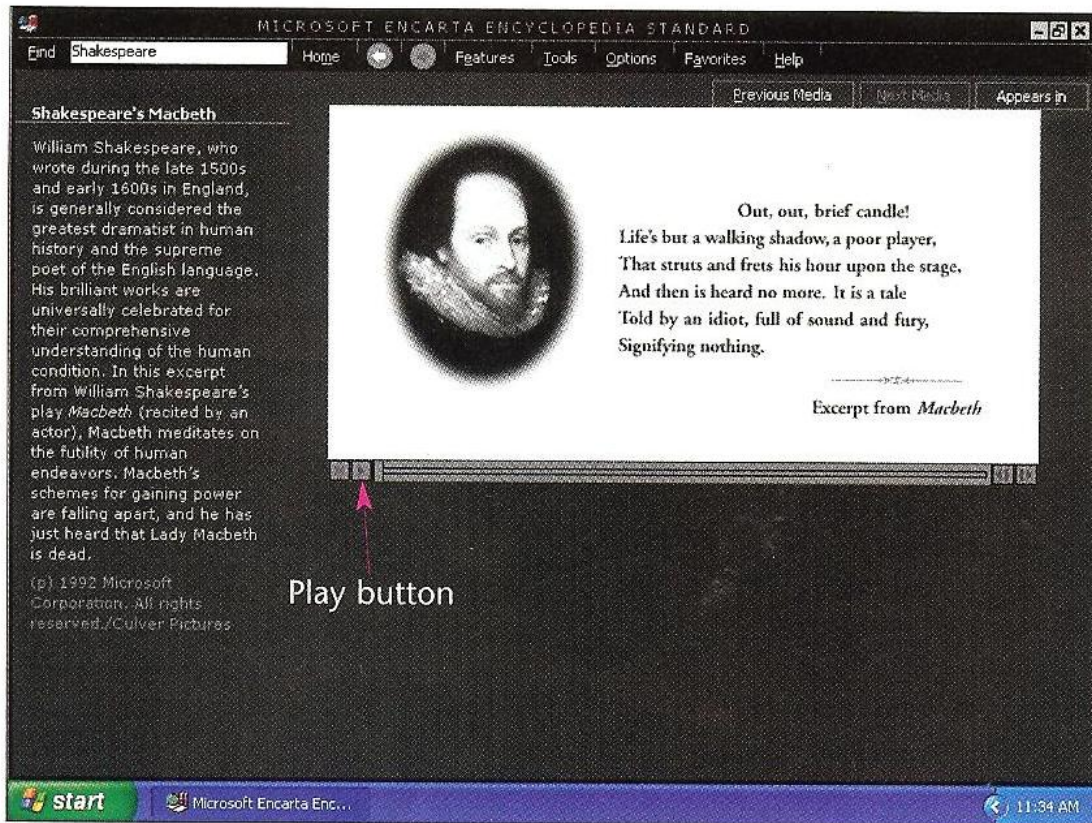


Figure 5-7 Interactive encyclopedias offer students many opportunities to hear the words and passages of great historical events and literary works, such as Shakespeare's *Macbeth*. By clicking the Play button, students hear passages from *Macbeth*.

Appendix 9: Assessments

NAME:	OMITTED	FINAL MARK:	OMITTED
STUDEN		45 =	
CRITERIA		MARK ALLOCATED	
SECTION 1:			
MSWORD: Laboratory investigation of equipment			
Letter to principal: Fundraising plan Request permission Suggested budget		/10	
Donation letter		/5	
Quotations		/5	
Equipment inventory		/10	
SECTION 2:			
MSPUBLISHER: Flyers			13
Creativity		/10	10
SECTION 3:			
MSWORD AND MSPOWERPOINT: Lesson plans, Presentation & Show, Assessment			
Lesson Plan: <i>Page #5</i> Topic, (LO's, Assessment standards, Lesson outcomes), lesson structure		/10	7
Slide presentation: Embedded Video <i>too much</i> Appropriate pictures <i>Bob/ballet</i> Enhancements <i>Bob</i>		/10	5
Assessment: Worksheet Memorandum/rubric		/10	10
TOTAL			

Assessments

NAME:	FINAL MARK:	SURNAMES OF OTHER GROUP MEMBERS:
STUDENT N: [OMITTED]	51 = .	[OMITTED]
CRITERIA	MARK ALLOCATED	
SECTION 1: MSWORD: Laboratory investigation of equipment		
Letter to principal: Fundraising plan Request permission Suggested budget	/10	
Donation letter	/5	
Quotations	/5	
Equipment inventory	/10	
SECTION 2: MSPUBLISHER: Flyers		
Creativity <i>As organized</i>	/10	19 5.
SECTION 3: MSWORD AND MSPOWERPOINT: Lesson plans, Presentation & Show, Assessment		
<u>Lesson Plan:</u> Topic, (LO's, Assessment standards, Lesson outcomes), lesson structure	/10	10
<u>Slide presentation:</u> Embedded Video Appropriate pictures Enhancements <i>Too much text/obscure</i>	/10	7.
<u>Assessment:</u> Worksheet Memorandum/rubric	/10	10.
TOTAL		

Files not saved in right format.

Assessments

NAME:	FINAL MARK:	SURNAMES C OTHER GROU MEMBERS:
STUDEN OMITTED	59 = .	
CRITERIA	MARK ALLOCATED	
SECTION 1: MSWORD: Laboratory investigation of equipment		OMITTED
Letter to principal: Fundraising plan Request permission Suggested budget	<i>Subject Line Justification</i> /10	5
Donation letter	/5	5
Quotations	/5	5
Equipment inventory	<i>Handwritten notes</i> /10	10
SECTION 2: MSPUBLISHER: Flyers		25
Creativity ✓	/10	10
SECTION 3: MSWORD AND MSPOWERPOINT: Lesson plans, Presentation & Show, Assessment		
Lesson Plan: Topic, (LO's, Assessment standards, Lesson outcomes), lesson structure	<i>Handwritten notes</i> /10	7.
Slide presentation: Embedded Video Appropriate pictures Enhancements	<i>Text bullet</i> /10	7.
Assessment: Worksheet Memorandum/rubric	✓ /10	10
TOTAL		

Assessments

NAME: STUDENT	FINAL MARK:	SURNAMES OF OTHER GROUP MEMBERS:
OMITTED	47 =	OMITTED
CRITERIA	MARK ALLOCATED	
SECTION 1: MSWORD: Laboratory investigation of equipment		
Letter to principal: Fundraising plan Request permission Suggested budget	/10	
Donation letter	/5	
Quotations	/5	
Equipment inventory	/10	13
SECTION 2: MSPUBLISHER: Flyers		
Creativity <i>✓ Tattoo stall</i>	/10	7
SECTION 3: MSWORD AND MSPOWERPOINT: Lesson plans, Presentation & Show, Assessment		
<u>Lesson Plan:</u> Topic, (LO's, Assessment standards, Lesson outcomes), lesson structure	/10	10
<u>Slide presentation:</u> Embedded Video Appropriate pictures Enhancements <i>Wag for pines Hot butter</i>	/10	7
<u>Assessment:</u> Worksheet Memorandum/rubric	/10	10
TOTAL <i>✓</i>		

Assessments

NAME: STUDENT N	OMITTED	FINAL MARK: 46 =	SURNAMES OF OTHER GROUP MEMBERS: OMITTED
CRITERIA	MARK ALLOCATED		
SECTION 1: MSWORD: Laboratory investigation of equipment			
Letter to principal: Fundraising plan Request permission Suggested budget		/10	
Donation letter		/5	
Quotations		/5	
Equipment inventory		/10	
SECTION 2: MSPUBLISHER: Flyers			20
Creativity	Fort too small	/10	6
SECTION 3: MSWORD AND MSPOWERPOINT: Lesson plans, Presentation & Show, Assessment			
Lesson Plan: Topic, (LO's, Assessment standards, Lesson outcomes), lesson structure	Date, layout etc.	/10	5
Slide presentation: Embedded Video Appropriate pictures Enhancements		/10	5
Assessment: Worksheet Memorandum/rubric		/10	10
TOTAL			

Assessments

NAME: STUDENT	FINAL MARK:	SURNAMES OF OTHER GROUP MEMBERS:
OMITTED	57 =	OMITTED
CRITERIA	MARK ALLOCATED	
SECTION 1:		
MSWORD: Laboratory investigation of equipment		
Letter to principal: Fundraising plan X		
Request permission X Suggested budget X	10	5
Donation letter	5	3
Quotations	5	5
Equipment inventory	10	10
SECTION 2:		
MSPUBLISHER: Flyers		23
Creativity	10	10
SECTION 3:		
MSWORD AND MSPOWERPOINT: Lesson plans, Presentation & Show, Assessment		
Lesson Plan: Topic, (LO's, Assessment standards, Lesson outcomes), Lesson structure	10	7
Slide presentation: Embedded Video Appropriate pictures Enhancements	10	7
Assessment: Worksheet Memorandum/rubric	10	10
TOTAL		

Assessments

NAME:	OMITTED	FINAL MARK:	OMITTED
STUDEN		<i>H. H. =</i>	
CRITERIA		MARK ALLOCATED	
SECTION 1:			
MSWORD: Laboratory investigation of equipment			
Letter to principal: Fundraising plan Request permission Suggested budget		/10	
Donation letter		/5	
Quotations		/5	
Equipment inventory		/10	
SECTION 2:			29
MSPUBLISHER: Flyers			
Creativity	<i>Font too small; Incomplete text ✓ ✓ NO Date; Font size</i>	/10	3
SECTION 3:			
MSWORD AND MSPOWERPOINT: Lesson plans, Presentation & Show, Assessment			
Lesson Plan: Topic, (LO's, Assessment standards, Lesson outcomes), lesson structure	<i>page # (But neat)</i>	/10	7
Slide presentation: Embedded Video Appropriate pictures Enhancements	<i>Slide # Too much text (bullet)</i>	/10	5
Assessment: Worksheet Memorandum/rubric	<i>page # (But neat) ... Bullets</i>	/10	6
TOTAL			

Assessments

NAME:	FINAL MARK:	SURNAMES OF OTHER GROUP MEMBERS:
STUDENT ID: OMITTED	53 =	OMITTED
CRITERIA	MARK ALLOCATED	
SECTION 1:		
MSWORD: Laboratory investigation of equipment		
Letter to principal: Fundraising plan Request permission Suggested budget	Too informal. /10	
Donation letter	Lack of coherence /5	
Quotations	/5	
Equipment inventory	/10	
SECTION 2:		
MSPUBLISHER: Flyers		
Creativity	✓ /10	
SECTION 3:		
MSWORD AND MSPOWERPOINT: Lesson plans, Presentation & Show, Assessment		
Lesson Plan: Topic, (LO's, Assessment standards, Lesson outcomes), lesson structure	Page # /10	
Slide presentation: Embedded Video Appropriate pictures Enhancements	Slide # /10	
Assessment: Worksheet Memorandum/rubric	/10	
TOTAL	✓	

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19

10.

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Assessments

NAME:	FINAL MARK:	OTHER MEMBER
STUDEN: [OMITTED]	55 =	[OMITTED]
CRITERIA	MARK ALLOCATED	
SECTION 1:		
MSWORD: Laboratory investigation of equipment		
Letter to principal: Fundraising plan Request permission Suggested budget	/10	
Donation letter	/5	
Quotations	/5	
Equipment inventory	/10	
SECTION 2:		
MSPUBLISHER: Flyers		
Creativity	/10	25 10
SECTION 3:		
MSWORD AND MSPOWERPOINT: Lesson plans, Presentation & Show Assessment		
Lesson Plan: Topic, (LO's, Assessment standards, Lesson outcomes), lesson structure	/10	7
Slide presentation: Embedded Video Appropriate pictures Enhancements	/10	3
Assessment: Worksheet Memorandum/rubric	/10	10
TOTAL		

Assessments

NAME: (STUDENT)	FINAL MARK:	SURNAME OTHER MEMBER
OMITTED	53	OMITTED
CRITERIA	MARK ALLOCATED	
SECTION 1: MSWORD: Laboratory investigation of equipment		
Letter to principal: Fundraising plan Request permission Suggested budget	No date ✓ link in letter ✓ As income... ✓ /10	
Donation letter	/5	5
Quotations	/5	5
Equipment inventory	/10	5/10
SECTION 2: MSPUBLISHER: Flyers		
Creativity ✓ ✓	/10	10
SECTION 3: MSWORD AND MSPOWERPOINT: Lesson plans, Presentation & Show Assessment		
Lesson Plan: Topic, (LO's, Assessment standards, Lesson outcomes), lesson structure	Page # ✓ /10	7
Slide presentation: Embedded Video Appropriate pictures Enhancements	Slide #s ✓ /10	7
Assessment: Worksheet Memorandum/rubric	✓ /10	10
TOTAL		

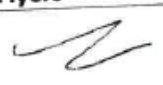
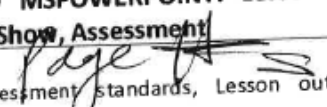


Assessments

NAME: Y	FINAL MARK:	SURNAMES OF OTHER GROUP MEMBERS:
STUDENT I	SS = .	OMITTED
CRITERIA	MARK ALLOCATED	
SECTION 1:		
MSWORD: Laboratory investigation of equipment		
Letter to principal: Fundraising plan Request permission Suggested budget	/10	
Donation letter	/5	
Quotations	/5	
Equipment inventory	/10	
SECTION 2:		
MSPUBLISHER: Flyers		
Creativity ✓ ✓ Small For ✓	/10	7.
SECTION 3:		
MSWORD AND MSPOWERPOINT: Lesson plans, Presentation & Show, Assessment		
Lesson Plan: Topic, (LO's, Assessment standards, Lesson outcomes), lesson structure	/10	10.
Slide presentation: Embedded Video Appropriate pictures Enhancements	/10	7
Assessment: Worksheet ✓ Memorandum/rubric ✓	/10	7.
TOTAL		

Assessments

NAME: STUDENT	FINAL MARK:	SURNAMES OF OTHER GROUP MEMBERS:
OMITTED	59 =	OMITTED
CRITERIA	MARK ALLOCATED	
SECTION 1: MSWORD: Laboratory investigation of equipment		
Letter to principal: Fundraising plan Request permission Suggested budget	/10	
Donation letter	/5	
Quotations	/5	
Equipment inventory	/10	
SECTION 2: MSPUBLISHER: Flyers		22
Creativity ✓	/10	10
SECTION 3: MSWORD AND MSPOWERPOINT: Lesson plans, Presentation & Show Assessment		
<u>Lesson Plan:</u> <i>page 4</i> Topic, (LO's, Assessment standards, Lesson outcomes), lesson structure	/10	7
<u>Slide presentation:</u> Embedded Video Appropriate pictures Enhancements ✓	/10	10
<u>Assessment:</u> Worksheet Memorandum/rubric ✓	/10	10
TOTAL		

Assessments

NAME: . STUDEN	FINAL MARK:	SURNAMES OF OTHER GROUP MEMBERS:
OMITTED	59 =	OMITTED
CRITERIA	MARK ALLOCATED	
SECTION 1: MSWORD: Laboratory investigation of equipment		
Letter to principal: Fundraising plan Request permission Suggested budget	/10	
Donation letter	/5	
Quotations	/5	
Equipment inventory	/10	22
SECTION 2: MSPUBLISHER: Flyers		
Creativity 	/10	10
SECTION 3: MSWORD AND MSPOWERPOINT: Lesson plans, Presentation & Show, Assessment		
Lesson Plan:  Topic, (LO's, Assessment standards, Lesson outcomes), lesson structure	/10	7
Slide presentation: Embedded Video Appropriate pictures  Enhancements	/10	10
Assessment: Worksheet  Memorandum/rubric	/10	10
TOTAL		

Assessments

NAME: / STUDEN	FINAL MARK:	SURNAMES / OTHER GRO / MEMBERS:
OMITTED	50 = .	OMITTED
CRITERIA	MARK ALLOCATED	
SECTION 1: MSWORD: Laboratory investigation of equipment		
Letter to principal: Fundraising plan Request permission <i>Sping</i> Suggested budget	/10	
Donation letter <i>✓</i>	/5	
Quotations <i>✓</i>	/5	
Equipment inventory <i>No formulae</i>	/10	
SECTION 2: MSPUBLISHER: Flyers		15
Creativity <i>✓✓</i>	/10	10
SECTION 3: MSWORD AND MSPOWERPOINT: Lesson plans, Presentation & Show, Assessment		
<u>Lesson Plan:</u> Topic, (LO's, Assessment standards, Lesson outcomes) lesson structure	/10	10.
<u>Slide presentation:</u> Embedded Video Appropriate pictures Enhancements <i>Slide / No slides</i>	/10	5
<u>Assessment:</u> Worksheet Memorandum/rubric	/10	10
TOTAL		

Assessments

NAME:	OMITTED	FINAL MARK:	52 =	OTHER GRP MEMBERS:	OMITTED
STUDENT		MARK ALLOCATED			
CRITERIA					
SECTION 1:					
MSWORD: Laboratory investigation of equipment					
Letter to principal: Fundraising plan Request permission Suggested budget	<i>No Budget</i>	/10		0	
Donation letter		/5		5	
Quotations	<i>No P nos.</i>	/5		2	
Equipment inventory	<i>✓</i>	/10		10	
SECTION 2:					
MSPUBLISHER: Flyers					
Creativity	<i>Font Small</i>	/10		7	
SECTION 3:					
MSWORD AND MSPOWERPOINT: Lesson plans, Presentation & Show, Assessment					
Lesson Plan: Topic, (LO's, Assessment standards, Lesson outcomes), lesson structure	<i>Page #</i>	/10		7	
Slide presentation: Embedded Video Appropriate pictures Enhancements	<i>Video not playing!</i>	/10		5	
Assessment: Worksheet Memorandum/rubric	<i>✓</i>	/10		10	
TOTAL				23	

Assessments

NAME:	OMITT	OMITTED	FINAL MARK:	SURNA OTHER MEMBER
STUDE:			32 =	OMITTED
			MARK ALLOCATED	
CRITERIA				
SECTION 1:				
MSWORD: Laboratory investigation of equipment				
Letter to principal: Fundraising plan Request permission Suggested budget			/10	17.
Donation letter			/5	
Quotations			/5	
Equipment inventory			/10	
SECTION 2:				
MSPUBLISHER: Flyers				
Creativity			/10	0
SECTION 3:				
MSWORD AND MSPOWERPOINT: Lesson plans, Presentation & Show, Assessment				
Lesson Plan: Topic, (LO's, Assessment standards, Lesson outcomes), lesson structure			/10	5
Slide presentation: Embedded Video Appropriate pictures Enhancements			/10) 10
Assessment: Worksheet Memorandum/rubric			/10	
TOTAL				

Assessments

NAME:	OMITT	FINAL MARK:	55 =	SURN/ OTHER MEMBE
STUDENT NUMBER:	OMITTED	MARK ALLOCATED		OMITTED
CRITERIA				
SECTION 1: MSWORD: Laboratory investigation of equipment				
Letter to principal: Fundraising plan Request permission Suggested budget	✓ ✓ ✓ → No Income.	/10		4.
Donation letter	✓	/5		5.
Quotations	✓ No date	/5		3
Equipment inventory	✓	/10		10
SECTION 2: MSPUBLISHER: Flyers				
Creativity	✓ Very good.	/10		7.
SECTION 3: MSWORD AND MSPOWERPOINT: Lesson plans, Presentation & Show, Assessment				
Lesson Plan: Topic, (LO's, Assessment standards, Lesson outcomes), lesson structure	✓ ✓	/10		7.
Slide presentation: Embedded video Appropriate pictures Enhancements	✓ ✓ ✓ ✓	/10		7
Assessment: Worksheet Memorandum/rubric	✓ ✓	/10		10
TOTAL				24

NAME:	OMITTED	FINAL MARK:	63 =	SURNAME OTHER MEMBER	OMITTED
STUDENT	18	CRITERIA	MARK ALLOCATED		
SECTION 1:					
MSWORD: Laboratory investigation of equipment					
Letter to principal:					
Fundraising plan					
Request permission	Justification, page # exchange.		/10		
Suggested budget	No formulas + functionality				
Donation letter	✓		/5	5	
Quotations	✓		/5	5	
Equipment inventory	✓		/10	10	
SECTION 2:					
MSPUBLISHER: Flyers					
Creativity	✓		/10	10	
SECTION 3:					
MSWORD AND MSPOWERPOINT: Lesson plans, Presentation & Show, Assessment					
Lesson Plan:	✓ page #				
Topic, (LO's, Assessment standards, Lesson outcomes), lesson structure			/10	7	
Slide presentation:					
Embedded Video	✓				
Appropriate pictures	✓		/10	10	
Enhancements	✓				
Assessment:					
Worksheet	✓				
Memorandum/rubric			/10	10	
TOTAL					

Packaging very good ✓✓

Assessments

NAME:	OMITTED	FINAL MARK:	58 =	SURNAMES (OTHER GROUP MEMBERS):	OMITTED
STUDENT:	4	CRITERIA	MARK ALLOCATED		
SECTION 1:		MSWORD: Laboratory investigation of equipment			
Letter to principal:	✓				
Fundraising plan	✓				
Request permission	✓		/10		
Suggested budget	✓				
Donation letter			/5		5
Quotations			/5		5
Equipment inventory	Detail,		/10		6
SECTION 2:		MSPUBLISHER: Flyers			
Creativity	Not clear		/10		7
SECTION 3:		MSWORD AND MSPOWERPOINT: Lesson plans, Presentation & Show, Assessment			
<u>Lesson Plan:</u>					
Topic, (LO's, Assessment standards, Lesson outcomes), lesson structure			/10		10
<u>Slide presentation:</u>					
Embedded Video					
Appropriate pictures			/10		5
Enhancements					
<u>Assessment:</u>					
Worksheet					
Memorandum/rubric			/10		10
TOTAL					

Assessments

NAME: ✓ STUDENT	OMITTED	FINAL MARK: 64 =	SURNAMES OF OTHER GROUP MEMBERS:
CRITERIA		MARK ALLOCATED	OMITTED
SECTION 1: MSWORD: Laboratory investigation of equipment			
Letter to principal: Fundraising plan Request permission Suggested budget	✓	/10	
Donation letter	✓	/5	
Quotations	✓	/5	
Equipment inventory	✓	/10	
SECTION 2: MSPUBLISHER: Flyers			30
Creativity <i>Cold Empty Spaces...</i>		/10	7
SECTION 3: MSWORD AND MSPOWERPOINT: Lesson plans, Presentation & Show, Assessment			
<u>Lesson Plan:</u> Topic, (LO's, Assessment standards, Lesson outcomes), lesson structure	✓	/10	10
<u>Slide presentation:</u> Embedded Video Appropriate pictures Enhancements <i>Slide</i>		/10	7
<u>Assessment:</u> Worksheet Memorandum/rubric ✓		/10	10
TOTAL			

Assessments

NAME:	OMITTED	FINAL MARK:	SURNAMES OF OTHER GROUP MEMBERS:
STUDENT NUMBER:	OMITTED	672	
CRITERIA		MARK ALLOCATED	OMITTED
SECTION 1:			
MSWORD: Laboratory investigation of equipment			
Letter to principal: Fundraising plan Request permission Suggested budget		/10	
Donation letter		/5	
Quotations		/5	
Equipment inventory		/10	
SECTION 2:			30
MSPUBLISHER: Flyers			
Creativity ✓✓		/10	10
SECTION 3:			
MSWORD AND MSPOWERPOINT: Lesson plans, Presentation & Show, Assessment			
<u>Lesson Plan:</u> Topic, (LO's, Assessment standards, Lesson outcomes), lesson structure	No page #s	/10	7
<u>Slide presentation:</u> Embedded Video Appropriate pictures Enhancements		/10	10
<u>Assessment:</u> Worksheet Memorandum/rubric		/10	10
TOTAL			

Assessments

NAME: STUDENT	FINAL MARK:	SURNAMES OF OTHER GROUP MEMBERS:
OMITTED	60 =	OMITTED
CRITERIA	MARK ALLOCATED	
SECTION 1: MSWORD: Laboratory investigation of equipment		
Letter to principal: Fundraising plan Request permission Suggested budget	/10	
Donation letter	/5	
Quotations	/5	
Equipment inventory	/10	<i>27</i>
SECTION 2: MSPUBLISHER: Flyers		
Creativity ✓ ✓	/10	10
SECTION 3: MSWORD AND MSPOWERPOINT: Lesson plans, Presentation & Show, Assessment		
<u>Lesson Plan:</u> <i>pages 115, Spelling 116, 117, 118</i> Topic, (LO's, Assessment standards, Lesson outcomes), lesson structure	/10	6.
<u>Slide presentation:</u> <i>Slide 115</i> Embedded Video Appropriate pictures Enhancements	/10	7.
<u>Assessment:</u> ✓ Worksheet Memorandum/rubric	/10	10
TOTAL		

Assessments

NAME:	OMITTED	FINAL MARK:		SURNAMES OF OTHER GROUP MEMBERS:
STUDENT NUMBER:	OMITTED	65 =		OMITTED
CRITERIA		MARK ALLOCATED		
SECTION 1:				
MSWORD: Laboratory investigation of equipment				
Letter to principal: Fundraising plan Request permission Suggested budget		/10		
Donation letter		/5		
Quotations		/5		
Equipment inventory		/10		
SECTION 2:				
MSPUBLISHER: Flyers				
Creativity ✓		/10		25 10
SECTION 3:				
MSWORD AND MSPOWERPOINT: Lesson plans, Presentation & Show, Assessment				
<u>Lesson Plan:</u> Topic, (LO's, Assessment standards, Lesson outcomes), lesson structure ✓		/10		10
<u>Slide presentation:</u> Embedded Video ✓ Appropriate pictures Enhancements		/10		10
<u>Assessment:</u> Worksheet ✓ Memorandum/rubric		/10		10
TOTAL				

Assessments

NAME: STUDENT	FINAL MARK:	SURNAMES OF OTHER GROUP MEMBERS:
OMITTED	40 =	OMITTED
CRITERIA	MARK ALLOCATED	
SECTION 1: MSWORD: Laboratory investigation of equipment		
Letter to principal: Fundraising plan Request permission Suggested budget	/10	
Donation letter	/5	
Quotations	/5	
Equipment inventory	/10	
SECTION 2: MSPUBLISHER: Flyers		
Creativity <i>True?</i>	/10	13
SECTION 3: MSWORD AND MSPOWERPOINT: Lesson plans, Presentation & Show, Assessment		
<u>Lesson Plan:</u> <i>Date, Page #</i> Topic, (LO's, Assessment standards, Lesson outcomes), lesson structure	/10	5
<u>Slide presentation:</u> <i>Slide #s</i> Embedded Video Appropriate pictures Enhancements <i>Animation</i>	/10	5
<u>Assessment:</u> Worksheet Memorandum/rubric	/10	10
TOTAL		

Assessments

NAME:	O	FINAL MARK:	53 =	SURNAMES OF OTHER GROUP MEMBERS:
STUDENT NUMBER:	OMITTED			OMITTED
CRITERIA		MARK ALLOCATED		
SECTION 1:				
MSWORD: Laboratory investigation of equipment				
Letter to principal: Fundraising plan Request permission Suggested budget		/10		
Donation letter		/5		
Quotations		/5		
Equipment inventory		/10		
SECTION 2:				19
MSPUBLISHER: Flyers				
Creativity ✓		/10		10
SECTION 3:				
MSWORD AND MSPOWERPOINT: Lesson plans, Presentation & Show, Assessment				
<u>Lesson Plan:</u> Topic, (LO's, Assessment standards, Lesson outcomes), lesson structure	Indentalis	/10		7
<u>Slide presentation:</u> Embedded Video Appropriate pictures Enhancements	Too much text/bullet/slide	/10		7
<u>Assessment:</u> Worksheet Memorandum/rubric	T	/10		10
TOTAL				

Assessments

NAME: STUDENT	FINAL MARK:	SURNAMES OF OTHER GROUP MEMBERS:
OMITTED	63 =	OMITTED
CRITERIA	MARK ALLOCATED	
SECTION 1: MSWORD: Laboratory investigation of equipment		
Letter to principal: Fundraising plan Request permission Suggested budget	/10	
Donation letter	/5	
Quotations	/5	
Equipment inventory	/10	
SECTION 2: MSPUBLISHER: Flyers		
Creativity <i>but size too small.</i>	/10	30.
SECTION 3: MSWORD AND MSPOWERPOINT: Lesson plans, Presentation & Show, Assessment		7.
Lesson Plan: Topic, (LO's, Assessment standards, Lesson outcomes), lesson structure	/10	10.
Slide presentation: Embedded Video Appropriate pictures Enhancements	/10	6.
Assessment: Worksheet Memorandum/rubric	/10	10
TOTAL		

Assessments

NAME: ^ STUDENT	FINAL MARK:	SURNAMES OF OTHER GROUP MEMBERS:
OMITTED	51 =	OMITTED
CRITERIA	MARK ALLOCATED	
SECTION 1: MSWORD: Laboratory investigation of equipment		
Letter to principal: Fundraising plan Request permission Suggested budget	/10	
Donation letter	/5	
Quotations	/5	
Equipment inventory	/10	24.
SECTION 2: MSPUBLISHER: Flyers		
Creativity <i>format ✓ ✓</i>	/10	7.
SECTION 3: MSWORD AND MSPOWERPOINT: Lesson plans, Presentation & Show Assessment		
Lesson Plan: <i>page # & line x</i> Topic, (LO's, Assessment standards, Lesson outcomes), lesson structure	/10	6.
Slide presentation: Embedded Video Appropriate pictures Enhancements <i>Slide #s with arrows</i>	/10	4.
Assessment: Worksheet Memorandum/rubric	/10	10
TOTAL		

Assessments

NAME:	FINAL MARK:	SURNAMES OF OTHER GROUP MEMBERS:
STUDENT: OMITTED	55 =	OMITTED
CRITERIA	MARK ALLOCATED	
SECTION 1:		
MSWORD: Laboratory investigation of equipment		
Letter to principal: Fundraising plan Request permission Suggested budget	/10	
Donation letter	/5	
Quotations	/5	
Equipment inventory	/10	
SECTION 2:		
MSPUBLISHER: Flyers		
Creativity ✓ ✓	/10	
SECTION 3:		
MSWORD AND MSPOWERPOINT: Lesson plans, Presentation & Show, Assessment		
<u>Lesson Plan:</u> Topic, (LO's, Assessment standards, Lesson outcomes), lesson structure	/10	
<u>Slide presentation</u> Embedded Video Appropriate pictures Enhancements	/10	
<u>Assessment:</u> Worksheet Memorandum/rubric	/10	
TOTAL		

24

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Assessments

NAME: Fr	OMITTED	FINAL MARK:	SURNAMES OF OTHER GROUP MEMBERS:
STUDENT N	OMITTED	50 =	OMITTED
CRITERIA	MARK ALLOCATED		
SECTION 1:			
MSWORD: Laboratory investigation of equipment			
Letter to principal: Fundraising plan Request permission - No date. Suggested budget → No income; Making formulae of functions ✓	/10		6
Donation letter ✓	/5		5.
Quotations ✓ In WORDS...	/5		3
Equipment inventory ✓	/10		10
			24.
SECTION 2:			
MSPUBLISHER: Flyers			
Creativity ✓ Font size;	/10		7.
SECTION 3:			
MSWORD AND MSPOWERPOINT: Lesson plans, Presentation & Show, Assessment			
<u>Lesson Plan:</u> Topic, (LO's, Assessment standards, Lesson outcomes), lesson structure	/10		10.
<u>Slide presentation:</u> Embedded Video Appropriate pictures Enhancements	/10		7.
<u>Assessment:</u> Worksheet Memorandum/rubric	/10		10
TOTAL			

Assessments

NAME: STUDEN	FINAL MARK:	SURNAMES OF OTHER GROUP MEMBERS:
OMITTED	56 =	OMITTED
CRITERIA	MARK ALLOCATED	
SECTION 1: MSWORD: Laboratory investigation of equipment		
Letter to principal: Fundraising plan Request permission Suggested budget	/10	
Donation letter	/5	
Quotations	/5	
Equipment inventory	/10	
SECTION 2: MSPUBLISHER: Flyers		
Creativity ✓ ✓	/10	10
SECTION 3: MSWORD AND MSPOWERPOINT: Lesson plans, Presentation & Show, Assessment		
Lesson Plan: Topic, (LO's, Assessment standards, Lesson outcomes), lesson structure	/10	7
Slide presentation: Embedded Video Appropriate pictures Enhancements	/10	4
Assessment: Worksheet Memorandum/rubric	/10	10
TOTAL		25