Using clickers in an isiXhosa Communication Course: A case study on implementation of Interactive Student Response Systems (clickers) for learning isiXhosa as an Additional Language in Higher Education clinical settings

Linda Mhlabeni

MHLLIN020

A mini dissertation submitted in partial fulfilment of the requirements for the award of the degree of Master in Education (Applied Linguistics)

Faculty of Humanities

University of Cape Town

2017

Supervisor: Associate Professor Lucia Thesen

Plagiarism Declaration

I know that plagiarism is wrong. Plagiarism is to use another's work and pretend that it is one's own. Each significant contribution to, and quotation in this thesis, from the work of other people has been attributed and has been cited and referenced. I have not allowed, and will not allow anyone to copy my work with the intention of passing it off as his or her own.

Signed by candidate

Signature: _____ Date: _____

Dedication

I would like to dedicate this dissertation to my Heavenly Father for showing me that there is always a way even when it seems there is none. Completion of this work is also My Father in Heaven's confirmation that with Him, a delay is not a denial!

Acknowledgements

I would like to acknowledge the remarkable support I received from various key role-players without whom I would not have completed this dissertation. Without my supervisor's assistance, my ancestors' unseen aid, my family's urging as well as caring acquaintances, this scholarly work would not have reached completion. My supervisor's expert guidance and patience kept me going during the most difficult times of writing this mini thesis. I will always be grateful for her contribution in enhancing my writing skills by instilling in me a good sense of perceiving myself as a researcher. Celia Walter's writing mentorship added value to how I am expected to express the flow of my views on paper as a scholar. I wish to acknowledge all the students who have participated in this study and given consent for me to use their contributions I collected during observations, their questionnaires and focus group interviews.

My acknowledgements would not be complete if I would not recognise the kind assistance I received from the UCT Research Commons, particularly for the technical support Rosemary Ononaiwu rendered to me. Ingrid Thomson's assistance and advice was valuable during the final completion of this academic endeavour, my sincere gratitude goes to her too. Ann Law's copy editorial skills added tremendous value to this dissertation as a professional piece of work. My gratitude knows no bounds for her skilful contribution.

Abstract

In multilingual countries, proficiency in more than one language can benefit individuals and society. For this reason, many universities, especially those with medical faculties, promote the learning of additional languages. Stellenbosch University's Faculty of Medicine and Health Sciences (SUFMHS) offers an isiXhosa Clinical Communication (XCC) course as part of some undergraduate courses. This study explores the use of clickers, a student response system (SRS). The study aims to answer the following research questions: How do students engage with the Student Response System (clickers) in an isiXhosa Clinical Communication course in Higher Education settings? This core question is followed by this subsidiary research question: To what extent can the use of clickers enhance students' clinical communicative competence in isiXhosa as a second additional language? The participants were 51 female first year Occupational Therapy (OT) students. They answered multiple choice questions (MCQs) using their mobile phones as clickers as a formative assessment procedure. The researcher observed the students from the moment they started answering the MCQs until the post-test classroom discussions had ended. The students' MCQ responses were polled and then displayed in the form of histograms. Additional data were collected by means of a post-intervention questionnaire, from focus group discussions and with informal staff interviews. The immediate feedback seemed to enhance content consolidation, student self-assessment and constructive peer comparison. For these reasons the study found that the use of clickers could enhance student-lecturer and student-student engagement. An important additional finding is that the use of students' personal mobile devices, rather than commercial clickers, contributed to the success of the intervention. It does seem though that, in order to be used maximally, clickers should be incorporated in the teaching pedagogy from the onset, rather than being primarily utilised as a resource to enhance teaching interventions.

Key words:

Classroom engagement, clickers, student response system (SRS), isiXhosa Clinical Communication (XCC) course, clinical communicative competence, clinical settings

Abbreviations and Acronyms

ACC	Afrikaans Clinical Communication course
FMHS	Faculty of Medicine and Health Sciences
HN	Human Nutrition (Dietetics)
L1	First or primary language
L2	Second language
L3	Third language
LC	Language Centre
MCQs	Multiple Choice Questions
OT	Occupational Therapy
SAL	Second Additional Language
S-LHT	Speech-Language & Hearing Therapy
SU	Stellenbosch University
SUFMHS	Stellenbosch University Faculty of Medicine and Health Sciences
XCC	isiXhosa Clinical Communication course
XML	Extensible Mark-up Language
WebCT	Blackboard Learning System, now owned by Blackboard, is an online proprietary virtual learning environment system that is licenced to colleges and other institutions and used in many campuses for e-Learning.

List of figures

List of tables

Table of Contents

Chapter 1: Introduction

1.1 Context to the study

This thesis is about teaching and learning clinical communication in the medical faculty of a prestigious, historically white, Afrikaans medium university in the Western Cape, South Africa. Internationally, clinical communication was not taught to previous generations of clinical practitioners until the 1990s. This followed recognition that failure of communication was a major factor in adverse clinical events and poor patient outcomes (Thistlethwaite & Morris, 2006). This shortcoming has led to the widespread implementation of measures to address the communication challenges experienced among health professionals and patients. In South Africa, which is a richly multilingual society, this challenge has also been taken up.

The important concept of multilingualism is closely linked to communication, including in clinical settings. While it is not a new phenomenon, nowadays it requires deeper investigation and exploration which relates to the unique dynamics of the current moment. One of the challenges is how to define it:

> […] multilingualism is the ability to use three or more languages to some extent, whether these are in the same or different domains. However, defining the term 'multilingual' for any context is problematic, in that each definition is based on the resolution of some interrelated debates which are still active, where researchers' decisions may not be made explicit, and where the decisions affect how the definition is applied to individuals' situation (Kemp, 2009: 16).

An often overlooked reality is that multilingualism is the norm, rather than the exception, with three-quarters of the world's population using at least two languages (Crystal, 2011). There is thus a growing view that proficiency in more than one language seems to benefit not only individuals and selected sectors of a country, but also the country as a whole. This is reflected in the language provisions in the South African Constitution (2006) which recognises eleven official languages[1] in order to address the country's language inadequacies, including those of clinical communication and a myriad of inconsistencies from the pre-constitutional

[1] It also recognises Sign language and Khilovedu (Northern Sotho dialect presently under review)

democracy era. Although multilingualism is the global norm, there is great resistance to this, with the myth of monolingualism prevailing, particularly in nations with a recent colonial past (Crystal, 2011; Heugh, 2012).

The importance of multilingualism is increased by globalisation and the growing movement of 'people, products, services and capital'(Marx et al, 2007: 49). This strengthens multilingualism in everyday contact, foregrounding cross-cultural communication as a crucial part of social and economic life. For South Africans there is greater freedom of movement from rural roots to the urban spaces they would not have ventured into in the past because of the constraints on movement under apartheid (Crawford, 1999). Because of this movement the obligation for clinicians and medical practitioners to have basic proficiency in at least three or more languages has become an essential requirement.

Despite the attention given to multilingualism in clinical contexts, the communication problems experienced between healthcare professionals and patients in South Africa are still a challenge to the delivery of quality healthcare (Crawford, 1999; Levin, 2006; Killian et al, 2010).

The former South African president, the late Nelson Rholihlahla Mandela, is frequently quoted in educational settings. The global icon's words could not have expressed the importance of multilingualism better:

> If you talk to a man in a language he understands, that goes to his head. If you talk to him in his language, that goes to his heart (Nelson Mandela).

The importance of this point is borne out in fields of studies such as medicine and health sciences. Some of the challenges can be detected when medical and clinical practitioners take patients' case histories and the language barrier prevents meaningful communication; serious consequences could result as the wrong diagnosis could be made and, subsequently, incorrect treatment could be administered (Angus et al, 2012).

Writing from a United Kingdom perspective, Thistlethwaite & Morris (2006) particularly highlight the context in which the consultations happen as important. They recognise that

patients are diverse in a number of aspects such as behaviour and attitudes, age, gender, ethnicity and social background. The socio-economic and socio-historical contextual factors are generally embedded in the factors that become explicit during clinical consultations. Most of these attributes and hidden aspects are discovered through the clinical communication involving the clinical practitioner and the patient. Knowing the patient's language would make these aspects more distinct; be beneficial to the patient and foster dignity.

Addressing this language predicament has increasingly become a necessity for institutions of higher learning as producers of knowledge. A number of universities that host Medical and Health Sciences Faculties have undertaken the task of promoting additional language learning to enhance quality healthcare.

1.2 Institutional background to the study

With regard to the multilingual context discussed above, the site of this study, Stellenbosch University, embraces multilingualism in its language policy:

> The Policy aims to increase equitable access to SU for all students and staff and to facilitate pedagogically sound teaching and learning. Since our campuses are situated in the Western Cape, we commit ourselves to multilingualism by using the province's three official languages, namely Afrikaans, English and isiXhosa (Language Policy of Stellenbosch University, 2016: 2).

In an attempt to comply with the university's policy and to ensure quality of healthcare through the services of the medical practitioners and clinicians the Faculty of Medicine and Health Science (SUFMHS) offers an isiXhosa Clinical Communication (XCC) course simultaneously with an Afrikaans Clinical Communication (ACC) course to most undergraduate programmes. The Language Centre (LC) is at the helm of this initiative in order to equip predominantly isiXhosa speaking students with Afrikaans clinical linguistic skills, and Afrikaans and English speaking students with isiXhosa clinical competences. These courses do not only aim at improving clinicians' communication skills, but also at increasing cultural awareness.

In an editorial in the *African Journal of Health Professions Education* (AJHPE) Burch expresses that the importance of language learning should outweigh that of cultural competence. She seems to lament the fact that cultural competence and related concepts such as 'cultural

awareness', 'cultural sensitivity', 'cultural diversity' and 'cultural humility' seem to receive more attention than language learning while the healthcare client has a need to be 'heard and understood' (Burch, 2016: 3). It is in response to this need for the patient to be 'heard' that the XCC course intends to equip health professionals with the appropriate communication skills to enable them to communicate meaningfully and intelligibly in isiXhosa with patients who are not fluent in English or Afrikaans, while acknowledging cultural awareness and sensitivity.

Tyam (2016: 11), in her study of teaching and learning in an isiXhosa communicative language skills course in a medical school, endorses Hayden and Lumma's argument (2007) about the importance of the development of communicative language competences and the imparting of societal values, such as cultural awareness. However, this is not without its challenges, as Lumma-Sellenthin's (2009) study of medical students' predicaments with learning communication competences when conducting patients' interviews suggests.

To compound matters, isiXhosa is regarded as a difficult language to learn. Kese highlights some of the reasons in her article about isiXhosa as a second additional language (SAL) at SU. In order to ensure relevance in imparting language competence in the isiXhosa Communication module for 3rd year students who intend to be primary or secondary school teachers, she made a concerted effort to reflect on her experiences, and those of the students of the course. She recognised the difference between 'the isiXhosa linguistic structure' and her students' 'language repertoire' (2012: 92). The students' anxieties about these perceived and actual linguistic differences were also of concern to her.

Tyam, at the University of Cape Town, also highlights the challenges of teaching isiXhosa in clinical settings:

> In combination with a perceived lack of motivation to learn isiXhosa from the students, it is a challenge to integrate the teaching of isiXhosa into the clinical skills course component, and it is difficult to measure the real-life effectiveness of such courses (2016: 16).

Besides these pedagogical and curriculum difficulties for faculties of Medicine and Health Sciences to accommodate isiXhosa in their overloaded curricula, limited exposure to isiXhosa poses another challenge. Students may experience emotional difficulties when their isiXhosa

production of the complex word structures does not meet the standard they expect after considerable exposure to the language. Kese regards the root of this problem as the difference in the students' 'language repertoire' (2012: 92). Students become reluctant to practise communicating in isiXhosa because they become self-conscious when they make mistakes. I have discovered this reluctance through my occasional encounters with students as the course developer and co-ordinator of their complementary e-Lessons, as an experienced teacher, as this study's primary investigator and as the person to whom they come when they encounter technical challenges. The same narrative is usually part of the conversations where colleagues speak anecdotally of the students' attitudes towards voluntary isiXhosa clinician-patient communication.

1.3 XCC course

At SU the XCC course is taught as a second additional language embedded in the students' practical module. The conditions of the course make it compulsory for students to pass it in order to proceed to the next year of study. The structural design of the course obliges students to take its lecture attendance, on-line complementary learning interventions and assessments seriously.

This study is located in the XCC course which first year occupational therapy (OT) students were required to take in 2013. In this thesis, I aim to explore whether the students' basic clinical communicative competence in isiXhosa can be enhanced if classroom engagement during conventional classes is augmented by introducing mobile devices in the form of the student response system (SRS), commonly known as clickers.

The language situation is complex. Undergraduate clinicians enrolled for XCC are usually first language speakers of Afrikaans or English, the languages of learning at higher education institutions. The XCC course, like other module courses in the faculty, is presented in English, which is also the lingua franca for lecturers, who mainly have isiXhosa as their first language. Besides Afrikaans and English speakers, there are seSotho, seTswana and isiZulu speaking students who also need to be linguistically empowered with skills to deal with patients who are monolingual isiXhosa speakers. IsiXhosa first language speakers are equipped to deal with Afrikaans monolingual patients by being taught Afrikaans Clinical Communication (ACC)

course. It is most likely due to the students' varied first language dynamics that Heugh et al anticipated that future students 'will become less linguistically homogenous' (1995: 104).

In an attempt to simplify the language complexity of this study and thereby place the XCC students' linguistic repertoire into context, I contemplated three scholarly assertions around language acquisition and learning. Firstly, I considered Gee's distinction of two broad sorts of Discourses, namely, primary and secondary Discourses. He defines the first notion as follows:

> Primary Discourses are those to which people are apprenticed early in life during their primary socialization as members of particular families within their sociocultural settings. Primary Discourses constitute our first social identity, and something of a base within which we acquire or resist later Discourses.

In contrast, Secondary Discourses are:

> […] those to which people are apprenticed as part of their socializations within various local, state and national groups and institutions outside early home and peer-group and socialization – for example, churches, schools, gangs, offices. They constitute the recognisability and meaningfulness of our 'public' (more formal) acts (1996: 137).

On the basis of these definitions, most of the XCC students' primary discourses would be linked to Afrikaans, with a minority for whom English or seSotho, seTswana and isiZulu is part of their first social identity. They would be apprenticed into secondary discourses via the languages they learn at school. Here English is dominant.

The second assertion I considered is Krashen's (1982) notion of acquisition and learning which Gee (1996), as will be explained in chapter 2, draws on to tell us more about primary and secondary discourses. He draws an analogy between coming to know a Discourse, and coming to know a language.

> *Acquisition* is a process of acquiring something (usually, subconsciously) by exposure to models, a process of trial and error, and practice within social groups, without formal teaching (Pinker, 1989; 1994 in Gee, 1996).

This takes place naturally, while on the other hand:

> *Learning* is a process that involves conscious knowledge gained through teaching […] or through certain life-experiences that trigger conscious reflection. This teaching and reflection involves explanation and analysis, that is, breaking down the thing to be learned into its analytical parts. It inherently involves attaining, along with the matter being taught, some degree of meta-knowledge about the matter (1996: 138).

While XCC students typically *acquire* and internalise their primary languages (mainly Afrikaans and English) they would *learn* isiXhosa. Because of the changing multilingual landscape, there are debates about how to name the various languages students 'pick up', whether through learning or acquisition. This study acknowledges the claim of concepts first language (L1) and second language (L2) that implies a sequential model of language learning and thus makes reference to 'the order of acquisition' (Bylund & Oostendorp, 2014: 257). However, it also recognises contemporary multilingual environments where people typically acquire multiple languages at the same time.

In this study, isiXhosa is regarded as a second additional language (SAL) because students are already proficient in Afrikaans and English or another African language. The term SAL is also used in language policy for schools. It doesn't specify which language came first. Against this background of linguistic complexity, the present study intended to enhance the learning of isiXhosa as a second additional language by introducing clickers, mobile devices, which are used to engage students. Clickers were implemented as part of regular weekly lectures in the XCC course class groups. Based on my knowledge of the course and its pedagogy, the routine classroom teaching that took place for 90 minutes each week was fairly interactive. However, it was characterised by questions from the more vocal students, while the rest of the students would occasionally agree with comments of the more outspoken students or add their sentiments to the views under discussion.

1.4 Background to the research question

In this section, I explain the typical XCC class interaction and my role in the research. Additionally, I give a brief background around how the research question changed from a focus on 'classroom interaction' to that on 'classroom engagement.'

A typical class went as follows: The lecturers would commence the new lesson with revision of the previous one, building on the students' prior knowledge. Teaching and learning interactions would usually take the form of an initiation-response-evaluation (IRE) sequence (Neal, 2008). Questions and responses would be based on the main themes of the previous lesson. The main student engagement would be prompted by the lecturer's questions, and the students would then respond to the prompts. This question-and-answer session would be consolidated in a summary of the students' responses and often in the form of a simulated clinical consultation and then new concepts would be introduced. Students were also expected to practise the dialogues they learnt in class in pairs. Occasionally, a student would ask a question or two about the challenges she had experienced at home or during class teaching and the lecturer would briefly respond. The student engagement was thus mainly initiated by the lecturers. The clickers were meant to be an intervention to change the lecturer-student engagement status quo during class teaching. Besides being an enabler, the introduction of clicker technology was also meant to assist the lecturers to bring variation to the predictable teaching approach.

My normal role is that of an e-Learning Course Developer and co-ordinator of the on-line activities of the XCC course. I am an experienced teacher, although I do not teach the course. However, I form part of the team that develops the subject content and, together with my colleagues who lecture the XCC course, I visit clinical sites to acquire and verify subject content specific to the different contexts of the fields of study such as occupational therapy. Due to the technological component of my normal role, I was also responsible for resolving possible technological glitches during the course of data collection. When I was not actively playing this role and that of being the primary investigator of the study I was an observer in this study.

As mentioned earlier, the purpose of the clickers was partially to break the classroom interaction norm. Clickers seemed to offer an alternative to the lecturers opting to start the engagement through question-and-answer method, explanations of seemingly difficult sentence structural changes, clarifications and unravelling of perceived complex concepts. Instead content related questions, discussions and comments were meant to be initiated by

students, having been prompted by histograms, the virtual medium that is a result of using their personal devices.

The experience of the pilot study with Speech-Language and Hearing Therapy (S-LHT) students had given me a sense of this anticipated students-lecturer interaction scenario. What transpired during the data collection went beyond the verbal classroom interaction I had anticipated. The students started to engage with the mobile clickers from the time they responded to clicker questions. I found the manner in which they effortlessly manipulated their devices interesting. When they viewed their results, they smiled and their eyes lit up showing their excitement. The classroom atmosphere was transformed into a lively space where students exchanged gazes, murmurs and whispers.

The term 'classroom interaction' did not adequately capture the classroom connection with all the extra verbal and non-verbal dynamics present. In order to acknowledge all the dynamics – from the engaged use of mobile clickers to the climax of the students' reactions and post-clicker discussions of the histogram displays – my research question changed from 'students' interaction' to 'student engagement.'

So, initially I had used the term 'interaction' as I was interested in the students-lecturer verbal behaviour. However, during the data gathering period the actual exchanges among the students and between students and lecturer went beyond the expected spoken words. Classroom engagement seemed to encompass communication that included non-verbal cues and students' emotions towards the clicker devices. The visible effect of the histogram displays on students as well as how they actively shared their views contributed towards a lively classroom atmosphere and experience.

This background is given because, as will be seen in chapters 3 and 4, some of the question statements in the questionnaire use the term 'interaction' and not 'engagement.'

1.5 Research questions

In order to address the classroom dynamics that were shown by what I saw as student engagement I posed the following main research question:

- How do students engage with the Student Response System (clickers) in an isiXhosa Clinical Communication course in Higher Education settings?

This core question is followed by the following subsidiary research question:

- To what extent can the use of clickers enhance students' clinical communicative competence in isiXhosa as a second additional language?

1.6 Rationale for the study

At the most practical level, there is a need for studies which explore experiences of incorporating digital technologies such as clickers in health sciences classrooms. The novelty of clickers could give the classroom teaching and learning space an interesting and contemporary dimension that could capture the students' interest. This attentiveness in class might be easily transferred to the language content learning the students should master in order to be more effective and relevant in the multilingual settings of their health professions. Also, in this way, the reported challenges of teaching isiXhosa to Afrikaans or English first language speakers for both conversational and for clinical purposes could be minimised (Kese, 2012; Tyam, 2016).

Furthermore, this study acknowledges Cain & Robinson's (2008) argument that clickers are gaining popularity because they are seen to promote engagement and assist with assessment and gathering of feedback (Cain & Robinson, 2008: 1). They also seem to facilitate the assessment of the students' understanding of content concepts. The popularity of clicker technology has, again, increased with the traditional devices, that is, conventional hand-held clicker devices being replaced by smart phones. The integration of clickers in the conventional classroom also appears to serve the purpose of making the teaching and learning experience for the students interesting. Since this technology seems likely to accord with the students' 'digital culture', I have used this aspect to enhance this thesis.

At a deeper level, this work has the potential to help contribute meaningfully to the contemporary students' ability to enhance communication that would not only improve healthcare but also enrich human relations in professional spaces. Improved language skills could facilitate communication with patients and this could help enhance the image of the

health profession; this in turn, might assist health professionals to cope better with the demands of their work.

The understandings from this research could potentially help restore dignity to patients who cannot afford private healthcare services and thus are solely dependent on services rendered at public healthcare facilities. They would no longer have to communicate their illnesses through interpreters who are sometimes ill-equipped to act as agents on behalf of patients to health professionals and clinicians (Killian et al, 2010; Crawford, 1999). Thus, this work could also assist in maintaining the health care practitioner-patient relationship and confidentiality.

The importance for enhancing multilingualism for health practitioners is also emphasised in Levin's (2006) powerful Cape Town-based study on barriers to healthcare for children. He points out that 'Language and cultural barriers were cited by more parents as a major barrier to healthcare than structural and socioeconomic barriers' (1076). This study concurs with Killian et al (2010) on problems with poorly skilled interpreters, and Crawford (1999) whose research was conducted nearly two decades ago in two academic hospitals and three township-based day hospitals. Her area of interest was:

> […] the problem caused by doctors by being linguistically unequipped to care for Xhosa speaking patients, whose numbers continue to grow rapidly as people move to town from rural areas (Crawford, 1999: 27).

This concerned her because isiXhosa was one of the main languages spoken in the Western Cape at the time, besides Afrikaans and English as the official languages. It appears that there have been no significant changes in the language use in the Western Cape Province since Crawford's (1999) study. IsiXhosa remains one of the dominant languages in the Western Cape while healthcare practitioners remain 'linguistically unequipped' to deliver health services to patients whose first language is isiXhosa in their own language.

The three studies (Crawford, 1999; Levin, 2006; Killian et al, 2010), support my view that the ideal is for the health care practitioners is to acquire acceptable basic competence in isiXhosa for professional purposes as a second additional language. In this study, I intend to address the

language predicament of interdisciplinary health sciences students, practitioners and doctors. It is hoped that this study will help to understand the possibilities for using contemporary technologies to enhance potential clinicians' skills in this crucial area.

1.7 Outline of the document

In chapter 2 I will introduce scholarship about e-Learning and clickers. The benefits, disadvantages and cautions of clickers will be discussed. The effect of clickers on student engagement is of particular interest in this study. The main focus is on clickers, their recent use, and how they relate to language acquisition and learning.

This chapter concludes with a brief discussion of the three main concepts that form the theoretical framing of this study, namely, student engagement, formative feedback and clinical communicative competence.

Chapter 3 will focus on methodology. I will argue why the case study was chosen, and how I employed qualitative research methods as a means of understanding the students' experiences during and after clicker engagement. A post-intervention students' questionnaire, staff interviews and focus group interviews are introduced. Observations and how histograms seemed to prompt student engagement also form part of data collection methods.

The focus of chapter 4 will be data analysis and interpretation. The data are introduced and analysed using the theoretical framework introduced in chapter 2. Chapter 5 highlights the case I make that clickers – or rather personal mobile devices (PMDs) (since I opted to use students' smart phones rather than conventional hand-held clicker devices) – did enhance engagement, particularly because of their alignment to the students' digital culture. These contemporary students prompted considerably more engagement with their devices than initially anticipated.

This study's research findings summarise insights into the relationship between clickers and student engagement and suggest other ways that clickers can be broadly used in language learning classrooms. It includes reflections on the research process that PMDs should be incorporated into the classroom pedagogy rather than in the periphery of classroom teaching.

Chapter 2: Literature review and conceptual framework

My research study is an exploratory case study that aims to investigate whether clickers can be used as a way of enhancing student engagement in an African Language teaching and learning clinical setting in preparation for professional authentic settings. The XCC course that is offered at Stellenbosch University provided me with the African Language teaching and learning milieu I required for the study. This course aims, inter alia, to advance the use of an indigenous language in South Africa's health care sector while promoting quality patient-centred care.

Clickers as a tool used to enhance the linguistic skills of the participants of this study are not new in the teaching and learning domain. Kay & LeSage (2009) suggest that they were first used in the classroom in 1966 in the US. Since then, much empirical research has focused on their use in educational settings to assess the benefits of their use (Caldwell, 2007). Clickers were originally hand-held remote-controlled devices provided by the institution or purchased by students (Wood, 2004). Since their advent mobile smart phones have also been used as clickers. I will explore classroom use of mobile clickers and their possibilities in promoting student engagement in the XCC course.

For the purposes of this study clicker technology in the classroom, whether it is in the form of smart phones or conventional hand-held clicker devices, falls within the field of e-Learning.

2.1 The e-Learning field

I have selected two definitions that I regard as representing the understanding of e-Learning from 2000 to 2016. Firstly, I present the following definition by Meyen et al:

> E-Learning is the acquisition and use of knowledge […] which is distributed and facilitated primarily by electronic means. This form of learning currently depends on networks and computers but will likely evolve into systems consisting of a variety of channels (e.g. wireless, satellite), and technologies (e.g. cellular phones, PDAs[2]) as they are developed and adopted

[2] PDA: A personal digital assistant (PDA) is a portable device that functions as a personal information manager. PDAs are used for Web browsing, office applications, watching videos, viewing photos or as mobile phones. https://www.techopedia.com/definition/4619/personal-digital-assistant-pda

> E-Learning can take the form of courses as well as modules and smaller learning objects (2002: 7).

This relatively early definition focuses more on the technology, which is acknowledged, and is envisaged to evolve over time. Garrison's later definition focuses on the digital and coincidental educational communication that is aimed at knowledge acquisition and invention:

> E-Learning is formally defined as electronically mediated asynchronous and synchronous communication for the purpose of constructing and confirming knowledge (2011: 2).

Institutions of higher learning are often perceived as sites of innovation in teaching methodologies, and thus use the latest developments in the contemporary classroom. Through e-Learning, it is implied that teaching and learning quality is enhanced.

These definitions recognise that e-Learning as a new paradigm is evolving and also suggest that educational innovation inevitably involves a technology which can be understood in a variety of ways. Technology in this study should be viewed in the context of educational technology where a resource was used to facilitate learning with the aim of improving learning outcomes.

Against this background, I understand e-Learning in the context of this study as follows: the new paradigm of the 21st century resonates with the students' digital culture by utilising the student response system (clickers) to acquire knowledge as well as skills and competencies to yield quality outcomes. It is a concept that encompasses a variety of technological devices and media that are increasingly being used in the educational arena to enhance teaching and learning in its varied forms.

2.2 Origin of clickers

There seems to be a strong association between clickers as engagement-enhancing devices and the audience response system on the television game show, 'Who wants to be a millionaire?'(Caldwell, 2007; Cardoso, 2011). Members of the audience used clickers to help contestants answer questions. This association with a game is believed to enhance a sense of fun that comes with the innovation.

According to Kay and LeSage (2009) clickers were first introduced in 1966 at Stanford University. At the time, they were not user-friendly, they did not work well technically and they were difficult to manipulate and, most importantly, their cost was prohibitive. Until 1999 the cost deterred the adoption of clickers in schools. However, by 2003 they were being used extensively in secondary schools, colleges and institutions of higher learning because their interactivity and immediacy appealed to educationists.

Presently, the cost of a hand-held clicker is R700 per unit at a major supplier in Cape Town, despite their offer of discount rates for educational use. Considering the normal class sizes in higher education, and the current environment of financial austerity, affordability of these devices would still pose a problem.

2.3 Alternative names for clickers

Clickers are a type of electronic technology that is used in different ways, in a number of different environments. They are referred to using a variety of names. In education settings they are often allocated names according to how they are used, the purpose of use in a particular classroom context or field of study and also how students are expected to use them to gain certain insights from them. Kay & LeSage (2009: 820) have identified 26 different names for clickers. Here are some examples: student response system (SRS), classroom response system (CRS), audience response system (ARS), classroom communication system (CCS), voting machine and clicker system (Beatty & Gerace, 2009: 146). Since 'clickers' is a commonly used term with a colloquial sound that suggests the physical action required across the devices this study will also adopt this term, also to acknowledge the 'click language,' isiXhosa, that is the focus of this research work.

2.4 Definitions of clickers

The definition that is proposed by Premkumar & Coupal also refers to clickers in a variety of ways:

> Student response system (SRS), personal response system, classroom communication system, audience voting system, clickers or electronic voting system all describe an electronic application where a receiver located in the instructor's computer captures responses to questions from student keypads in response to the questions posed by the instructor. SRS can be used in various situations – such as in conferences and committee meetings where

members vote anonymously, in small or large classes to poll, start a discussion or conduct an assessment (2008: 146).

In this definition, different names are followed by a description of how clickers process the students' responses while indicating the different situations where clickers can be used.

Salemi (2009) also describes how this technology is used to capture and record students' responses during class teaching, elaborating on the procedure followed by students and the facility to collate and store the collected data to be retrieved when required. This is relevant for my study, as explained in chapter 1, where I introduce the importance of the colourful histograms used to display students' data.

Kay & LeSage (2009: 819) refer to clickers as 'audience response systems (ARSs) [which] permit students to answer electronically displayed multiple choice questions using a remote control device. All responses are instantly presented, in a chart form, then reviewed and discussed by the instructor and the class.' They emphasise the way clickers 'facilitate instant polling of results and consequent presentation' as a chart to the 'audience.'

In summary, I see clickers as technologically mediated devices which allow students to answer mainly MCQs online; where the students' responses are polled; the detailed data is instantaneously displayed as a visually appealing chart and the data can be stored for later use. The graphic displays are seen as prompts for students-lecturer, lecturer-students and student-student engagement.

2.5 Benefits of clickers

The literature is overwhelmingly positive about the introduction of clickers in different subject areas, particularly for developing a sense of classroom participation. I will begin with the main benefits claimed in the scholarship, before exploring some of the criticisms, limitations and gaps – particularly with regard to learning an additional language.

2.5.1 Increased participation

When students are engaged in a 'game show,' their attention span seems to increase. This is probably because when the show is 'in action' they perceive the classroom as a fun place. The pedagogical advantage is that they seem to retain the subject content longer, presumably because of the association of the classroom engagement with the 'game show.'

Jones et al reported on a pre-test and post intervention survey of a group of students who had used clickers. They note that: 'Most students responded favourably to voting with clickers and felt that it improved their participation during lectures and enhanced their learning' (2009: 3).

This sense of clickers as changing the way the classroom is framed, mixing 'education' with 'gaming,' is supported in a great deal of literature (Agbatogun, 2014; Caldwell, 2007; Cardoso, 2011).

Besides changing the structure of the classroom, interactivity is generally highlighted as an important positive outcome of clicker use in the classroom (Caldwell, 2007; Cardoso, 2007). DeBourgh seems to suggest that 'strategic instructional design' can lead to a host of other benefits besides increased classroom participation:

> When used by faculty in a strategic instructional design, clickers can raise the level of participation and the effectiveness of interaction, promote engagement of students in active learning, [and] foster communication to clarify misunderstanding and incorrect thinking, and provide a method to instructionally embed assessment as a learning activity rather than reliance on the traditional approach of summative assessment for assigning grades (2008: 76).

Student participation seems not only to increase when clickers are incorporated in the classroom, but they also offer an opportunity to 'embed assessment' during teaching and learning (DeBourgh, 2008).

Mollborn & Hoekstra (2010), writing from a sociological point of view, propose that this increased participation is closely related to classroom engagement – by which I mean that the students initiate verbal and non-verbal classroom involvement. This is particularly relevant

for the XCC course because it includes production of the language and might culminate in better understanding of concepts of the target language that relate to the clinical context. The basic isiXhosa proficiency that this study envisages is thus facilitated.

2.5.2 Immediate feedback through display

One of the frequently used forms to display a graphic representation of students' responses of an MCQ clicker test is a histogram. The effect of this display can be dramatic because it prompts questions, explanations and new insights about the subject content. This relationship signals a link between 'immediate feedback' and 'student engagement.' The students receive feedback in real-time and they are able to interact with their lecturers, as well as gain new insights from the post-clicker discussions. Johnson & Robson (2008) suggest that such immediate feedback provides lecturers and students with the opportunity to detect and remedy the inadequacies, misconceptions and mistakes that the histogram has revealed.

Also, with regard to succeeding in mastering a second additional language, it is important that their lecturers provide prompt, regular feedback. Prompt feedback is an opportune means of diagnosing errors and clarifying misconceptions. It can reassure students that they are making progress, and this encouragement can spur them to make greater efforts, which, in turn, could increase participation. In my experience as a language teacher prompt responses are highly beneficial to language learning, even more so with a complex language such as isiXhosa. Students' problem areas are resolved and misconceptions are clarified before they become a barrier to learning, consequently, the affinity towards the language is promoted.

2.5.3 Anonymity

Yet another benefit of clickers is the anonymity offered by the clicker test histograms. This is particularly the case with students who are struggling to understand content or who are shy about voicing their questions. Clickers give them the opportunity to be 'faceless' and therefore, to not fear being humiliated for their mistakes in front of the class (Wood, 2004; Martyn, 2007; Lantz, 2010). Therefore, most students remain at ease because the identities of those who gave incorrect answers are not revealed to the whole class. Anonymity in participation places them 'on par' with the rest of the class. Wood has the following contribution regarding anonymity: 'Those [students] who do not "get it" realize they're not the only ones. In a typical lecture situation, such students are often inhibited from asking

questions by the belief that everyone but me probably understood' (2004: 797). Importantly, the areas where those students struggle, are identified and addressed in class and in real-time.

Martyn (2007: 72) summarises an important beneficial aspect of anonymity in participation:

> A student who is unsure of the correct answer may be unwilling to take the public risk of being incorrect. One of the best features of an SRS is that it allows students to provide input without fear of public humiliation and without being worried about more vocal students dominating the discussion. Even in small-enrolment classes, many students are reluctant to respond to faculty questions; the anonymity of responding with a clicker guarantees a near or total participation.

Martyn seems to reiterate that when clickers are used no student has to fear giving a wrong answer, because there is no chance of being exposed and identified as 'not on par' with classmates and be ridiculed in or out of class. The privacy anonymous participation brings into the class allows all the students to be 'seen' and 'treated' in the same way, regardless of their capabilities. That also means that reticent students, as well as those who are more vocal, are accorded an opportunity to improve their unique understanding of the work. Because this puts the students on an equal footing, use of clickers also seems likely to promote classroom democracy and parity of participation. This is particularly important for students when they are learning isiXhosa, given the common challenges, mentioned in chapter 1, of learning this target language, such as, the anxiety the students experience when their production of isiXhosa does not seem to be as commendable as they realise it should be, as modelled by their lecturers.

2.5.4 To sustain students' attention and to divide lectures

Sustaining the attention span of students is yet another benefit of using clickers which is discussed in the literature. It seems to work well when it is combined with breaking the lecture into portions to bring an element of variety into the lesson (Caldwell, 2007). Jones et al acknowledge the 'break 'or 'pause' when using clickers in the following manner:

> Clickers test can also be used to change the pace of class by having the students pause to vote to answer a question. The teacher can spend a few minutes on the answer choices and help students see why the correct answer is the best answer (2009: 3).

Bunce et al add another dimension to the use of clickers by lecturers to sustain students' attention while dividing the lecture into portions:

> A common experience among teachers is that students do not pay attention throughout an entire lecture […] One of the innovative methods used to engage students in class is the use of individual response devices (clickers) […] by sending their answers electronically to the teacher's computer (2010: 1438).

Breaking up the lecture into two sessions seemed to be helpful in sustaining the attention of students. The fact that the subject content covered in the clicker tests was the basis of the new content that was presented during the subsequent part of the lecture was also pedagogically helpful. The students could experience the subject content as a 'whole' while the 'break' gave them some reflection time.

2.5.5 Gauging students' understanding from whole class responses

Premkumar & Coupal explain how both the students and the lecturer benefit from gauging students' understanding by summing up evaluation of the students' comprehension of subject content and concepts during teaching and learning:

> There is benefit to both learners and instructors when they see how the whole class has fared. To the learner, it indicates whether he/she has understood the concept or needs to review further. To the instructor, the results indicate if he/she should proceed or spend more time on the concept (2008: 147).

With regard to how the instructor benefits from gauging students' understanding, Lantz highlights how helpful students' 'systematic incorrect responses' can further be helpful to enhance the teaching-learning process by providing 'a more effective explanation' to students:

> Systematic incorrect responses can allow the instructor to understand how students are misrepresenting material, hopefully leading to a more effective explanation. Not only can clicker responses inform the instructor that the students were not understanding a concept,

> but also where students were misunderstanding material by seeing the incorrect responses (2010: 559).

The benefit of gauging students' understanding is thus valuable for progress in class during teaching and learning. It can determine the pace of the lecturer when presenting certain content areas, while it enriches the quality of learning.

2.5.6 Students' self-assessment and constructive comparison

This reflective process has another advantage, in that it allows a student the privacy to assess and to compare their knowledge with that of the rest of the class. Self-assessment can be constructive and can affect student motivation positively. Peer comparison (Cardoso, 2011) is useful to students, particularly because they can gauge themselves against their peers without being exposed to the rest of the class as 'struggling' when compared to their counterparts.

Self-assessment (Cardoso) can improve the motivation of both the able and the less able students. Self-assessment and constructive feedback validates the efforts and self-worth of the high achievers while the less gifted students also get an idea of how they are doing compared to the rest of the class. Because the less gifted students recognise that they are not doing as well as the others, after some reflection, they may be motivated to put more effort into their work and change their learning styles and strategies. Cardoso's summary of the benefits of clickers is helpful in highlighting most of these aspects:

> Overall, the results are consistent with the consensus that students perceive the response system as a positive addition to their classes, as its use increases participation and the general enjoyment of classes, contributes to learning, fosters interactions, and allows learners to self-assess and compare their performance with that of their peers (2011: 393).

In Edens' US-based research education students who used SRSs as a metacognitive tool, besides having a positive affinity towards clickers, 'also reported that they were able to learn from errors they made on quizzes and liked not being penalised for an incorrect answer' (2008: 173).

Students' self-assessment and peer comparison seem to have a positive effect on students' self-esteem when it has an element of privacy, probably until the students gain more

confidence in themselves. This increased level of confidence was detected among the participants of this study by the third day as well as the fourth day, which was the last day of this research.

2.5.7 Improving assessment

Formative-assessment, like self-assessment, can lead to improved results. As was clear in DeBourgh's (2008) argument about the potential for clickers to 'instructionally embed assessment' (see section 2.5.1) that clickers lend themselves to assessment practices, most strongly to formative assessment. Formative assessment takes place along the way, while summative assessment is cumulative, and is thus the conclusion of the process of assessment that usually implies progression to a subsequent level. Kay & LeSage offer a comprehensive definition of this diagnostic procedure and how clickers are beneficial to it:

> Formative assessment is used to determine student understanding of concepts without grades, in order to identify misconceptions and alter the course of classroom instruction. Without a tool like ARS, it is somewhat challenging to calibrate overall student understanding of concepts while they are presented in class. Regular use of ARS can offer real-time feedback to both instructors and students as to how well concepts are being understood (2009: 823).

There seem to be certain parallels between DeBourgh's (2008) and Kay & LeSage's (2009) concept of 'formative assessment' in that, their lens is more focused on the understanding of concepts rather than on grades. A key theorist on formative assessment, who also endorses 'learning activity' is Barbour. His study on clickers in the South African higher education classrooms focuses on the concept of 'formative feedback' (rather than assessment) in his phenomenographic study of using a student response system to provide formative feedback in large classes. He showed convincingly that the parallels between formative assessment and formative feedback lie in augmenting the students' understanding of subject content and enhancement of results. Placing the student at the centre of the formative process, he argues that: 'the main aim of formative feedback is to increase a student's knowledge, skills, and understanding of specific subject matter, by indicating a gap between the actual knowledge of the student and the required standard' (2013: i). The lecturer as the facilitator of subject

material and the result of student-lecturer exchange of subject content are better clarified in his succinct definition of formative feedback below:

> Formative feedback is defined as information communicated to each student, which is intended to modify their thinking or behaviour, for the purpose of improving learning (2013: 10).

Understanding of concepts or subject matter appears to be key in Kay & LeSage's (2009) definition of 'formative assessment' and how Barbour (2013) defines his concept of 'formative feedback' in a manner that transforms students' thinking or attitude. The similarities in these two scholars' definitions also lie in improved results rather than improved grades.

In both studies the clicker engagement was used to identify gaps and misconceptions in order to address them speedily. In a nutshell, clickers seemed to facilitate the learning process that includes reinforcement, clearer content and acquisition of additional skills, as was evident in this study. Formative assessment is associated with meaningful learning. In order to achieve the latter, Premkumar & Coupal 2008 suggest incorporation of a debriefing session to clarify the reason why an option is either correct or incorrect.

2.6 Disadvantages and cautions

Besides the above-mentioned benefits, the literature indicates that there are some disadvantages to implementing clickers in the classroom. Firstly, hand-held clicker devices are quite costly; as mentioned before, a major Cape Town-based supplier currently charges R700 for a single clicker device. Secondly, they are cumbersome to use. Thirdly, students have to register them on-line with the course software. Consequently, the serial numbers of the clickers are linked to students' names and email addresses where they are purchased (Wood, 2004: 796).

Mobile phones can be used as clicker devices, but both students and the lecturers have to deal with connectivity problems, for example, access to Wi-Fi is still posing a challenge at South African higher education institutions. In an article that covered students' protest over lack of facilities in residences at a university in Cape Town, a journalist was quoted as saying:

'in order to get Wi-Fi, they [students] had to walk outside at night, which was unsafe' (2017: 425). While it should not be assumed that all students have smart phones, mobile clickers as smart phones allow more than one student to access clicker questions that have been loaded without fear of students' dishonesty. The use of unique student numbers in order to access the clicker questions is helpful in this regard.

Barnett (2006), in a students' perceptions survey where 560 students responded to implementation of personal response units in very large lecture classes, he persisted in using clickers despite the challenges the students experienced. He reports that students' experiences of clickers were positive, despite having to cope with frequent technical glitches.

However, Johnson and Robson's (2008) findings go against the generally positive studies discussed previously. They chose a lecture-based introductory Economics course and compared it with a class that used clickers to find out whether these technological devices were associated with changes in student engagement or students' performance. These are their findings:

> […] we find no significant differences between the clicker and non-clicker sections in student attitudes toward attendance, participation or class engagement, nor do we find any difference in exam performance (2008: 4).

They conclude that lecturers should exercise caution when they are considering whether 'to patch' new technology into traditional lectures. Johnson and Robson (2008) also caution higher education institutions to be careful when issuing directives to staff who wish to introduce new educational technology into their courses without considering pedagogical adaptations. Caldwell's (2007: 19) advocacy for 'peripheral role' clicker use during class teaching is thus opposed by Johnson and Robson.

One of their main findings in the Economics course study mentioned above is that, 'simply patching clickers into a lecture course does not result in statistically significant improvements in student performance or attitudes' (Johnson and Robson, 2008: 10). A secondary caution is that the effectiveness of clickers may depend significantly on the type, organisation and size of the course. Their final caution highlights that the students may not always understand the

significance of engagement and participation in the learning process. Instructors can play a significant role in facilitating their understanding by explaining and illustrating how clickers can be utilised to enhance their learning.

So, the scholars whose work is discussed above highlight classroom participation as an important reason why clickers could be incorporated into teaching. However, there are also important limitations on general claims about enhancing engagement. On the one hand, Caldwell seems to advocate for both 'patching' into the conventional teaching style to promote engagement between students and lecturers as well as 'a more radical change in teaching style' (2007: 19) that could involve pedagogical amendments. On the other hand, Johnson and Robson seem to be proponents of pedagogical changes rather than peripheral application of clicker devices.

2.7 Recent clicker use in global north and south (2013 – 2017)

The clicker as the focus of my study is rapidly changing, innovative technological device. Since 2013, when I did my study, there have been considerable advances in mobile classroom clicker usage and how it relates to classroom engagement. There are three significant developments that have caught my attention.

Firstly, there are technical advances in clickers as technological devices. The iQlicker is a Chinese innovation, this new name and form for clickers seems to have added a new dimension to the novelty of using the mobile phone. It has a feature that notifies each student of his or her responses by short message service (SMS) after collecting and analysing all students' answers (Lee et al, 2013). They probably resonate with the students because of the iQlicker's SMS feature. This common social feature would most likely enhance classroom interaction. Lee et al's opinion of the novelty is endorsed by China-based Song & Oh (2016) through their comprehensive four-phased study.

The second development is that of the use of a mobile app for clickers. This is yet another common feature the students would probably easily relate to due to its prevalence in their social media spaces. In retrospect, both iQlickers and mobile app-based clickers reinforce my choice to use mobile phones for this study. Their innovations do not only take cognisance of

the modern classroom teaching and learning interventions, but also, students' contemporary digital literacy skills.

The scholars who have written about the positive effects of clickers on student engagement from 2013 to 2017 seem to have drawn from Mazur & Watkins (2010), (Barbour, 2013; Lee et al, 2013), who advocate for a two-phased approach. In this teaching and learning technique, students are provided with questions they respond to and their polled responses are displayed in a chart. Pairs of students discuss their responses, after which the pairs attempt the same questions again. The post-discussion results seem to indicate that the students gain different insights after the peer discussion sessions. The students also seem to have a better understanding of the subject content in the same manner as after the post-clicker lecturer-led discussions in this study. The review of the clicker literature has been interesting in that it consistently shows that clickers, regardless of the type, seem to enhance engagement.

A third point of interest in the more recent literature is a critique of mobile clickers. Based on the students' feedback in Hwang et al' s study of human physiology courses, the conventional clickers seem to be a better option than mobile clickers and a subsequent survey regarding perceptions of the traditional and mobile clickers found that:

> […] most students favoured the use of traditional clickers over mobile clickers, with the students reporting a number of difficulties in using the latter. These difficulties could discourage students from moving ahead to more advanced levels in programmes that involve mobile device interaction with the course teacher (2015: 347).

Out of a student sample of 114, preference for traditional clickers was indicated by 99 (86.8%) participants. The reason they cited most was 'not every student owned a mobile phone that could connect to the internet.' Other reasons that appeared to be important for the students included:

> […] that the traditional clicker was easier and more convenient to use […] the long time it could take to connect to the internet […] difficulties in connecting to the internet […] the consumption of mobile battery power in accessing the internet […] the limited quotas of campus Wi-Fi logins […] small screens on phones (354).

It is my impression that attitudes to using mobile clickers have changed significantly since this study was conducted in 2013. Availability of SU Maties Wi-Fi on all campuses has greatly changed the students' perceptions towards use of their mobile phones as clickers. Even the students who seemed to resist technology appear to be in favour of using their mobile phones for classroom-based interventions. Presently, the clickers are so widely used at SU that academics and students who are resistant to e-Learning involving clickers and other devices such as iPads would probably find themselves left behind if they could not participate in classroom interventions.

2.8 Newer South African clicker research (2011 – 2013)

In recent years, clickers seem to be growing in prominence in South African research, particularly in higher education. Most of the findings are, like that of researchers in the global north and south, positive. Researchers appear to agree that, at a practical level, the rationale for clicker use ranges from simplicity, ease of use, to facilitating 'individual and peer voting' (Gachago et al, 2011: 253). At a deeper level, clickers are seen as devices that could, on the one hand, help address the boundaries that are experienced between the lecturers' conventional teaching methods and digitally inclined contemporary student cohorts that are increasingly enrolled at South African institutions of higher learning. On the other hand, these digital devices seem to offer students a better inclination to actively participate in their learning that is augmented by the anonymity they offer; this leads to 'students' involvement in the learning process' (Simelane & Dimpe, 2011: 83) while 'improving students' motivation and academic performance' (Tlhoale et al, 2013: 497). Aspects such as novelty and enjoyment of classroom activities when clickers are used confirm existing studies on clickers.

Interestingly, this recent research has not only been done in historically white, well-resourced and advantaged institutions. Gachago et al, whose work at a university of technology focuses on Graphic Design also underlines the potential of clickers to 'encourage peer discussion' that leads them. Students reported that by being confronted with opposing points of views, which lead to uncertainty or conceptual conflicts, they were propelled to re-conceptualise their own arguments, which result in 'more refined and thoughtful conclusions' (2011: 253).

2.9 Clickers and language learning

Overall, the literature points to how clickers offer a powerful and flexible tool for teaching. They can be used in a variety of subjects with students at almost any academic level. Clickers may occupy either a peripheral or central role during class. They can be incorporated into a standard lecture course to increase interaction between students and instructor or used as part of a more radical change in teaching style towards primarily active learning in class.

Clickers seem to have been used extensively in Science, Technology, Engineering and Management (STEM) disciplines, however, they have been explored surprisingly little for learning a second or foreign language. As a scholar committed to the communicative approach to language learning, Cardoso's UK-based study of English teaching as a foreign language to Brazilian students shares that, although incorporation of clickers in teaching additional language is still in its early stages, it has pedagogical advantages. He seems to be advocating for Caldwell's (2007: 19) 'more radical change in teaching style.'

The two main researchers in language learning are Agbatogun (2014) and Cardoso (2011). Cardoso has the following to say about how sparse the scholarly evidence is with regard to second or foreign language learning using clickers:

> An inspection of the literature on the use of LRSs reveals that studies involving the use of the system in a foreign or second language classroom environment are almost non-existent […] A possible explanation for this deficit might be due to the very nature of second language teaching, where classes are considerably smaller, thus allowing higher levels of interaction among students and the teacher (2011: 399).

Cardoso argues that '[o]verall the technology is a tool that increases learners' motivation, encourages more active participation in the class, allows learners to self-assess, assists students in verifying their standing amongst peers, and fosters interactions' (2011: 400).

In my thesis, Agbatogun (2014) represents an African point of view because his research on the impact of clickers on the communicative competence development of learners who were

taught in English as a second language (ESL) was conducted in his home country, Nigeria, although he is based in the UK. So issues of connectivity, exposure to e-Learning and multilingualism would be similar to the South African situation and to other situations in the global south. The communicative competence of the participants of Agbatogun's research was measured and significant difference between pre-test and post-test scores was detected, which he attributes to difference in teaching pedagogy. He summarises the significance of his study as:

> [Having] contributed to the fledging literature on whether clickers can make a significant difference in improving L2 learners' oral proficiency. It is high time teachers explore the potential of the technology to make ESL learning more attractive to learners, provide learners opportunity to use the target language in oral communication, and improve their communicative skills (2014: 267).

Both Agbatogun's (2014) and Cardoso's (2011) studies strongly endorse the potential of clickers for second language learning. While these two studies' settings differ, the focus areas seem to be in alignment with the main aim of this study, namely, to explore whether the use of clickers could enhance communicative competence to equip students for future multilingual professional milieus.

2.10 Language acquisition and language learning

Clicker use for learning communicative competence is associated with the classroom, whereas acquiring our first language seems to come naturally to us because we are immersed in the context where it can be part of our socialisation. As outlined in the introduction, for Gee (1996), acquiring a first language often comes with what he refers to as 'a primary Discourse' and it happens in informal everyday environments.

This process leads to how people are intuitively grounded in their first language. So, language acquisition is not taught although it can be enhanced by teaching. In contrast to acquisition, for Gee, learning takes place in formal planned settings. He refers to this formal intentional process as 'secondary Discourse' (1996: 137).

In life, we are generally exposed to language learning after acquiring our language through 'initial enculturation' (Gee, 1996: 138). With regard to the participants of this study, who were either predominantly Afrikaans and or English speaking, Afrikaans speaking students were taught English as a first additional language while English first language speakers learnt Afrikaans as a first additional language. Therefore, typically, they had acquired Afrikaans and English before they were taught isiXhosa as a second additional language.

Gee's (1996) distinction of 'learning' and 'acquisition' draws from Krashen (1985a; 1985b in Gee, 1996) who in his earlier work on second language acquisition theory describes three hypotheses: the acquisition-learning distinction, the natural order hypothesis and the monitor hypothesis (Krashen, 1982 in Gee, 1996). Referring to adults, he distinguishes two ways of developing second language competence, namely, 'language acquisition' and 'language learning' (Krashen, 13–14). After decades of research Krashen shows that the best way to acquire a language is in the actual communicative setting. For my study, this environment would be the clinical settings for which the students are being equipped to cope with through intelligible competence in isiXhosa.

Krashen's definition of language learning has influenced Gee, particularly with respect to how adults learn a second language: "In non-technical terms, learning is 'knowing about' a language, known to most people as 'grammar' or 'rules.' Some synonyms include formal knowledge of a language, or explicit learning."(1982: 14).

So, Krashen's (1982) definition of language acquisition corresponds with that of Gee's (1996) 'primary Discourse' while Krashen's 'language learning' can be placed parallel to that of Gee's 'secondary Discourse.' However, Krashen also states that '[s]ome second language theorists have assumed that children acquire, while adults can only learn' (1982: 14). Worthwhile to note though is that, as we go through life after we have acquired a language through our encounters, language acquisition and learning are combined.

Krashen appears to combine the acquisition and learning processes as he clarifies his claim:

> The acquisition-learning hypothesis claims, however, that adults also acquire, that the ability to 'pick-up' languages does not disappear at puberty. This does not mean that adults will

> always be able to achieve native-like levels in a second language. It does mean that adults can access the same natural 'language acquisition device' that children use (1982: 14).

Because second language for participants of this study is learnt for professional purposes, this research does not claim that the XCC course would offer them the opportunity to acquire 'native-like level' in isiXhosa. Until they can be immersed in the language Krashen's (1982) acquisition-learning hypothesis would be elusive to them. It is for this reason that this study focuses on second additional language for facilitating clinical communicative competence.

As indicated in the introduction, this study takes cognisance of the sequential model of language learning. It is for that reason that Bylund & Oostendorp's (in Bock & Mheta) concepts of first (L1) as primary language and second (L2) as second language are acknowledged. They differentiate between chronological orders of language as follows:

> Primary language refers to our dominant language, the one we speak most often and feel most at ease with. A secondary language, then, is the language we feel less confident with, and use to a lesser extent (2014: 257).

However, I have observed that gradually the lines between primary and secondary languages appear to be blurred. This interesting phenomenon is becoming more noticeable with different cohorts of XCC students. They seem to be increasingly exposed to multilingual contexts in their natural settings and at their various learning institutions, including the site of this research. Their exposure to multilingual contexts leads to them acquiring and learning multiple languages at the same time. It is more complex to distinguish between learning and acquisition, and between primary and secondary languages. This observation is supported by scholars such as McKinney 2017, who argues that "We now understand that languages are not stable, discrete or bounded entities" (2). It is for that reason that this study recognises the shift contemporary, untapped language acquisition-learning occurrence. However, isiXhosa as a language they have to learn for professional settings remains their clinical communicative device to ensure quality of healthcare.

2.11 Second additional language (SAL) and the clinical context

As mentioned before, this study explores whether clickers can improve student engagement, and, consequently, their ability to communicate with isiXhosa-speaking patients who are not fluent in English or Afrikaans. If successful, the study would enable the XCC course lecturers to employ clickers to reinforce concepts and complex language constructions. This digital technology appears to have the potential to provide isiXhosa lecturers with a new pedagogical strategy with which to supplement conventional strategies, such as language coaching, scaffolding and modelling when teaching isiXhosa for clinical professions.

Traditionally, language would be taught by developing knowledge of the grammar rules and syntax. Grammar rules and syntax and the way parts of speech change were taught as part of general language usage to the participants in this study. However, the context of the clinical setting informed the vocabulary, content and assessment of the curriculum. For example, if an occupational therapist wants a patient to climb up on a bed, she would ordinarily say: 'khwela ebhedini' (climb on the bed). However, if she wishes to show politeness, she would say: 'ndicela **u**khwel**e** ebhedini' (please climb on the bed). The students need to understand that 'khwela' has changed to: '**u**khwel**e**' because 'ndicela' (please / I request) has been added to the request to indicate politeness. Although the students in my study were taught some grammar and syntax, it was primarily for their understanding of the use of the language in clinical settings. Practising how to communicate meaningfully and in an intelligible manner takes precedence over grammar and syntax.

Importantly, the students in this study, because they were in their first year of study, were taught isiXhosa as an additional language in the classroom – they were not exposed to it in a natural setting, in this case, a clinical environment. This lack of authentic exposure might create a challenge for course designers in addressing curriculum design for clinical communicative competence. In this work, I am going to use the term clinical communication competence to signal language learning for the XCC course students.

To conclude this chapter, I will give due attention to the following key concepts which will frame the analysis in the rest of the thesis while guiding interpretation of the following chapters: student engagement, formative feedback and clinical communicative competence.

2.12 Key concepts

In the e-Learning literature, the theoretical construct 'engagement' has been identified as an essential condition for meaningful learning (Brill & Park, 2008). The types of engagement that would enhance this research work are those that influence active learning in the classroom, hence it is called student engagement. Through this engagement students, it is hoped, could gain communicative skills they would employ in their envisaged clinical professional sites as occupational therapists.

In an attempt to expose the students to isiXhosa clinical content, lecturers' formative feedback is used as a concept that might relate to how the students could increase their knowledge of the target language. So, engagement is embedded in the feedback part of the lesson in understanding basic isiXhosa language concepts that could help students to communicate in the target language they are learning. Student engagement and formative feedback seem to have potential to contribute towards the students' ultimate clinical communicative competence, which started in the classroom.

2.12.1 Student engagement

The term 'student engagement' has already come up many times in this thesis, particularly, in the discussion of benefits of clickers. In the literature, I found that it was seldom defined. Here I draw on Kuh (2009) and Trowler (2010).

Kuh's definition of student engagement has evolved over a period of time as a representation that is linked to course learning outcomes and the corresponding students' participation in classroom activities:

> […] the time and effort students devote to activities that are empirically linked to desired outcomes of college and what institutions do to induce students to participate in these activities (2009: 683).

The 'time and effort that students devote to activities' Kuh (2009) refers to is acknowledged by Trowler in her literature review. She points out that:

> Student engagement has become the latest focus of attention among those aiming to enhance learning and teaching in higher education […]. It is not difficult to understand why: a sound body of literature has established robust correlations between student involvement in a subset of 'educationally purposive activities' (2010: 2).

When defining engagement, she acknowledges participation of students in 'educationally purposive activities' (5). She further examines its deeper dimensions:

> *Engagement is more than involvement or participation* – it requires feelings and sense making as well as activity […] Acting without feeling engaged is just involvement or even compliance; feeling engaged without acting is dissociation [my emphasis].

Trowler further explains that 'behavioural engagement' is more than compliance with certain expected observable and measurable behaviour such as required class attendance, showing interest by becoming actively involved in classroom activities. Moreover, citing Bloom (1956) who identifies three dimensions of student engagement, she enumerates and briefly clarifies each one in the following manner:

> 1. *Behavioural engagement*
>
> Students who are behaviourally engaged would typically comply with behavioural norms, such as attendance and involvement, and would demonstrate the absence of disruptive or negative behaviour.
>
> 2. *Emotional engagement*
>
> Students who engage emotionally would experience affective reactions such as interest, enjoyment, or a sense of belonging.
>
> 3. *Cognitive engagement*
>
> Cognitively engaged students would be invested in their learning, would seek to go beyond the requirements, and would relish challenge (Trowler, 2010: 5).

Trowler offers a definition that includes different layers, only some of which can be seen in the classroom. In this study, students could be observed complying with behavioural expectations, such as, clicking clickers, asking questions and responding to questions, however, it is more difficult to document or capture emotional engagement. Cognitive engagement, on the other hand, is investment in learning, such as, students' 'relish' of a challenge and seeking more than the routine requirements. During the pilot study with

Speech-Language and Hearing Therapy (S-LHT) students, I had a sense that all three of these layers could be relevant for this study.

So, I am interested in lively verbal and non-verbal participation by students who willingly attend classes and show interest and enjoyment in classroom activities. At the same time, I am exploring that which cannot be seen, those underlying qualities in students such as 'interest,' 'a sense of belonging,' an investment in terms of cognitive engagement, also working to broaden their knowledge of the subject content imparted by lecturers aiming to use it in their future professions.

2.12.2 Formative feedback

This is another important concept for my study because it reminds us of the context in which clickers were used, namely, to enhance learning through feedback. Here I draw on Barbour's study, briefly mentioned in 2.5.7 above, and the concept of formative feedback he uses. Like student engagement, formative feedback, in the context of higher education, involves the lecturer. As the term implies, it recognises that the lecturers are still equipping the students for their imminent roles as professionals.

Stated differently, formative feedback highlights the pedagogical relationship between the lecturer and the student. The lecturer, as an expert in her or his field, imparts the knowledge and appropriate skills and competences to the students. The objective of the imparting process is captured in Barbour's words: 'intended to modify their thinking or behaviour' (Barbour, 2013: 10). In this regard, Barbour seems to get closer to Trowler's behavioural and cognitive engagements, while implying emotional engagement. To complete the process, Barbour clarifies the purpose of these students' efforts: 'for the purpose of improving learning' (2010: 10).

For the purposes of this research endeavour I define formative feedback as:

> The subject content and feedback methods students receive, with the intention of changing the conduct and thinking in a manner that would enhance their learning, competences to enable them to use the acquired knowledge and skills in future professional communicative contexts.

2.12.3 Clinical communicative competence

As indicated above, the knowledge and skills of the students should be grounded so that it would not be difficult for them to apply these proficiencies in their future clinical settings. The future that is being referred to is, the careers the students' are being equipped for in the classroom. The intention is context-sensitive learning, although adults might not be as attuned to picking up languages as children (Krashen, 1982: 14). This type of language learning would be helpful to students to anticipate their future and prepare themselves for the acquisition process that will come once they are clinicians and are immersed in the field.

The term that seems to capture the approach to language teaching in the classroom that anticipates its production in the envisaged clinical settings is 'clinical communicative competence'. The term 'communicative competence' is widely used in second additional language literature to refer to knowledge about a language beyond its grammar, syntax or semantics, which includes contextual and social uses. It was first put forward by Hymes (1966; 1972), and later by Leung (2005).

Scholars such as Agbatogun (2014) and Cardoso (2011) cited earlier use the term 'communicative competence.' In this study, I add 'clinical' to indicate the setting that students are working towards in their growing professional identities. Thus, I define clinical communicative competence as:

> The language skills students have been exposed to, gained and practised in order to enable them to meaningfully and intelligibly communicate in patients' language in their respective clinical careers.

Discussions in this chapter end with these three key terms above, which will guide analysis and interpretation in the following chapters. The synopsis of the significance of clickers in the classroom as discussed in this chapter follows.

2.13 Summary

In short, there seems to be ample evidence in the literature, including South African scholarly work, that clickers can promote student engagement when incorporated into classroom activities. Besides known benefits such as anonymity, immediacy and assessment, in the

South African higher education milieu clicker use appears to bridge the gap between conventional teaching methods and contemporary student aligned digital interventions. To most lecturers and course designers, increased student engagement during the instructional process appears to lead to better understanding and improved retention of the lesson content.

Clickers are one of the emerging technologies that lecturers are using to get students who are reluctant to take part in classroom discussions to be more active. A number of scholars suggest that clickers not only lead to greater engagement between lecturers and students, but also, among students themselves, whether classes are small or large. This engagement among students is likely to benefit both struggling and gifted students.

While struggling students are gaining better understanding of the content presented, more able students, who might otherwise be bored in class, are motivated to participate during classroom engagement – both seemingly brought about by incorporating clickers with conventional classroom-based activities such as IRE.

Chapter 3: Methodology

This chapter gives an account of the type of methodology and the methods that I made use of in the data collection process. In this chapter, I also explain why I have chosen these particular approaches and I discuss issues which relate to generalisability, reliability and validity.

With regard to methodology, I had to make several important decisions in order to ensure an appropriate choice. The primary decision I had to make was whether this study was going to be predominantly qualitative or quantitative. I was guided by several factors. I had to consider that in qualitative research, access to participants in order to possibly spend time with them plays an important role, unlike in the quantitative approach where research can be accomplished with limited involvement of research participants. Firstly, preference for words over numbers was important; secondly, my aim was to understand the situation under scrutiny primarily from an emic perspective, that is, from the participants' point of view (Hancock & Algozzine, 2017). Therefore, thirdly, the amount of time that I had to spend with the participants was an additional factor. As I was the primary investigator, I would have to spend a significant amount of time in the research environment. That meant that I would not be keeping my distance from the participants in the name of objectivity or remain aloof from the dynamics of the investigation (Hancock & Algozzine, 2017). After thorough consideration, I was convinced that this study had to be mainly qualitative rather than quantitative.

Another important decision was the choice of a specific approach. I chose the case study methodology firstly, because it is well suited to being carried out by a single researcher within a specific time-frame (Bell, 1993); secondly, it is based on the need to understand and unravel complex phenomena in a specific context; and thirdly, case studies focus on the interaction of factors and events. Finally, I was motivated by an important benefit that is stated by Bell:

> The great strength of the case-study method is that it allows the researcher to concentrate on a specific instance or situation and to identify, or attempt to identify, the various interactive processes at work. These processes may remain hidden in a large-scale survey but may be crucial to the success or failure of systems or organizations (1993: 8).

For these reasons, like other researchers who intend to gain an in-depth understanding of phenomena, I chose the case study method because it enables a researcher to gather information from a variety of sources, each of which could provide different types of information (Baxter & Jack, 2008; Bell, 1993; Hancock & Algozzine, 2017).

The qualitative case study approach demands meticulous and methodical planning (Bell, 1993), unlike the ethnographic approach which would have an emergent design that comes from immersion in the field. Qualitative researchers collect and analyse data from a variety of sources, for example, interview transcripts, observations and documents which record practices, policies and events. Also, unlike experimental research studies that seek to prove relationships and test hypotheses, case study research tends to be generally more exploratory than confirmatory, as qualitative researchers mostly seek to identify themes or categories of behaviour and events (Hancock & Algozzine, 2017).

Like ethnographers, case study researchers usually spend a lot more time in the research environment than other types of researchers (Hancock & Algozzine, 2017). Because the research site was also my workplace, I was immersed in the field and I could make decisions about the research as it unfolded. This is one of the characteristics of the case study method; it creates opportunities for the researcher to explore additional questions and emerging issues that were not initially included in the research plan. For these reasons, the qualitative case study I chose resonated well with me.

As is common in most qualitative case studies, I have used questionnaires, interviews and focus group interviews as data collection procedures. Observations throughout the data collection period complemented these three data collection methods while histograms seemed to be useful in prompting student engagement.

3.1 Research design

In order to select an appropriate research design, guidance from Baxter & Jack (2008) was helpful. They state that the qualitative case study:

> […] is an approach to research that facilitates exploration of a phenomenon within its context using a variety of data sources. This ensures that the issue is not explored through one lens, but rather through a variety of lenses which allows for multiple facets of the phenomenon to

> be revealed and understood. There are two key approaches that guide case study methodology; one proposed by Robert Stake (1995) and the second by Robert Yin (2003, 2006). Both seek to ensure that the topic of interest is well explored, and that the essence of the phenomenon is revealed, but the methods they each employ are different (544–545).

On the basis of the nature of my research question I used the constructivists' claim (Baxter & Jack, 2008) that is based on both Stake (1995) and Yin (2003), namely, 'that truth is relative and that it is dependent on one's perspective' (Baxter & Jack, 2008: 545). Based on my perspective, as alluded to in my conceptual framework discussed in chapter 2, I opted for a main research question that is complemented by subsidiary questions to accommodate the three concepts that frame this study, namely, student engagement, formative feedback and clinical communicative competence.

My main research question is:

> How do students engage with Student Response System (clickers) in an isiXhosa Clinical Communication course in Higher Education settings?

The subsequent subsidiary research question is:

> To what extent can the use of Student Response System (clickers) enhance students' clinical communicative competence in isiXhosa as a second additional language?

In my attempt to answer these research questions, I have drawn from Yin (2014: 2) in that:

> (1) the main research questions are 'how' or 'why' questions; (2) a researcher has little or no control over behavioural events; (3) the focus of study is a contemporary (as opposed to entirely historical) phenomenon [in Baxter & Jack, 2008].

On the one hand, my main research question contains a 'how': 'How do students engage …?' On the other hand, its sub-question has an implied 'how … far', 'To what extent …?' The case study methodology invites responsiveness from subjects in the same manner as my research is probing for responses. Additionally, it focuses on human subjects who have their own views and opinions about the interactive processes at work. Because the study is qualitative, not experimental, I do not have control over the subjects.

The students in this study are being prepared to communicate with isiXhosa-speaking patients in the future; mobile clickers are used to assess their competence in the language. Therefore, I will be able to form an understanding of the interplay of the processes that constitute this methodology.

Case studies, like all research studies, have limitations. The most common critiques range from subjectivity to generalisability. Case studies are generally small-scale projects and the size of the population is small, so it is difficult to deduce generalisations from the findings. For this reason, some critics of case studies even question the value of analysing individual events. However, proponents of case study methods argue differently. Bassey (1981: 86), for example, argues that if case studies:

> […] are carried out systematically and critically, if they are aimed at the improvement of education, if they are relatable, and if by publishing the findings they extend the boundaries of existing knowledge, then they are valid forms of educational research.

The challenge of identifying 'the case' in a case study, for example, my 'clicker study', deserves the attention of novice and seasoned researchers. These findings about case studies are often used to pursue further investigations to add to an existing body of knowledge in a specific field of study.

Critics point out that subjectivity makes it difficult to avoid intense involvement in a project. Another criticism generally levelled at case studies is the problem of distortion (Bell, 1993). After a researcher has collected the relevant data, (s) he selects the aspects which are to be included in the final report. It is not easy to objectively verify the data; consequently, distortion could result.

However, in this study, verification of data seemed to have been enriched rather than distorted. It was possible to maintain a reasonable level of objectivity to verify participants' data quantitatively through the histograms and representations of results of questionnaires. Besides being the study's primary investigator, I was part of the team that developed the course, although I did not teach the participants. As it will be explained in the next section, I played several roles in this study. Through my multiple roles, I realised that the reflections that went together with my involvement in different capacities enriched this project. In my

view, my multiple roles – as is often found in qualitative research – were a strength rather than a weakness.

In order to get the best out of a research study, it should be coherent and well designed. Yin (2014) has provided me with a research design that fits this study well. Most case studies, mine included, are conducted as free-standing exercises (Bell, 1993), although some case studies complement and/or supplement existing surveys.

Yin's model has served as a guide to me. It follows a 'linear but iterative process' Yin (2014). This process is illustrated below:

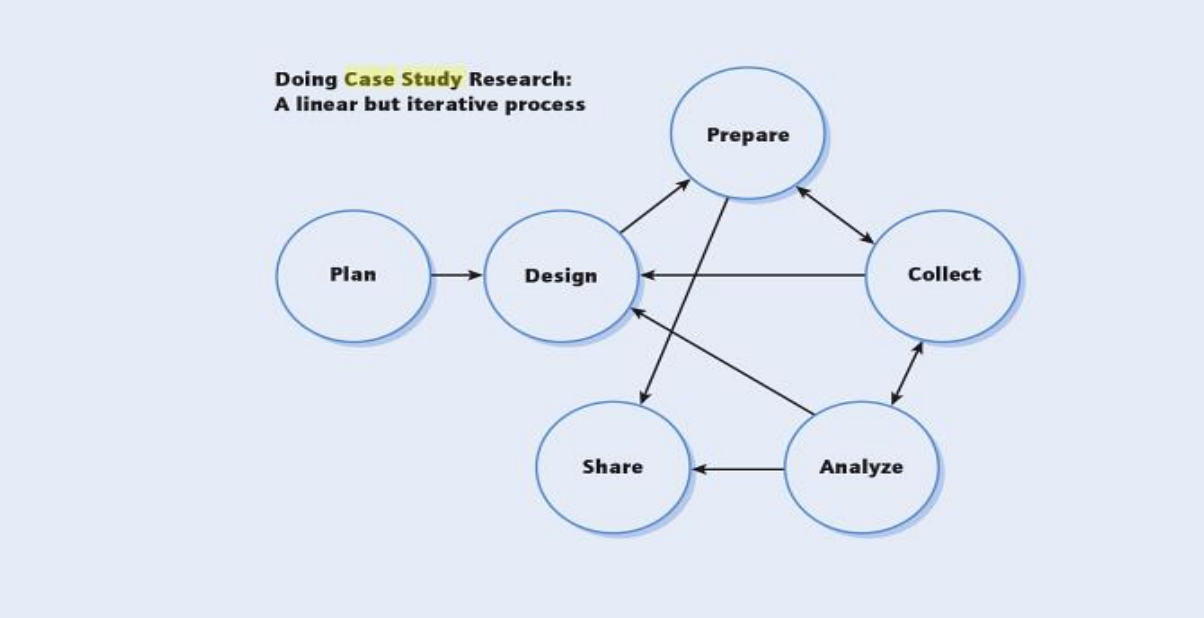


Figure 1: Doing case study research (Yin, 2014: 2)

The design process starts with a plan and ends with sharing. There are five stages. At a simple level the course of development would proceed as follows:

1. **Plan** of processes,
2. A detailed **design** would follow,
3. One would need to **prepare** the processes involved,
4. Planning would facilitate **data collection**. Some elements of design could be found necessary while data is being collected. Data collection would often need more preparation.
5. Before the processes are **analysed**, more data collection could be required to make the analytical process meaningful. While the data is being analysed, the researcher

constantly goes back to the design to 'check in,' adjust and appropriately respond to keep what emerges in the data using the original design.

6. **Sharing** the findings with the appropriate audience, such as the staff who were interviewed, or research scholars and educationists, would punctuate the processes although some preparation could also complement the sharing process.

The implementation of the research design depends largely on three important factors, the methods that are employed for data collection, the preparation and the execution thereof.

3.2 Data collection preparation

3.2.1 Role of researcher

My professional role is that of an e-Learning Course Developer and co-ordinator of on-line activities of the XCC course. While I am an experienced teacher, as mentioned in 3.1, I am part of the team that develops courses, visits sites to acquire and verify subject content to keep the faculty needs analysis relevant, but I do not teach. Due to the technological component of my multiple roles, I was also responsible for resolving possible technological glitches during implementation and data collection.

My role in delivering the technology led to my interest in the possibility of using a formative on-line alternative assessment procedure for students as suggested by my line manager. I was then assigned the principal investigator role on the proposed project. It appeared as if the projected clicker study could meaningfully enhance the two assessment procedures the students were accustomed to, the blackboard platform-based WebCT tests and oral assessments.

Conducting a trial-run with 32 XCC course Speech-Language and Hearing Therapy (S-LHT) students was deemed necessary after preparing the data collection logistics of the imminent study. The clicker test of five general knowledge MCQs was conducted with two groups of 16 students. During the time group X was using clickers I observed that the devices seemed to have a positive effect on students' interaction.

While conducting the same procedure with group Y my initial observations were confirmed. Both student groups seemed to display interest in using their mobile clicker devices. They also

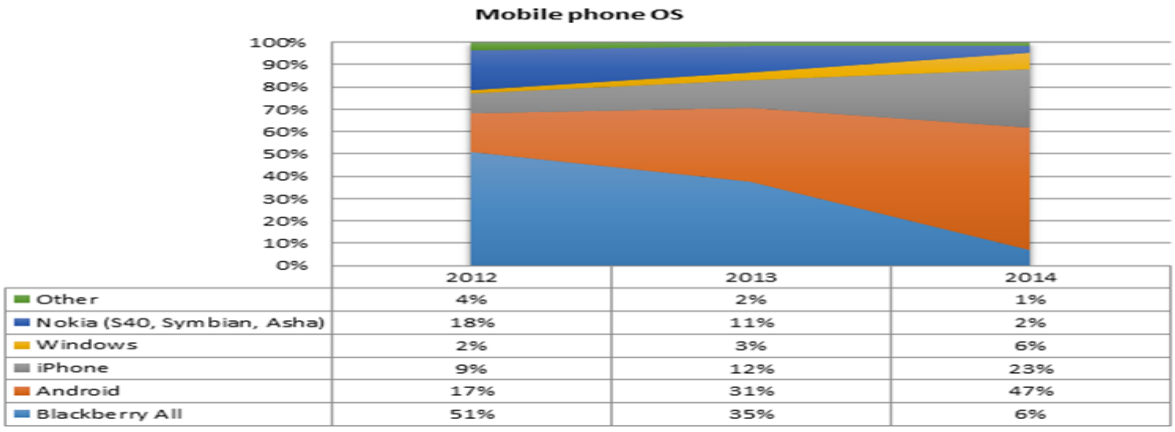
appeared to take particular interest in the histograms that displayed their responses. These two observations were not anticipated.

As expected, some students started to direct their questions to their lecturers. Exchanging glances, smiles and murmurs were surprising features of the classroom environment in XCC. The students' questions revolved around the data that was displayed on histograms and the related subject content. This similar interaction of each student group and their lecturer prompted my interest in students' use of clickers and classroom interaction. While the mobile clickers seemed to be a likely additional assessment procedure to complement WebCT tests and oral assessments, it seemed worthwhile to probe the classroom interaction further.

Also, although I sensed a certain connection between the students and their use of the device, it was difficult for me to understand it. At that point, I resolved that two aspects were worth investigating: the relationship between the students and their mobile phones and their intense interest when they viewed the histograms. My interest in the probe was intensified when I found out from the course lecturers that the classroom discussions were generally led by the lecturers, when mobile clickers were used, the students were more involved.

3.2.2 Enquiries about use of clickers

I then started enquiring about the use of clickers for teaching and learning purposes. I discovered that clicker devices were available on request for use by lecturers. The dilemma that I faced was whether it was best to use the clicker devices or the students' mobile phones as clickers. The SU Information Technology staff members who were tasked with assisting lecturers with the use of technology in the classroom offered me the following results of a survey they had just compiled:



	2012	2013	2014
Other	4%	2%	1%
Nokia (S40, Symbian, Asha)	18%	11%	2%
Windows	2%	3%	6%
iPhone	9%	12%	23%
Android	17%	31%	47%
Blackberry All	51%	35%	6%

Figure 2: SU Mobile Phone Use Survey 2012–2014

The Android mobile phones were gaining popularity among SU students, while Blackberry and Nokia were becoming less popular than they were previously. The features of Android mobile phones fitted well with our institution's system. Students could log on without major difficulties. The conventional clicker devices on the other hand, posed a number of challenges, for example, they were costly and there was the risk that they could be misplaced or lost more easily than mobile phones. Consequently, they posed a burden to lecturers who had to look after them during classroom interventions. Additionally, students had to be guided on how to use them with reasonable ease. Mobile phones as clickers seemed to be less problematic and therefore entailed fewer challenges than the mobile clicker devices.

Other general aspects I considered included firstly, that students were adept at using their mobile phones; secondly, they looked after these 'treasured devices' very well, and, when necessary, the students could share them after submitting their responses. Thirdly, the lecturers did not have to look after the students' property. So, mobile clicker devices seemed to be a better choice for this study than hand-held clicker devices.

3.2.3 Designing of MCQs

As soon I had made the decision to use mobile clickers, the next preparatory stage was the designing of MCQs and further preparation for their classroom execution. When used with clickers, MCQs result in a chart display, called a histogram, which shows the results of students' responses. The two language practitioners who taught the first year OT students added significant value to the quality of the clicker questions. The instructions for answering

the questions were presented in English and Afrikaans. Four options were regarded as appropriate for each of the questions.

The beginning of the lesson was considered the best time for the clicker sessions since the content of the questions was revision of the previous lesson. Furthermore, the clicker questions were regarded as a review session and a build-up for the new lesson. As mentioned in section 2.5.4, the implementation of clickers at the beginning of the lecture was beneficial, in that it was also meant to sustain the attention span of the students. As Caldwell (2007) and Jones et al (2009) suggest, the clickers seemed to 'break' the lecture into portions. This variety is helpful to extend the students' attention span during teaching and learning. A maximum of 12 minutes was allocated for responding to the clicker questions: from logging on to the university system through the URL that was specific for this purpose, responding to MCQs, viewing the histograms and discussion of post-clicker displayed results.

3.3 Data collection process

3.3.1 Sampling criteria

To conclude the preparatory process, research participants had to be selected from student groups of three fields of study of the 2013 XCC course cohort. At the time of this research there were three first year student groups of XCC course, 22 Human Nutrition II (HN II), 32 Speech-Language and Hearing Therapy II (S-LHT II) and 51 Occupational Therapy 1 (OT 1) students. As the team that is responsible for XCC course content we purposefully chose OT 1 students due to their greater number as compared to the two other class groups. In our view, the higher number of students would lead to more opportunities for making research related inferences and dynamic observations during the study. Moreover, the OT 1st year student group had not yet been exposed to isiXhosa at SU like the S-LHT 2nd year students who had been sensitised in terms of isiXhosa grammar by the African Languages Department in their first year of study. Even if they had been exposed to isiXhosa during their school careers, the context would have been different to the isiXhosa for clinical purposes that is the focus of the course. We thought of them as 'raw diamonds,' as they had no previous exposure to the target language. Lastly, the 51 students were already divided into three class groups to facilitate the classroom interaction that is characteristic of second additional language

teaching (Cardoso, 2011). The ages of this homogenous group of female students ranged from 19 to 22 years.

3.3.2 Selection of the research participants

All 51 students were identified for completion of questionnaires and they were all willing to complete them. In order to consolidate the content of the students' questionnaires, focus group interviews were planned. Instead of purposeful selection of participants of the focus group interviews, volunteers were opted for. From each of the three groups (A, B & C) four participants volunteered to be part of the focus group discussions. The choice of volunteers was primarily to ensure participants' willingness to meaningfully participate in the research study as well as availability at the times that the interviews were to be scheduled.

3.4 Data collection methods

The selection of data collection methods often corresponds with the intentions of the study and task at hand. The methods that are primarily used in case studies are observations and interviews, although a host of other methods can be used. Bell makes the following claim:

> Though observation and interviews are most frequently used in case study, no method is excluded. Methods of collecting information are selected which are appropriate for the task (1993: 8).

This study was no exception in this regard. Due to the nature of my research study, I have supplemented the main methods used, observations that include histograms and interviews, with the questionnaire as well as focus group interviews.

I will start the discussion of the data collection methods with the observations and histograms while taking cognisance of the fact that these displays are not generally used as a data collection method in qualitative studies. What is significant about them in this study is that, they seemed to have prompted student engagement and post-clicker test discussions between the students and their lecturers.

3.4.1 Observations and histograms

Observations

Cohen and Manion (1980) were helpful in guiding my understanding of observations during the data collection stage of this study. Their comparison of an experimental and a case study researcher clarifies matters as follows:

> Unlike the experimenter who manipulates variables to determine their causal significance […] the case study researcher typically *observes* the characteristics of an individual unit – a child, a clique, a class, a school or a community. The purpose of such observation is to probe deeply and to analyse intensively the multifarious phenomena that constitute the life cycle of the unit with a view to establishing generalisations about the wider population to which that unit belongs (1980:99).

They further point out circumstances where observations are deemed more important than, for example, experiments or surveys:

1. Observation studies are superior to experiments and surveys when data are being collected on non-verbal behavior.
2. In the observation study, the investigator is able to discern ongoing behavior as it occurs and is able to make appropriate notes about its salient features (1980:103).

I found this aspect useful as I observed the students' demeanour and non-verbal cues during data collection. I realised that my observations would possibly enhance and validate the data that would be collected through students' questionnaires and focus group interviews. Though most of my attention was focused on the students' reactions and behaviour, I was also able to make appropriate notes (Cohen & Manion, 1980). I observed three class groups (A, B & C) on four days; the three groups made up the 2013 cohort of 1st year OT students who were enrolled in the XCC course. In each class group I sat at the back of the class and watched how the students manipulated the clickers, how they responded to the histogram displays as well as how they interacted with lecturers and each other.

Histograms

The definition below does not indicate that histograms are used to collect data because they are not ordinarily used for this purpose, nor were they used for that purpose in this study. Investopedia (2015) defines a histogram as:

> […] a graphical representation, similar to a bar chart in structure that organizes a group of data points into user-specified ranges. The histogram condenses a data series into an easily interpreted visual by taking many data points and grouping them into logical ranges or bins.[3]

During the data collection process, the histograms that were a result of polled results of students' responses to clicker questions appeared to prompt student engagement. The histograms displayed several bars of different colours that are their characteristic features, details of questions asked, specific students' marks and percentages. Students appeared to show a keen interest in these colourful and detailed features on the charts.

3.4.2 Informal staff interviews

In order to get better insights about the classroom observations I chose to conduct informal interviews with the two lecturers of the three groups I had observed. One of the lecturers taught groups A and C and the other one taught group B. Trumbull has the following to say about a qualitative researcher's intentions and the groups (s) he chooses to study:

> The researcher conducting qualitative research is attempting to discover as much information as possible about the individual or phenomena under study, by providing detailed narrative descriptions of the phenomena rather than statistics calculations. As a result, the qualitative researcher usually studies small groups (2005: 104).

Following his guide, my intention with interviewing the two staff members was to try and discover as much as I could about the students' responses in their respective class groups. These lecturers were not equally experienced as teachers of the target language. One lecturer had only started teaching second additional language in 2013; the second one had taught SAL at school level for more than 10 years and 2013 was her second year of teaching the XCC

[3] http://www.investopedia.com/terms/h/histogram.asp

course. She had also assisted in designing its first curriculum. Consequently, I relied more on the more grounded and experienced lecturer when I needed to verify conceptual knowledge. This was particularly the case when I needed their insights into the degree of student interaction during the normal lectures as compared to the data collection period involving clickers.

As anticipated, the interviews with the lecturers were a valuable source of data: after each of the four data collection days I had a five to ten minute de-briefing session with each of them. These short meetings were valuable and I noted the salient points that came out of them. To allow some reflection, a week after the data collection process had ended, I held a 30 minutes interview with each of the two language practitioners (see appendix 2).

3.4.3 The questionnaire

I regard the student questionnaire as the most significant data collection instrument of this study. The students knew that they would have to complete a questionnaire after the four clicker sessions had ended. The questionnaire contained 12 question statements which had to be rated on a 5-point Likert scale. There were five possible responses to each statement, ranging from 'strongly disagree', 'disagree', 'neutral', and 'agree 'to' strongly agree. This data collection instrument gave students the opportunity to provide motivations for their choices.

The content was divided into two sections (A and B). The questions in Section A focused on students' opinions about the clickers as an assessment tool that improves outcomes; the questions in Section B aimed to probe students' views on the mobile clicker as an interactive tool (see appendix 3).

In order to facilitate the analysis of the students' responses, the question statements were divided into three categories. These will be discussed in chapter 4.

On the last day of data collection after the students had finished answering the clicker questions and the post-clicker discussions were over, I administered the questionnaire to the 51 student participants, who completed it anonymously.

Although English is the primary medium of instruction of the XCC course, in accordance with the language policy of Stellenbosch University, the students were also allowed to express

themselves in Afrikaans. Some students chose this option, and their use of Afrikaans will be discussed in chapter 4.

3.4.4 Focus group interviews

Although I had planned group discussions, as focus group interviews are sometimes called, (Kitzinger, 1995) to enrich this study, I had to allow the research to unfold before I decided on the content to be discussed by the focus groups. After examining the students' completed questionnaire, it was not difficult to identify areas for discussion. Also, during the research study, the students had not been accorded an opportunity to share their opinions about the study. As Kitzinger states:

> Focus groups are a form of group interview that capitalises on communication between research participants in order to generate data […] The method is particularly useful for exploring people's knowledge and experiences and can be used to examine not only what people think but how they think and why they think that way (1995: 299).

As mentioned earlier, four members of each of the three groups (A, B & C) volunteered to participate in the group discussions. Group co-ordinators were invited. Each of the group co-ordinators was responsible for arranging each group's session by liaising with me about group members' availability. To maintain consistency in certain variables, I arranged the same venue for the three group interviews. Each group was interviewed a week after the other, starting from a week after the last data collection day to accord them reflection time.

Before the group interviews commenced, the four members of each group were allocated different coloured numbers from 1 to 4 to use to introduce themselves before each one responded to a question or contributed during the interviews. Participants that were more vocal than others were toned down to give their peers an opportunity to air their views too, while participants who showed signs of being shy were encouraged to share their views.

In describing characteristics of focus group interviews participants Richardson & Rabiee, 2001 (in Rabiee 2004), specify certain selection criteria:

> Participants in this type of research are, therefore, selected on the criteria that they would have something to say on the topic, are within the age-range, have similar socio-

> characteristics and would be comfortable talking to the interviewer and each other (2004: 655).

As mentioned before, participants in my study were relatively homogenous and, therefore, complied with all the criteria above. 'Similar socio-characteristics' convinced me to opt for volunteers from participants of each class group. Consequently, I dealt with a group of participants who were willing and able to contribute meaningfully to enrich the study; they shared valuable insights with me. These interviews served as a consolidation of engagement that was observed to be prompted by histograms as well as complemented by questionnaire responses and staff interviews in this research study.

The following table highlights some important information with regard to the data collection process:

1. The numbers of students are specified as A (19), B (16) and C (16).

2. The twelve histograms viewed by students over the four study data collection dates.

3. The three focus groups of the study and the dates held a week apart from 10 May, the last data collection date.

Table 1: Data collection table

1. Number of students and groups			
Number of students	19	16	16
Groups	A	B	C
2. Data collection dates and numbers of histograms viewed			
12 April 2013	**19 April 2013**	**26 April 2013**	**10 May 2013**
A, B & C	A, B & C	A, B & C	A, B & C
3	3	3	3
3. Dates of focus group interviews, students' groups and numbers of students			
Dates	**17 May 2013**	**23 May 2013**	**03 June 2013**
Groups	A	B	C
Numbers of students	4	4	4

3.5 Ethical considerations

The ethical considerations were grounded in ethical protections, namely voluntary participation, informed consent, and confidentiality (Stake, 1995). Even if the students had initially agreed to participate in the study, they could withdraw at any stage of the research study. It was explained to them that all information was confidential and thus, no information was to be disclosed unless the consent of the participants was sought. The consent forms were issued to all participants prior to the commencement of the study. All ethics documentation were completed and submitted to the Health Research Ethics Committee for consideration.

Informed consent was considered a priority; on 29 January the students were informed about what to expect during the data collection process. This message was reinforced to the students on 15 March through their lecturers as the data collection dates came nearer. I submitted the original ethics documentation to the Ethics Committee in February 2013 and I received the letter of approval to proceed with the research in April 2013. Due to the time that had elapsed between conducting the study and the submission of this thesis, another application was required (see appendix 5).

In their course outline for XCC course, students were informed about the dates of the clicker sessions where they were cautioned to charge their mobile phones and have minimal airtime as a precaution. During the students' orientation, once again, the clicker sessions and expectations were reiterated. Additionally, they were informed that they were expected to sign consent forms.

On 12 April I discussed the content of the consent forms with the students. I explained to them that the clickers were aimed at improving their isiXhosa proficiency and I reminded them about the duration of the data collection, expectations and procedures, namely, observations, post-intervention discussions and questionnaires as well as focus group interviews. Lastly, they were informed that volunteers would be sought for focus group discussions to be interviewed after the classroom-based clicker sessions. The students were also informed who to contact should they need to consult someone about the research study, namely, the primary investigator or my line manager, whom they knew. The consent forms were made available to students in English and Afrikaans (see appendix 5).

3.6 Reliability and validity

3.6.1 Reliability

In case studies design a number of basic key elements should be taken note of and integrated in the design to ensure enhancement of study quality or trustworthiness. In an attempt to appraise credibility of case study research Bell suggests the following definition:

> Reliability is the extent to which a test or procedure produces similar results under constant conditions on all occasions (1993: 64).

In order to achieve reliability sufficient details about the method should be provided. These details afford the target audience an opportunity to assess the validity or credibility of the research work.

3.6.2 Validity

Attempts were made to ensure both reliability and validity of data collection procedures in this research. Bell's concise definition of validity was helpful in this regard, and this concept's complexity as compared to reliability was highlighted:

> Validity […] tells us whether an item measures or describes what it is supposed to measure or describe. If an item is unreliable, then it must also lack validity, *but* a reliable item is not necessarily also valid. It could produce the same or similar responses on all occasions, but *not* be measuring what it is supposed to measure (1993: 65) [my emphasis].

Through test-runs with participants with similar features to the target groups, questionnaires, staff interviews and focus group questions were assessed to what extent they were likely to be reliable and valid.

Chapter 4: Data analysis and interpretation

In the methodology chapter I focused on the details of the data collection methods I used for this study. I also provided the rationale for using them. As indicated in chapter 3, this research is a qualitative case study. It has provided me with tools 'to study complex phenomena within their contexts' (Baxter & Jack, 2008: 544). The previous chapter also indicated that this qualitative approach allows for data analysis to unravel relationships of the 'complex phenomena.' In this chapter, my main aim is to present data from the following sources: observations and histograms as student engagement prompts, the questionnaire, as well as the interviews.

4.1 Observations and histograms

4.1.1 Observations of students' behaviour in the classroom

Observing the students from the back of the classroom was interesting. They seemed to be excited about engaging with clickers. In my notes I noted utterances I heard such as 'cool' and 'lekker.' This excitement could be felt in the atmosphere in the classroom. Their body language changed and their eyes seemed to light up as soon as they had viewed the histograms. The adept manner in which the students handled their devices was striking. Consequently, they completed their tests in three to seven minutes which was less time than anticipated.

The third day, 26 April, was the best data collection day. Student engagement was at its most fluent. All procedures went smoothly; the students were used to the processes involved. The debates and discussion sessions were also livelier on this research day. Content related comments seemed to be more student-led than being initiated by the lecturers. Students appeared to contribute more meaningfully to the classroom engagement and content consolidation, such as, the differentiation between singular and plural nouns and how they are formed: '**i**ncwadi / **ii**ncwadi' (**the**-book / **the**-books). They could also easily differentiate between nouns and locatives in singular '**i**ncwadi / **e**ncwadi**ni**' (**the**-book / **in-the**-book) as well as in plural '**ii**ncwadi / **ezi**ncwadi**ni**' (**the**-book**s** / **in-the**-book**s**). One could still sense the signs of students' excitement, while at the same time the seriousness of the clicker sessions as a means of a formative assessment procedure appeared to be absorbed.

I particularly observed how serious the students were about the clicker sessions on 19 and 26 April when two students could not use their personal mobile phones. One student had a new mobile phone and she was not yet comfortable in navigating it in the same way as her old device. The second student's mobile clicker had not charged properly, the student seemed anxious the mobile clicker would fail before she could complete the clicker test. Both students made arrangements to borrow their friends' mobile phones to complete the tests. It was interesting to observe how the students were taking responsibility and ownership of the clicker tests and the procedures that went together with them. Observing incidents such as these is echoed by Bell's views:

> Direct observation may be more reliable than what people say […] It can be particularly useful to discover whether people do what they say they do, or behave in the way they claim to behave (1993: 109).

My observation of student engagement from the back of each of the three classrooms on the third day of research resulted in interesting insights. For example, I got a sense that the students were also more prepared for the clicker tests. It seemed as if they were also making considerable effort to engage with content as they silently clicked their options. Pacing up and down the class gave me a better view of how engaged the students were. Perhaps, because I could relax that the technology had been mastered, I was able to notice more than the previous sessions. It is at that time that I took the picture below. The idea crossed my mind on the spur of the moment while the students were engrossed in answering the clicker questions. Consequently, this is the only picture that has been included in this thesis because I had not set out to take pictures. The identities of students are thus blurred.

Figure 3: Picture of Group A's intense engagement while using mobile phones on 26 April

The majority of the class group of 19 students is shown in the image. It captures the atmosphere in the classroom. It shows the students' intense concentration on the devices; their body language is serious and focused. Their poses suggest intense thought and there was silence in the room, as is appropriate during an assessment. Already, at this stage in the research, I had begun to notice that engagement was not just about linguistic interaction between students and their lecturers. Here, the student engagement with their devices seemed to show an intensity and focus that I had not initially anticipated.

4.1.2 Histograms as a prompt for engagement

This part begins with a brief description of the 10 to 12 minutes portion of the class time when clickers were introduced. This description includes the histograms and sets the context for a closer analysis of the main source of student engagement data procedures, namely, the questionnaire and focus group interviews that will be discussed later.

The histograms present the polled instantaneous feedback (Johnson & Robson, 2008) input from the students after submitting the MCQs. This study recognises the impact of this data as formative feedback that contributes to students' communicative competence. The part of the histogram below shows some content on developing rapport that the students were expected to be familiar with. It also indicates the subject matter the students had mastered (question 8) and areas the lecturers still had to work on to assist the students (questions 5, 6 and 7) in

order to gain communicative competence that would prepare the students for clinical communicative competence. See appendix 1 for clicker questions 1–8.

All the students seemed to have mastered the two concepts that were the focus of question 8, namely, first person pronoun 'Ndi' (I), the helping verb in the present continuous tense 'ya' (am) and the verb 'zama' (try-ing) that indicates the action that is in progress. However, discussions of questions 5, 6 and 7 seemed to serve as formative feedback to students; their results appeared to indicate that information and explanations were still necessary for students to understand the content better. For example, in question 5, 10 (52.63%) of the students selected the correct option, 'vulani,' while the results in question 6, indicate that 6 (31.58%) of the students knew the correct option, 'hambani' (go you-all). Both questions 5 and 6 tested concord and plural form of verbs. The results of the capture thus indicate that the students still needed support in understanding the relationship of nouns and verbs in the plural form.

Question 7 brings out a different and interesting dynamic, namely, that the students showed more preparedness for communicating in spoken isiXhosa than its written form. 'Ndiyavuya ukukwazi' (I-am-glad to-know-you) and 'Ndiyavuya ukudibana nawe' (I-am-glad to-meet you) are both used after introductions and greetings in isiXhosa and they are both usually spoken while shaking hands. What seems to come through in this question is that the students had grasped the cultural and communicative components but confused the meanings of the two concepts: 'ukukwazi' (to-know-you) and 'ukudibana nawe' (to-meet you). Seventeen of the 19 students seemed to have grasped this communicative cultural based competence, 9 (47.37%) students selected the correct response, 'ukukwazi,' while 8 (42.11%) students chose 'ukudibana.' In their oral assessment, which is a simulation of the clinician-patient scenario their course focuses on, it would not have mattered which one of the two expressions they have used. Either of the expressions would have helped to establish and enrich the rapport with the patient during a clinical interview.

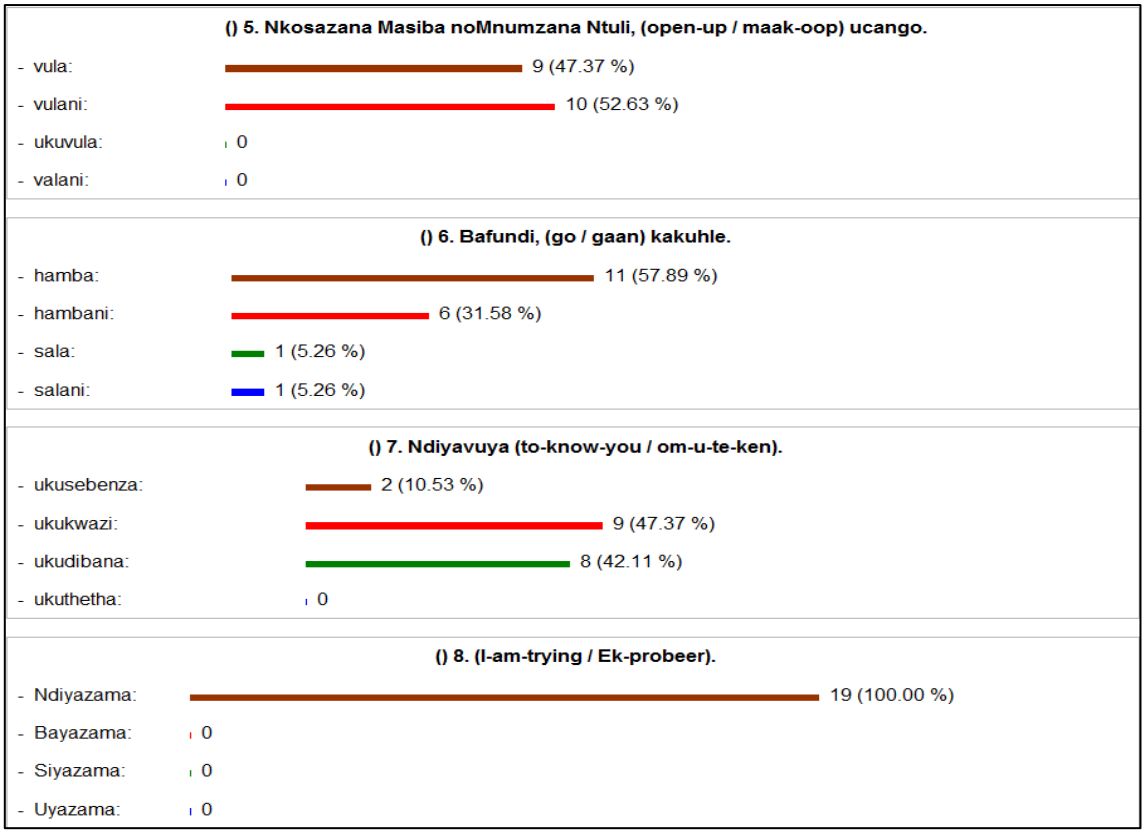


Figure 4: Example of a histogram – Group A

So, this example of a histogram that shows four of the eight questions and displays how meaningful and convenient it was for the lecturers and students to identity the content areas that the students had mastered, as well as those that still needed attention in order to enhance the students' learning.

4.2 Informal staff interviews for meaningful content consolidation

The classroom dynamics that displayed student engagement were also observed by the lecturers. The intensity of this engagement stood out in their comments during the informal briefing consultations I held with them shortly after each data collection session. Staff interviews in this study are a combination of these brief consultations and the 30-minute interviews I conducted with both lecturers two weeks after the last data collection session. The venues for the interviews were their offices, for their convenience. The use of their familiar surroundings was intended to ease possible tensions that could affect the interviews negatively. Regardless of their apparent less formal nature, these interviews were regarded as a fairly significant part of the study that represented the views of the target language practitioners who had insight in the participants' receptive dynamics of SAL.

During my interviews with the lecturers I took cognisance of their varied experience as second additional language practitioners. As mentioned in chapter 3, lecturer A had taught isiXhosa as a second additional language to both primary and secondary school learners. At the time of this research, it was her second year of teaching the XCC course for clinical contexts. Lecturer B had taught isiXhosa only at primary school level before she came to teach the XCC course at the beginning of 2013, three months before data collection of this study.

My initial intention was to ask the lecturers to complete a questionnaire. However, I was advised by an experienced researcher to rather interview them using the same questions that were meant for the questionnaire as prompts (see appendix 2), making notes as the interview progressed and then sending the notes to them for verification. This advice proved to be helpful. I later realised that if I had requested the lecturers to complete the questionnaires themselves, I would have missed out on the valuable information the lecturers volunteered to share with me while answering the questions face to face.

I also realised that the lecturers were more comfortable as we conversed about the clickers than they might have been if they had written down their comments. As the interviews progressed I became aware that the lecturers also seemed to have enjoyed the data collection sessions, contrary to what I thought I had observed. Perhaps, the reason for my ambivalence was that I had not visited their classes before the data collection period in order to make a fair comparison with what generally takes place during the normal classroom engagement. Although I had not observed the language practitioners' classes before commencement of the research process, I had the impression that they were used to being in charge of the learning spaces where they modelled the target language to students, scaffolded and supported them. Therefore, I did not think that I was welcomed as a proficient speaker of the language, who is also an experienced teacher, although I was not given the impression that I was an 'intruder.' However, I was cognisant of the fact that I did not form part of their classroom conventions. It is for that reason that I particularly found the positive perceptions shared during the interviews encouraging despite their informality.

Both lecturers highlighted content consolidation that was facilitated by immediate feedback as having been greatly beneficial to students. The fact that students received formative feedback immediately was important to the lecturers because students' misconceptions and

errors could be rectified in real-time. In Lecturer B's opinion 'consolidation [of content] could take place meaningfully.'

Lecturer B also shared with me that:

> […] clickers also taught students to pay more attention to detail when engaged in an assessment.

I received this feedback because I had prompted her to elaborate on her initial response about whether students had benefited from exposure to clickers or not.

Lecturer A's experience with her class was that students displayed more interest in the lessons. In her view, classroom involvement was more robust than she was used to. Importantly, she seemed to emphasise the benefit of formative feedback:

> The feedback part stood out […] [W]hen the students received feedback, they became more aware of their errors and could rectify them immediately.

Furthermore, it appeared as if the students acted as agents:

> The students were even interested to know the justification of their correct or incorrect responses.

In their quest to understand the content better students sought justification of their acceptable and unacceptable responses. As novices in the target language I found the students' insights intriguing.

The two lecturers' views differed about making adequate time to discuss the identified problem areas. Lecturer A reported that she did not have sufficient time to discuss the feedback of clickers with her students. She pointed out that she 'wish[ed] it [post-clicker discussion session] had been longer.' When I probed her further about this aspect, her comment seemed to suggest that the students did not get sufficient time to display possible communicative competence using the knowledge they appeared to have acquired through clicker sessions although they appeared to be more attentive than usual. Perhaps, Lecturer A's comment could be viewed from the angle that she was not familiar with the affordances of clickers, and thus opportunities to use them to increase classroom participation.

However, Lecturer B could make use of the time available and she could improvise to ensure that the clicker feedback was accommodated by referring to it beyond the data collection sessions. Of importance to me, was that both lecturers' remarks indicated that they could observe a positive difference in their students' responses during the post-clicker sessions. Lecturer B voiced her appreciation of the 'build-up of content' the clickers offered her and her students. She emphasised the cumulative nature of clickers in that they broke down the content material into smaller portions that the students would be able 'to assimilate easily' in preparation for their bigger assessments, the WebCT tests and the oral assessments.

Notably, the post-clicker discussions appeared to have contributed meaningfully to laying a strong foundation for the subsequent lessons while prompting student engagement. Additionally, elimination of students' misunderstandings and misconceptions in real-time seemed to be augmented by formative feedback during post-clicker discussions. These sessions did not only seem to capture the students' interest, they appeared to be good for laying the ground for learning clinical communicative competence, particularly with the use of mobile clickers as devices to mediate formative assessment.

4.3 The questionnaire as a post-intervention reflection tool

On the last day of data collection after the students had finished answering the MCQs and the post-clicker discussions were over, I administered the questionnaire to the 51 student participants. As indicated in chapter 3, the questionnaire contained 12 questionnaire statements; the students' choices expressed value judgements which had to be rated on a 5-point Likert scale, where 1 indicated 'strongly disagree' and 5 meant 'strongly agree,' while 3 as the middle category denoted neutrality. Although the Likert scale specified 5 categories, the table below has combined 'strongly agree' and 'agree' as a single category, in the same way 'disagree' has been merged with 'strongly disagree.' It became evident that a detailed quantitative analysis that encompasses a broad range of value judgements was beyond the scope of this thesis. I then decided to simplify this questionnaire and to use the Likert scale to indicate trends rather than specific value judgements.

Therefore, to enable meaningful analysis of the students' responses, the question statements were divided into three categories. The first six statements (items 1–6) sought to establish the relationship between clickers and learning of isiXhosa; while the second part (items 7–9)

focused on the fun and ease-of use of the clicker as a technological device. The last three question statements (items 10–12) highlighted lecturer-students and students-lecturer interaction. The table below displays a brief questionnaire statement analysis that also indicates the numerical values of the three categories:

Table 2: Questionnaire statements analysis

Quantitative evidence of underlying themes and responses per question									
Question statements 1–6									
1. **Learning of isiXhosa by using clickers**	**Group A 19**			**Group B 16**			**Group C 16**		
Value judgements	**S/A &A**	**N**	**S/D &D**	**S/A &A**	**N**	**S/D &D**	**S/A &A**	**N**	**S/D &D**
1.1 Provided me with extra support	18	1	0	15	1	0	13	3	0
1.2 Reinforced my proficiency	17	2	0	6	9	1	11	5	0
1.3 Helped me to take interest in isiXhosa	14	4	1	7	5	4	9	7	0
1.4 Helped me to be better prepared for WebCT Test 2 and the OSCE	15	3	1	16	0	0	12	4	0
1.5 Enhanced my knowledge of isiXhosa for clinical communication	16	2	1	10	5	1	12	4	0
1.6 An approach to improve students' learning outcomes	14	4	1	12	3	1	13	3	0
Question statements 7–9									
2. **Fun, ease-of-use of clickers and motivation**	**Group A 19**			**Group B 16**			**Group C 16**		
Value judgements	**S/A &A**	**N**	**S/D &D**	**S/A &A**	**N**	**S/D &D**	**S/A &A**	**N**	**S/D &D**
2.1 Easy to use	19	0	0	13	2	1	15	1	0
2.2 Fun to use	17	2	0	8	8	0	10	5	1
2.3 Motivated my learning of isiXhosa	17	1	1	12	3	1	15	1	0
Question statements 10–12									
3. **Interaction during clicker sessions**	**Group A 19**			**Group B 16**			**Group C 16**		
Value judgements	**S/A &A**	**N**	**S/D &D**	**S/A &A**	**N**	**S/D &D**	**S/A &A**	**N**	**S/D &D**
3.1. Made it easier for me to interact with my lecturer	11	7	1	4	10	2	4	10	2
3.2 Encouraged me to share ideas with my peers	10	7	2	4	8	4	4	7	5
3.3 Made me participate more in class	9	6	4	5	6	5	4	7	5
Key: S/A & A = Strongly Agree; N = Neutral and S/D & D = Strongly Disagree									

4.3.1 Analysis of questionnaire

A brief analysis of quantitative data shows strongly positive support for the role that clickers played in the isiXhosa classes. There was strong support for the first cluster of questions relating to support for learning isiXhosa. Here Group A was particularly positive with 82% of responses choosing SA/A (94 of 114 responses), and only 4% indicating that they disagree. Results for Groups B and C were also positive, 69% and 73% respectively agreed with the statements; in Group C, no students disagreed. The specific question with the most positive responses was 'provided extra support,' while students were less certain about the statement 'helped me to take an interest.'

For the second cluster of questions around the theme, 'Fun, ease of use and motivation', the response was even more positive, particularly in Group A where 93% (53 of 57) responses expressed that clickers were easy, fun and motivating to use. With 69% in Group B and 63% in Group C, the response was a little less positive. Overall, across all questions in this cluster, there were only four responses that disagreed with the statement.

The cluster of questions in the third section – on interaction – was least positively evaluated. Again, Group A was most positive with 30 out of 48 responses (63%) in the 'agree' category. For both B and C, the majority of responses were in the 'neutral' category, with an even split between 'agree' (13 in B; 12 in C) and disagree (11 in B and 12 in C). Later, some of the responses in this category are explored to interpret the less positive perceptions of the impact of clickers on interaction.

In interpreting responses of the three class groups, it was easy to note that Group B was inclined towards neutrality, if not negativity in their manner of selecting value judgements compared to their counterparts in Groups A and C. It is rather difficult to provide particular reasons for this difference in responding. However, two possible rationales could be advanced for the differences. Firstly, Group B was taught by a one lecturer while the other lecturer was responsible for Groups A and C. Secondly, possible difficulty in interpreting some question statements, particularly, interaction-related value judgements might have posed a challenge.

Below I use qualitative analysis to understand these trends at a deeper level.

4.3.2 Theme 1 – Learning of isiXhosa

During the analysis of the questionnaire some themes that emerged appear more prominent than others. The prominent themes that seemed to come through the students' comments of the first and third questionnaire statements of the first category are that students either felt compelled or encouraged to study. However, these underlying themes appear to be more justifiable in the first rather than in the third question statement.

The following examples of students' comments highlight a duty-bound perception of the students. There were several references to being 'forced' to study.

> *It [clicker sessions]* ***forced me*** *to study.*
> *Doing these weekly test* ***forces me*** *to learn.*
> *It* ***forced me*** *to learn a bit of Xhosa each time when I had to write the test.*
> ***I was forced*** *to sit down and study Xhosa each week.*
> *It* ***forced me*** *to go over my Xhosa regularly.*
> *Dit* ***het my gedwing*** *om te leer (It forced me to study).*
> *Dit* ***dwing ['n] mens*** *om elke week te hersien (It forces one to revise every week).*
> ***I had to study*** *and go through my work a few extra times.*

On the other end of the spectrum a theme that highlights a more positive aspect related to motivation could be detected about these clicker sessions:

> *It* ***motivated me*** *to revise my work each week.*
> *It* ***motivated me*** *to study more.*
> *It* ***motivated me*** *to learn.*
> *Dit het* ***my aangemoedig*** *om elke week die werk te leer (It motivated me to learn the work every week).*

Reinforcement of work done in class is another sub-theme that seemed to come to the fore although in a less significant manner in the first and third questionnaire statements. Due to this theme's bearing on clinical communicative competence in the class and beyond, it appeared to be worth probing. The following students from Group C made these remarks:

> ***Reinforces the previous week's work***
> *The tests* ***reinforce the theory we learn in class.***

It has forced me ***to revise work immediately and be fresh in my mind which helps with orals****.*

In summary, there seems to be consensus among the students of all three class groups that the clicker sessions were an acceptable and appreciated means of support and additional assistance. The students appeared to re-iterate similar sentiments that revealed that they felt compelled, yet encouraged, to study and thus revised their work during the data collection period of the clicker sessions. The additional theme of the reinforcement of content that is learnt in class seemed to be closely linked to regular revision of subject matter.

Besides the themes discussed above, the students also seemed to enjoy the democratic choice of using their language of preference, Afrikaans, as shown in the remarks quoted above – 'Dit **het my gedwing om te leer'** and 'Dit **dwing ['n] mens** om **elke week te hersien.'** I was struck by the choice of 'gedwing' (forced) and 'dwing' (force) in the Afrikaans comments above because of the reinforcement of strength that is embedded in the meaning of force. I got the impression that this emphasis was difficult for the students to express in English; hence they opted for what I presume is their first language, Afrikaans. Also, these Afrikaans speaking students seemed to display greater comfort and ease when expressing themselves in a language they feel most at ease with.

These comments are also an expression of the institution's language policy, namely, 'we commit ourselves to multilingualism by using the province's three official languages, namely Afrikaans, English and isiXhosa' (Language Policy of SU, 2016: 2).

Preparedness for the clicker tests as a theme was evident in questionnaire statement 4. The general school system background of the students who are used *to prioritising work that is meant for marks came out strongly in the comments below:*

It [clicker session] gave me ***practice and reassurance*** *that I do know most of my work.*
Ek ***leer aanhoudend****, d.w.s. as ek moet leer vir die toets en OSCE ken ek al bietjie die werk (I constantly study, that is, if I have to study for the test and OSCE I would already know the work a bit).*
I did a lot ***more revision****.*
It gave me ***an idea of what to expect*** *in OSCE and WebCT.*
It ***helped me with my tests and OSCE*** *to use words in the correct format.*

*I am **more aware of** which sections **I need to work on.***

The students' responses to question statement 4 seem to display that they had a good grounding in how to prepare for assessments. They also show how clickers helped them to be more prepared for the two assessments, the WebCT test and the simulation Objective Simulated Clinical Examination (OSCE) that were meant to follow the clicker sessions. Interestingly, the next comments from Group C students suggests a different kind of engagement for the 'long term':

*Helped put the Xhosa **firmly in my mind**. It allowed it to **stay with me in the long term.***
*I feel that studying for these [clicker sessions] **will help with my further studying** and it will make my studying easier.*

These comments could signal a number of aspects, however, the two that are easy to highlight are: one, that the clickers gave the students reassurance of the isiXhosa knowledge they seemed to have acquired and probably mastered, as well as which areas they still had to improve; and two, these short test sessions allowed the students to start thinking about the long term. Their future clinical communicative competence as occupational therapists seems to have been nudged by preparing for assessments.

From the comments such as '**stay with me in the long term**' and '**will help with my further studying,**' I am inferring that this future oriented theme implies that, by learning isiXhosa through clickers, students were being communicatively equipped in preparation for their clinical careers.

Professional identity is a broad underlying theme that was detected in the students' comments in all the three class groups. Questionnaire statement 5 probed improvement in isiXhosa for communication in clinical settings. The students' commentaries relate to occupational therapy as a profession.

Seemingly, the three responses below acknowledge improvement of basic communicative competence through exposure to clicker sessions.

*I know **how to communicate better**.*
*Yes, but [I] **still haven't learned so much vocabulary** that I'm confident for a real interview.*

I have an idea *on how to approach a Xhosa speaking patient.*

These responses imply that knowledge of communication was already acquired, and thus it can be said that, the clicker sessions advanced this skill to a higher level.

The acknowledgement of the ability to converse with an isiXhosa-speaking patient is there. For example, during their first oral assessment the students displayed a good grasp of developing rapport with the simulated patients. They could greet appropriately, ask health questions, ask polite requests and empathise with patients when they indicate illness:

Molo, nkosikazi. (Hello, Ma'am.)

Uziva njani, namhlanje? (How do-you-feel today?)

Ndicela uhlale apha phambi kwam. (Please sit here in-front of-me.)

Ndiyavelana nawe. (I-emphathise with-you.)

However, the grounded knowledge of the ability to develop rapport with patients is quickly crushed by the lack of confidence to go beyond a simulated clinical interview to an actual consultation.

Progression from a general introduction to isiXhosa to its usefulness as a language that is put 'into context' and 'narrowed to' the occupational therapy field seems to be evident in the three responses below:

Puts isiXhosa ***into context*** *of how we will use it.*
It is ***narrowed to*** *our field.*
It is a focused course that has been designed for ***Occupational Therapists****.*

The occupational therapy that is alluded to above is mapped as part of the broader clinical context that has its own medical terminology. According to these students, there seems to be a progression from the initial introduction to isiXhosa to the achievement of communicative competence in isiXhosa.

The comments are a fitting conclusion to the first category of the questionnaire statements that focused on learning isiXhosa in preparation for clinical communicative competence.

All the work reflects a ***clinical situation****.*

[…] learning new terms, ***medically related****.*

Seemingly, the participants recognise the 'clinical situation' that is aimed at with its 'medically related' terminology that would be complemented by learning the language of the patient:

4.3.3 Theme 2 – Fun, ease-of-use and motivation

As mentioned in the brief quantitative analysis, students were positive about clickers being fun and easy to use. Noteworthy sub-themes emerged from questionnaire statement 7 that focused on the ease-of-use of the clicker rather than from questionnaire statement 8 that highlighted enjoyment. I had not anticipated that students could value easy use of a digital device more than its fun element. In my experience, students are particularly interested in teaching and learning interventions when some fun is included. Nonetheless, the usability theme received overwhelmingly positive responses from the research participants. There was frequent use of the word 'easy' as well as associated phrases such as '**very easy**' and '**easy to use.**'

Speed and uncomplicated access to the clicker questions are added sub-themes to simplicity in the following responses.

Easy and fast.
Easy access.
It is ***very easy and self-explanatory.***

The simplicity of the procedure is emphasised in the quotes below:

It's so simple, and ***just one click*** *and you have an answer.*
All you need is [a] ***web site, SU and clicker number****.*

The comment below seems to refer to the digital culture of contemporary students; this could also be viewed as a reason for the students' ability to use clickers effortlessly.

Students are ***technically advanced****.*
[…] ***easy to understand*** *how to use the clickers.*

All the comments that pertain to this theme could be linked to the digital identity associated with the mobile phones used as clickers for this study. The responses to questionnaire

statement 7 by the students below appear to amplify the gist of the comprehensive ease-of-use theme, and link it to their cell phone use.

> *I have access to it on **my phone.***
>
> ***Elkeen ken sy selfoon** en dis maklik om net die knoppie te druk. (Everyone knows her/his cell phone and it is easy to just press a button).*

4.3.4 Theme 3 – Interaction during clicker sessions

This category represents culmination of the questionnaire statements, classroom interaction. Out of the three questionnaire statements, 10 and 12 brought out the sub-theme of interaction in a meaningful manner. In this section selected student's comments will be dealt with in broader detail to probe the interaction theme.

For example, the clicker sessions were a revealing experience for the following student from Group A:

> *I know now where I struggle **so I can talk to my lecturer** about it.*

This statement brought into focus the areas she had mastered and those she still had difficulties with. The student knew that she was free to interact with her lecturer about the difficulties she had identified through the clicker sessions. She was confident that her engagement with her lecturer would yield positive results that would resolve her problems and complement her language inadequacies.

Three more comments came from the same class group, Group A, as the student above.

> ***Raised questions.***
>
> *She [lecturer] provides feedback and we can **ask questions.***
>
> ***Asking questions.***

For these three students, engagement meant posing questions to the person who has expertise in the target language they want to ask questions about. These questions are contained in the remarks and seem to have been triggered by the clicker sessions. 'She [lecturer] provides feedback and we can ask questions' clearly spells out the expectations about the role of the lecturer as a capable adult who is skilled in the target content of the language. Additionally, it was also expected of the lecturer to listen and respond appropriately to the questions the students intended to ask her.

A student from Group C had the following to say:

> *Did not influence interaction greatly, but **[I] got feedback.***

She acknowledged that the clicker sessions had had some effect on the way she engaged the lecturer, but it was not significant. Her comment again draws attention to the response that the lecturer provided, she seemed to have valued it. Two other comments from this class were rather hedging about the interaction with their lecturer although there was a sense of interaction before clickers were introduced:

> *It didn't really make any difference.*
> *She was in a way easy to interact with.*

Questionnaire statement 12 yielded responses that can be interpreted on the basis of the motivation they gave in support of their choices on the 5-point rating scale. The first group of comments came from the most enthusiastic class, Group A. They focused more on their personal gain, development and motivation than on sharing the knowledge they had acquired. Their comments, which appear below, are the basis for this observation:

> *I knew the work better.*
> *Studied more.*
> *Learning in class so that less studying had to be done at home.*
> *More knowledgeful [knowledgeable].*

Besides personal gain, development and motivation, a student from Group C, after appraising the statement about participating more frequently in class, made the following remark:

> *Being forced to learn the Xhosa motivated me to learn the Xhosa **and gave me the confidence to respond in class.***

This comment indicated that for this student, the clicker sessions compelled her to study and this served as motivation for her to pay more attention to the isiXhosa content. Her knowledge of isiXhosa seemed to have been enhanced because she studied regularly. Her knowledge and vocabulary gave her the confidence to respond to isiXhosa questions in class because she had something to contribute during the discussions. Her comment represents a

group of students who displayed the same 'confidence' she alludes to, although they did not document this attribute in their questionnaires.

Comments provided by the second group of students also suggested that they were focused in their studies. In turn, this could indicate that the lessons were well structured and so promoted student engagement. The structure and content of the lessons might have been integrated in such a way that they encouraged the students' participation in the class and, as a consequence, reinforced the students' engagement with the lecturer and each other in the 'post mortems' that followed the clicker tests.

The third group that was identified among the participants in two of the groups is that, the students had already acquired sufficient knowledge of the target language and were immersed in learning isiXhosa. Both circumstances made it easier for this sub-group to interact more robustly in class than any of the students in the third group. They seemed to have taken charge of and responsibility for learning of isiXhosa. These students appear to have had a strong internal motivation and were already committed to learning in a structured manner.

Consequently, they expressed that they do not need additional external motivation that the other participants seemed to require. It appeared as if these students were self-directed and so committed that they would automatically pay attention in class, whether there were clicker tests or not. They seem to be saying that they were predisposed to engage in class, as they are serious students.

> *Verander niks (It does not change anything).*
> *My deelname is **dieselfde** (My participation is the same).*
> *My class participation **remained the same**.*

To conclude this analysis, a Group C student whose comment was surprisingly positive as compared to her class group was:

> ***We** are **all** engaged in this activity and **w**e are **all** invited to join in on the fun!*

She seemed to feel very positive about the clicker sessions. She appeared to speak for herself and on behalf of her group as a whole. Her remark seems to imply that she viewed the class as an open forum where everyone's contributions was welcome and appreciated the

opportunity for active involvement. This comment from the less enthusiastic class perhaps explains that the student understood the classroom conventions better than any 'outsider.'

In short, this analysis reinforces the insight that clickers do seem to have enhanced engagement, but not really improved interaction. The comments made by students also point to the importance of the context of formative assessment, which might have placed a constraint on interaction. Comments also suggest that the choice of using students' cell phones rather than the official clickers may have been significant in ease of use. The next section – analysis of the focus groups – develops these insights further.

4.4 Focus group interviews to complement formative engagement

As indicated earlier in this chapter, besides the histograms that served as a prompt for classroom engagement, the qualitative data collection methods that I used in this study were observations, the questionnaire, informal staff interviews and focus group interviews. In conducting the focus groups, I followed a semi-structured group interview process; the questions were open-ended in order to allow the discussions to unfold with minimal prompting. The flow of questions-and-answers was greatly helped by opting for volunteers rather than purposeful selection of participants. The discussion questions focused primarily on the aspects that either could not be covered adequately in the students' questionnaire or the students could not respond to in the manner that was anticipated.

On the last day of data collection I asked for volunteers to participate in focus group interviews; this process was followed by assigning group leaders who could ensure that the participants of the same class group could be available for focus group discussions. By seeking volunteers I had a group of willing students in mind with whom I would be able to probe about clickers in more depth than questionnaires had allowed. Two factors that are related to the volunteers had helped me maintain the authenticity of the study. Firstly, the anonymity of the volunteers; secondly, how they shared their opinions about their experiences of using clickers. When making comments about the rationale for studying for clicker tests, students from Groups A and C showed the authentic way the volunteer participants expressed themselves: their demeanor displayed how they were relaxed and at ease as they expressed their views. Their comments also reinforced the freedom that was felt during the discussions. This relaxed atmosphere was contrary to the participants' emphasis on how the clicker tests

compelled them to study. The following commentary from groups A and B, respectively, highlight this aspect:

> ***F3**: […] **it** [clicker test] **forced you to revise before every lesson**, so that way I kept on top of my work, and then I always knew what was going on. It also made the lesson easier because I was more prepared for the lesson.*
>
> ***F4**: […] **it** [clicker test] **forced you to go through your work** in order to pass your test. So it made you [to] have to go through your test. **Every week you have to go through it** and check over it, just to keep yourself updated.*

These participants' responses seem to acknowledge that use of clickers made them engage with the subject matter more often.

The students' willingness to be part of the focus groups seemed to indicate a commitment and willingness to improve their understanding of isiXhosa as well as their proficiency, and these aspects appeared to extend to communication beyond the classroom, as if in preparation for clinical settings. For example, Student F3 of Group A had the following to say about how their study group originated in the use of clickers:

> *[…] In the beginning, we started as a small group, we went to the library on a Friday morning and just went through our work together, and **now we've kind of formed a study group where we all study together.** I think that was more or less as a result of the clicker tests.*

This student was responding to an additional spontaneous question that I had asked to probe whether there was any engagement among students in and out of class during the data collection period.

Besides these seemingly diligent students, like the one whose views are quoted above, there were also opinionated participants who wanted to share what they, through their engagement with their peers, had found to be helpful or an obstacle.

In the same group, three participants shared their views about their preference to use their smart phone clickers to complete an assessment as compared with the conventional means of assessment, the WebCT test. These Group A students also noted other important benefits of using this on-line technology. Among these beneficial aspects, appreciation of the clicker

as a smart phone tool and clicker tests as less intimidating than other conventional on-line assessments was mentioned as illustrated in the responses below:

F1 *I liked it [using own smart phone as a clicker] because I know how my phone works, so* ***it made me less stressed*** *because I knew exactly how to go into it [my smart phone] and everything [about it]. So,* ***I think I was definitely less stressed.***

F4 ***It*** *[clicker test]* ***was less intimidating.*** *You don't get a paper,* ***a paper makes you nervous, but if it is on your phone and you're comfortable*** *[with it] and you know what to do, then* ***it relieves you of that pressure and discomfort of a test, the anxiety.***

F3 *I agree with what F4 said, and also* ***it is not intimidating because you don't see everything you still have to do.*** *You haven't got a computer screen, you just scroll down and* ***you see one page at a time,*** *which isn't so bad.*

These varied opinions seemed to have been thought through quite well. This clarity of thought could be attributed to the fact that the focus group interviews took place two to four weeks after the data collection period. This interlude seemed to have given the participants time and space to reflect on the usefulness of clickers as an on-line assessment tool that could facilitate formative feedback and the difference that the introduction of this device made to learning isiXhosa in preparation for clinical setting consultations. It seemed as if, after the reflection period, the students were free of the anxiety that was caused by the weekly assessments that had 'forced them to study.' Therefore, it was easier to see the on-line test in perspective. The benefits of this reflective mode could also be seen in the following response that was given by a Group A participant when she was asked why it was necessary for students to revise the content for clicker tests:

F4 *If you didn't go through your work, you could kind of do the test, but* ***you wouldn't be 100% sure of your answers.*** *You had to have at least read through it and recapped your work.*

This student seemed to aim for excellent marks that would lead to proficiency in isiXhosa. This language proficiency would take them a step closer to the clinical communicative competence that is the ultimate aim of all the students of the XCC course. An important reason for conducting the focus group discussions was to validate the findings derived from,

particularly, my observations of the students and the analysis of their responses of their questionnaire.

Firstly, the students' conduct and demeanour during and after the clicker tests intrigued me. I had to confirm that what I had perceived to be excitement was an accurate observation.

Secondly, it was important for me to establish what had prompted me to interpret the students' behaviour as enthusiastic. Most importantly, I had to find out whether the enthusiasm had an effect on student engagement that would probably improve communication in clinical settings as a result of isiXhosa proficiency. The following exchange took place between Group C students and I:

LM *Tell me about your experience, this new novel experience with using clickers … Was there an element of fun? Was there an element that was new to you that you had never experienced before?*

F3 *It was a very interesting way. It took away, I don't know why, but like the negative connotations that come with a test. So it was a new kind of test and I didn't feel as pressurised, which I think was nice, and that sort of thing. So it was quite casual, but at the same time it was an assessment that you had to learn for. So for me it just took away the personal stress and pressure.*

LM *Of course.*

F2 *I was also going to say exactly the same about the nervousness and the pressure of a formal test, and this just made it a more relaxing environment. I felt I did better because of that, because you're on your phone, it wasn't stressed, you didn't feel your heart racing before you did it, and because of that I actually found that I was a lot calmer and my answers, I could see a bit more clearly.*

F2 and F3's opinions in this extract represent a general view of the students I interviewed. These kinds of comments clarified for me why the students appeared to be relaxed when they were doing the clicker tests. Another interesting feature of both this and the previous group's interaction is that students refer to what others have said, in this case, agreeing with one another.

Thirdly, it was necessary for me to confirm what I knew with regard to participants responding to an instrument such as a questionnaire, namely, respondents are known to get 'tired' as they get to the end of the questions or statements. This can be a problem when participants have to motivate their ratings. However, the 'tiredness' could also simply be a sign of waning interest or excitement.

Fourthly, during the other data collection procedures, not all students got an opportunity to express their feelings and there was no other opportunity where they could share their views and opinions. For some students, the classroom could be too confined and formal due to the conventions that are expected when you are a student and a lecturer is in front of you.

My idea was that in a smaller group the students would be given the opportunity to be unrestricted, so an attempt to get closer to their 'authentic' expressed world of emotions about the clickers and their use would be more successful. Also, my experience with working with students had taught me that some of them can be quite vocal and hold strong opinions. I was then interested in what they had been keeping in their minds as the research study progressed. In addition, as a non-academic staff member who used to interact with students quite closely, this proximity with the students would give me an opportunity to have face-to-face interactions with the students.

Some of the striking responses I received were about 'immediate feedback,' which highlights formative feedback. This element of immediacy seemed to resonate well with the students.

A Group C student had the following to say about immediate feedback and content consolidation:

> ***F4*** ***It really helps to get the feedback immediately****, because when you've just done it [the clicker test],* ***it's fresh in your mind****. […] if the feedback is late you are sort of disconnected from it […]* ***it doesn't form any critical improvement,*** *whereas if you've gone over [it] and you've seen where you've gone wrong, or where you might have made a mistake […] when that happens* ***it kind of reinforces what you should have known, or should know.***

The student F3 below mentions these two aspects, namely, consolidation of content and reinforces the immediacy that has been indicated above.

F3 *I felt that it helped* ***consolidate the work big time****, and also that we got the feedback straight after we'd done it. That really helped, because you could go through and* ***you realised where you'd made a mistake.***

Lastly, F4 below brought out three pertinent issues. Besides immediacy, timely corrections of misconceptions and misunderstandings, she points out self-esteem which goes together with confidence when you have done well.

F4 *For me, I liked the fact that it [feedback]* ***came immediately and that you could see where you went wrong,*** *because then* ***it's an eye-opener if you need to study harder****. Also, you are confident because you know you've done well.* ***You feel good about yourself and you feel confident in the next test****, which also helps.*

What could be deduced from these group discussions is that the engagement that took place between the focus groups participants and I yielded the richest data as compared to other data collection instruments of this research, although it was initially meant to be complementary to the questionnaire.

4.5 Signs of communicative competence from student engagement and formative feedback

Consolidation of all data collection procedures and these focus group discussions seemed to show confirmation that student engagement, particularly in the context of formative feedback, had taken place. More encouraging observations were signals that student engagement that was prompted in class extended beyond the classroom, into formation of study groups. This could be a pointer that there is a possible avenue that leads to isiXhosa proficiency to advance clinical communicative competence with patients in future. There were also interesting insights into how the choice to use students' cell phones created a different dimension when it came to test taking. The following two students' comments were particularly striking: '… a paper makes you nervous, but if it [clicker test] is on your phone and you're comfortable [with it] you know what to do…' and '… it [clicker test] is not intimidating because you don't see everything you still have to do… you see one page at a time, which isn't so bad.

Chapter 5: Findings and conclusion

This study set out to explore if, and how, student engagement with clickers can enhance clinical communicative competence in isiXhosa. In addressing the research questions I have organised the findings in the following themes: engagement, learning of isiXhosa, shift in pedagogy and preparation of students for professional encounters. I have highlighted student engagement, formative feedback and isiXhosa as the target language of clinical communicative competence for students' future professional contexts. Beyond the discussion

of these findings, this study concludes with reflections, its significance and some suggestions for future research.

5.1 Engagement

5.1.1 Student engagement with mobile phones for crossing boundaries

When I embarked on this study I had a choice of using either the traditional hand-held remote control clicker devices or mobile phones. As mentioned in chapter 3, formal and informal conversations at my institution led me to opt for mobile phones. It seemed as though most students did not only possess smart phones, they treasured them too.

This thesis has referred to the devices the students used to prompt engagement as clickers and, occasionally, related terms such as 'clicker devices' and 'clicker technology' were also used. I have come to the realisation that although 'clicker' is a proper name for the mobile phones that were used in this study, reference to them should be aligned to their personal and contemporary nature. The term that Brown & Pallit (2015) suggest – personal mobile devices (PMDs) – appeared to be more appropriate as these devices do not resemble the original hand-held tools that were first used for teaching and learning purposes in 1966 (Kay & LeSage, 2009) although they are generally still in use in their original form (Salemi, 2010; Mollborn & Hoekstra, 2010; Agbatogun, 2013). Brown & Pallit (2015) interrogate PMDs and laptops as devices that 'are making a profound impact in university settings worldwide, both inside and outside of the classroom' (Brown & Pallit, 2015: 1).

Through this research, I realise that by bringing mobile phones into the classroom the students brought a bit of themselves into this formal setting by crossing the home boundaries into the teaching and learning setting. Mobile phones that ordinarily belong to the social world, by being an attachment of the students, have penetrated the educational milieu. This penetration looked as if it also eased the power relations that are usually associated with the classroom. Elements of the social world had broken the conventional classroom lecturer-students barriers, thus allowing a sense of 'comradeship' in a traditionally taboo space for social media artefacts.

Unlike the remote control clickers, these mobile devices are aligned to the 'digital culture' of the participants of this study. The conventional remote clickers would seem to be part of official pedagogy because students would have found them only in the classroom, whereas

using the PMDs invited an extension of the students into the learning arena. By allowing these digital devices into the teaching environment, the learning space appeared to be made more accessible to students' broader sphere. Although 'many lecturers still view mobile devices as unwanted distractions, rather than critical learning tools' (Brown & Pallit, 2015: 2), these students seemed to have crossed those boundaries.

The PMDs also seemed to have expanded the traditional classroom repertoire. Students appeared to have appreciated using their own familiar devices and become adept at using as a teaching, learning and assessment tool. According to some students, the use of their own devices changed the anxiety usually associated with assessments to a more relaxed feeling. The manner in which the mobile devices might have alleviated most of the students' assessment anxieties had a positive impact on their engagement with isiXhosa. This positive effect is due to their association with life outside the formality of the classroom. Seemingly, digitally mediated experiences (Brown & Czerniewicz, 2010), particularly students' positive attitude to their PMDs that were used to enhance teaching and learning, helped in promoting student engagement in learning clinical communicative isiXhosa. Something that would probably not have been achieved with conventional clicker devices.

5.1.2 Student engagement in the classroom

I argue that the use of PMDs had an impact in all three dimensions of Trowler's framework for understanding student engagement (Trowler, 2010: 5). With regard to the first dimension, 'behavioural engagement' (Trowler, 2010: 5), the students showed their interest by attending class, bringing their PMDs with them and in their involvement in the answering of MCQs. 'Emotional engagement' (Trowler, 2010: 5) as a second dimension can be recognised in the students' expression of enjoyment when using their mobile phones as a formative assessment procedure and the general lack of anxiety when responding to the MCQs. Students' comments ranging from: 'The clickers are fun', 'I enjoyed learning for them [clickers]', to 'We are all engaged in this activity and we are all invited to join in on the fun!', indicate that they were emotionally engaged in using these technological devices. The aspect of PMDs that creates a pleasant experience in the classroom is mentioned by researchers such as Caldwell (2007). 'Students and instructors find their [clicker] use stimulating, revealing, motivating, and – as an added benefit – just plain fun' Caldwell (2007: 19).

However, much as a significant number of students acknowledged the fun element of using PMDs, there were a few students who expressed anxiety when using their mobile phones. The following comments convey some students' anxieties while their peers seemed to revel in using their devices: 'Writing a test on a phone doesn't make it more fun but makes me worried about my phone not working or the battery dying', ''It is better than a written test but still a test', 'It is still a test', 'No test is fun, but it helps'. An interesting thread throughout these four comments is that the apprehension of writing a test appears to surpass the enjoyment that could be experienced when using a device that is generally linked with fun social activities. This shows how deep-rooted the anxiety of engagement in an assessment seems to be to these four students.

The third dimension of 'cognitive engagement' Trowler's (2010: 5) shows a higher order that could also be observed among participants of this study. The following comments might have reasoning elements that were motivated by use of PMDs: 'They motivate[d] me to do well', 'Being forced to learn the Xhosa motivated me to learn the Xhosa and gave me confidence to respond in class', 'The clicker sessions encouraged me to share ideas with my peers'. The insights students gained helped in their approach to isiXhosa and increased their confidence to participate and contribute meaningfully during isiXhosa content discussions.

5.2 Learning of isiXhosa

An important finding is that the use of clickers (or PMDs) seemed to reinforce and consolidate the learning of isiXhosa. The students reported that, because PMDs offered a non-threatening assessment strategy of the content they were taught during lectures, the subject material was reinforced and thus easy to remember during the MCQ assessments. The concepts they battled with were also discussed immediately after the PMD sessions. This seems to suggest that they found the immediacy and repetition helpful for content reinforcement and consolidation.

Although the histograms were not meant to be data collection instruments I suggest that they were helpful in promoting immediacy that led to subject matter reinforcement and consolidation, while prompting student engagement. It could be their colourful, inclusive and detailed nature that captured the students' attention and interest. Interestingly, the students appeared to generate subject content for classroom discussion themselves. The student

engagement with the subject content was thus intensified by studying more and their teachers noted that their participation in content related discussions increased.

Secondly, the students' self-assessment and constructive peer comparison were also noteworthy themes. The students appeared to find formative feedback fruitful because it could offer them anonymity in self-assessment and self-correction, as well as immediacy. The aspect of immediate feedback was reinforced by the students' lecturers, as expressed in the comment: 'When the students received feedback, they became more aware of their errors and could rectify them immediately'. The experiences of the students were a confirmation of Barbour's (2013) notion of formative feedback, namely, the students' intention 'to modify their thinking or behaviour, for the purpose of improving learning' (Barbour, 2013: 10). These aspects could assist them to gauge their progress against that of their peers without feeling intimidated.

Thirdly, as mentioned earlier in this chapter, the element of students' enjoyment was noticed. The choice to introduce mobile phones also seemed to help students to enjoy learning isiXhosa. On starting the XCC course, due to a range of previous experiences of isiXhosa exposure, some students do not have a positive perception towards learning it. Choosing the mobile phones for this study provided an element of fun for the students as they learnt this target language. The enjoyment they experienced while using the PMDs seemed to spill over into their learning of isiXhosa. The positive effect of these elements might have motivated them to do well in the XCC course. This optimism also seemed to relieve the fear of failure in the target language.

A device that is associated with the students' 'digital culture', seems to be part of an effortless 'natural' process of reinforcing a technological literacy that can be an enabler for learning this seemingly difficult language. Bringing this device into the classroom appeared to have breached the barriers of the conventional classroom and thus to have blurred the distinction between acquisition and learning, thus reminding us that adults have an ability to 'access the same natural language acquisition device' Krashen (1982: 14) although it might not be as 'authentic' as the language acquisition of children through everyday exposure.

5.3 Shift in pedagogy

There is also some evidence that the introduction of these personal technologies for learning may have shifted the pedagogy of the classroom which may in turn have enhanced engagement (Traxler, 2010). While students were using their mobile devices to respond to the MCQs and discussing their displayed polled results on the histograms with their lecturers, they seemed to interrupt the conventional lecturer-led style of interaction. With the implementation of PMDs, a noteworthy deeper level of student engagement appeared to take place from students to lecturers rather than the norm, from lecturers to students. The students seemed to be initiating engagement with their lecturers about the linguistic aspects of isiXhosa.

These shifts in initiating engagement were also reported by the two lecturers who participated in this study during their individual interviews. The aspects the lecturers deemed important in their interviews were mainly the result of the intense manner in which the students engaged with the content material. Students seemed to grasp the concepts better and their understanding of the content was deeper. They also identified their misconceptions about content, thus allowing the lecturers to address those misunderstandings in real-time. The students' comments such as these support the lecturers' observations, 'After the test, seeing what I got helped me see where I went wrong', 'I have been able to see why certain things are the way they are', 'When my lecturer went over the test, I was interested to see why some of the words were the way they were'. This is in line with similar findings by Brill & Park (2008) regarding technological devices, they argue that 'technologies must contribute to student learning, and in particular, student *engagement* in learning' (Brill & Park, 2008: 70).

Both lecturers shared the observation that their students were more animated during the post-PMD discussions than they normally were in class. One of the lecturers commented that: 'Class involvement increased. The students were even interested to know the justification of their correct or incorrect responses.' They also reported that students who did not usually contribute to classroom interactions also shared their views about the subject content. This is confirmed in studies such as Caldwell (2007) and Kay & LeSage (2009) which show that PMDs do not only bring engagement in the classroom, but also shift the dynamics by flipping the classroom (Mazur & Watkins, 2010).

5.4 Preparation of students for professional encounters

The study suggests that participants appear to have gained some level of confidence in understanding some concepts in isiXhosa and this self-assurance could carry over to being keen to venture into clinical consultations – the ultimate goal of their studies. It is one thing to suggest that engagement in a course has been enhanced, and another, more complex matter to claim that students' communicative competence has been enhanced.

Frequent engagement in a language is usually seen to have the possibility of refining language skills through, inter alia, repetition of language concepts and grammar. In this research work repeated use of PMDs in the XCC course presumably increased the students' confidence to converse about isiXhosa concepts and its dynamics. These engagements are likely to have enhanced students' isiXhosa proficiency, in and out of class.

I suggest that the technology used in this study makes a worthwhile contribution towards reinforcing students' learning of the target language through engagement with isiXhosa content, lecturers, peers and participation through the assessment process. I argue that the three dimensions of Trowler's framework (Trowler, 2010) for understanding student engagement and Barbour's (2013) formative feedback of lecturers to students are likely to have made some contribution to preparing the students for their future professional healthcare career where they would need the clinical communicative competence in isiXhosa. It is, however, beyond the scope of this study to observe students' language use in their clinical settings

5.5 Reflections

If I could be given an opportunity to embark on the same study again, there are certain considerations and procedures I would do differently in order to make classroom engagement more prominent.

Firstly, I would consider the students' isiXhosa backgrounds. The fact that the students had been exposed to isiXhosa for approximately two months before I embarked on the study

initially seemed to have potential of adding value to the research, however, the findings of the study do not seem to support this notion. While on the one hand I'm positive about using the PMDs with these participants at this early stage as it helped them to feel more comfortable with isiXhosa, on the other hand, I believe it would have been useful to have allowed them to have been able to generate more advanced language content before commencing the research.

The study shows some indications that student engagement would have been more robust if the study participants had been exposed to isiXhosa for longer before commencing with the study. Generally, when engaging about isiXhosa learning after 12 to 18 months of isiXhosa exposure, students turn to code-switch from English to isiXhosa. It is for that reason that probably, if they had been more grounded in the target language, they could have used isiXhosa during data collection. For example, they would probably have been able to cite their own examples of misconceptions regarding the content during the post-personal technology discussions and not only focus on their lecturers' examples. Additionally, some of them might have been able to make direct references to isiXhosa content areas in isiXhosa as the second year XCC students sometimes do. The post-PMD discussion sessions with the lecturers would likely not only have been vigorous, they would have been more meaningful and the students would have gained more insights into the isiXhosa content under discussion.

Secondly, I would pay more attention to the period that was identified for data collection. Four weeks was planned for this study. Extending this time frame to three or six months would probably have yielded more emergent themes and it could also have enriched the data. For example, it would have been easier to measure the impact of the use of PMDs by looking at students' performance on their tests. Because the period of exposure to this technology was rather short, it has been an intricate task to differentiate between the content the students had learnt through face-to-face lectures and what they had acquired through these personal technologies.

The findings over a longer period would also have been more interesting, insightful and worthwhile for isiXhosa learning, as well as for the study's generalisability. Because of the short time frame, this research could easily be regarded as a feasibility study although it is also viable as a stand-alone or free-standing (Bell, 1993) case study for a coursework thesis.

The third aspect I would focus on would be my personal role, as a semi-participant observer in this study. While I was not directly responsible for the pedagogy, my involvement ensured the success of the classroom processes through seamless integration of the technology.

Bell (1993) advocates for the following to make the observation role meaningful: 'to observe and record in as objective a way as possible and then to interpret the data' (1993: 111). In particular, during data collection of this study, intense observations were important to ensure that significant details of the research were not overlooked. However, because I am an emerging researcher who had not only limited experience regarding this method, but also had other roles that sought my attention during the study, my observations were not adequate. I was thus not sufficiently equipped to methodically plan and pilot my observations. Therefore, crucial information that could have been accurately recorded and interpreted possibly slipped through the cracks.

Also, the team I was working with could not effectively support me during observations because its involvement was mainly in the planning procedures in the background. At the venues of data collection, although they were present, they assumed their normal roles as language practitioners.

Based on my experience through this research work, if I was given another chance to embark on this research, I would use the experience of this study to plan my observations more meticulously, practice and pilot my data collection instruments. In the classroom, I would use technologies such as digital audio recorders or videos to look more closely at student engagement. I would also take pictures in a methodical manner, paying greater attention to how students actually interacted with their devices, as well as to the content and character of the classroom interaction.

5.6 Conclusion and study significance

Overall, the study was deemed to be successful in exploring how PMDs may increase engagement with learning isiXhosa as a second additional language for clinical purposes. The main finding is the potential of PMDs to enhance this engagement. However, the small scale of the study means that we can only make limited claims beyond the course.

In the introduction, this research acknowledges the importance of the multilingual setting of the university and health care practice. This aspect is based on what 'is often claimed that worldwide, people who speak only one language are in the minority, while people who speak a language in addition to their first language are in the majority' (Bylund & Oostendorp: 255 in Bock & Mheta, 2014). The recognition of eleven official languages by the South African Constitution (2006) seems to strongly support this multilingual notion. In order to make the vision of the constitution a reality, higher learning institutions that host medical faculties should ensure that they produce clinical practitioners who are not 'linguistically unequipped' (Crawford, 1999: 27) to practise in clinical sites where they do not speak the language of the majority of their patients.

Additional relevant aspects to this study regarding L2 are firstly, the fact that it does not highlight proficiency, and secondly, it does not necessarily have to be learnt as secondary to the first language, and therefore, as 'second best' (Bylund & Ooostendorp: 257 in Bock & Mheta, 2014). So, it acknowledges simultaneous acquisition of more than one language. Similarly, for the XCC course proficiency to promote authentic pronunciation and articulation of isiXhosa is not a key focus area, the intelligible production of the target language to be able to practise functionally in students' life-saving professional domains is most important.

Due to Stellenbosch University being in the Western Cape, with its historical language legacy combined with the South African realities of segregation, isiXhosa is the language of the most vulnerable residents of this province which is dominated by Afrikaans and then English speaking groups. It is hoped that as a result of this positive engagement with learning isiXhosa, the participants of this study would be in a better position to render clinical services where isiXhosa monolingual speakers would be in the majority. These young professionals should be linguistically equipped for this mammoth task through courses such as XCC.

With regard to technology, the potential of this research has gathered momentum since 2013, when the study was conducted. Technological advances beyond 2013 have elevated the PMDs to Bring Your Own Devices (BYODs), Brown & Pallit (2015) view BYODs as 'the practice of students bringing their own laptops, tablets, smart phones or other mobile devices with them to class' Brown & Pallit (2015: 2). In this way PMDs have also been moved from the periphery to the centre of the higher education classroom assisted by wider availability of Wi-Fi at universities, thus raising the importance of this study. Broadly, the prominent findings of

this study include the positive effects of implementation of PMDs on student engagement to augment clinical communication competence in a classroom situation and the positive role of lecturers' formative feedback to students as facilitators of classroom engagement. This feedback could inform future learning beyond the classroom to ensure quality of healthcare in future professional encounters.

In short, this study has shown that PMDs are well suited for today's students, who seem to increasingly possess smart phones and have access to data to participate in social activities. They should thus be incorporated in the higher education contemporary classroom, particularly in clinical settings. The novelty and enjoyment clickers, or in this case PMDs, bring to the classroom make them and similar future devices a worthwhile tool for teaching and learning and this might assist the students' knowledge acquisition. Although the digital tool that has been used in this study is not generally used for second language learning and acquisition, the students in this study seemed to have gained from PMD use in their learning of isiXhosa as a second additional language. In Cardoso's (2011) view 'research on LRS [PMDs] in L2 settings is still in its infancy.' So, this makes this PMD study's contribution meaningful.

5.7 Future research

There are a number of useful lessons to be learnt from this language learning yet technologically inclined study. It seems to suggest that PMDs have a great appeal amongst its participants. This research work would possibly assist to prompt a narrative that seems to be lacking about technology-enhanced teaching and learning of indigenous languages, particularly using PMDs that are increasingly referred to as newer technologies or mobile learning (Brill & Park, 2008). Higher education institutions are well positioned to initiate scholarly conversations of this nature. The insights from these debates might be persuasive for other institutions of higher learning that focus on professions whose work also revolves around saving lives and the importance of human dignity.

Therefore, future research in this field would be meaningful if it can place BYODs more at the centre of teaching and learning interventions in and out of the classroom. Furthermore, with the implementation of BYODs Brown and Pallit add that, 'lecturers are able to engage students in activities that were once traditionally reserved for a computer laboratory only' (2015: 2). While technologically enhanced infrastructural resources are hard to find at some

remote and under-resourced areas of our country, mobile phones are increasingly available, even at the most impoverished sites where teaching and learning is taking place. Mobile phones would make the funding model for potential funders easier and more feasible than constructing high-cost infrastructures. Consequently, more students would gain from such financial resources to the betterment of education in general. Indigenous languages that are more prevalent in these remote areas would thus be on par with, for example, the science, technology, engineering and management (STEM) discipline courses. While PMDs could be utilised to teach indigenous languages in educational institutions such as the site of this study, in remote areas where these languages are more prevalent, PMDs could feature in curriculum for STEM professions.

It does seem as if, in order to be used optimally, clickers should be incorporated in the teaching pedagogy from the onset, rather than being primarily utilised as a resource to enhance teaching interventions possibly combined with a formative assessment procedure. Future studies could either confirm or dispute this notion.

Reference list

Agbatogun, A.O. (2014) Developing learners' second language communicative competence through active learning: Clickers or communicative approach? *Educational Technology & Society.* 17 (2), 257–269.

Angus, D., Watson, B., Smith, A., Gallois, C., & Wiles, J. (2012) Visualising conversation structure across time: insights into effective doctor-patient consultations, *PLoS ONE*, 7, e38014. [http://dx.doi.org/10.1371/journal.pone.0038014]

Banks, D. A. (2006) *Audience response systems in higher education: Applications and cases.* London, Information Science Publishing.

Barbour, I.S. (2013) *Using a student response system to provide formative feedback in large classes: a phenomenographic study at the University of Cape Town. [https://open.uct.ac.za/handle/11427/10024]*

Barnett, J. (2006) Implementation of personal response units in very large lecture classes: Student perceptions, *Australasian Journal of Educational Technology,* 22 (4), 474–494.

Bassey, M. (1981) Pedagogic research: On the relative merits of search for generalisation and study of single events, *Oxford Review of Education,* 7 (1), 73–94.

Baxter, P. & Jack, S. (2008) Qualitative case study methodology: Study design and implementation for novice researchers, *The Qualitative Report,* 13 (4), 544–559.

Beatty, I.D. & Gerace, W.J. (2009) Technology-enhanced formative assessment: A research-based pedagogy for teaching science with classroom response technology, *Journal of Science Education and Technology,* 18 (2), 146–162.

Bell, J. (1993) *Doing your own research project: A Guide for First-Time Researchers in Education and Social Science* (2nd ed.). Buckingham, Open University Press.

Bozalek, V., Ng'ambi, D. & Gachago, D. (2013) Emerging technologies in South African higher education institutions. Institutional enablers and challenges, *Presentation at the 2011 SAAIR forum, Cape Town*, October.

Brown, C. & Czerniewicz, L. (2010) Debunking the 'digital native': Beyond digital apartheid, towards digital democracy, *Journal of Computer Assisted Learning,* 26 (5), 357–369.

Brown, C. & Pallitt, N. (2015) Personal mobile devices and laptops as learning tools. In Filfoil, W. R. (ed.) *Moving beyond the hype: A contextualised view of learning with technology in higher education,* A Publication of the teaching and learning strategy group of universities of South Africa, Pretoria, South Africa, 25–28.

Brill, J. & Park, Y. (2011) Evaluating online tutorials for university faculty, staff, and students: The contribution of just-in-time online resources to learning and performance, *International Journal on E-learning,* 10 (1), 5–26.

Bunce, D.M., Flens, E.A. & Neiles, K.Y. (2010) How long can students pay attention in class? A study of student attention decline using clickers, *Journal of Chemical Education,* 87 (12), 1438–1443.

Burch, V. (2016) Cultural competence or speaking the patient's language? Editorial, *African Journal of Health Professions Education (AJHPE),* 8 (1) 3.

Bylund, E. & Oostendorp, M. (2014) Second language acquisition In: Bock, Z. & Mheta, G. (eds.) *Language, Society and Communication,* Pretoria, Van Schaik Publishers, 255–278.

Cain, J. & Robinson, E. (2008) A primer on audience response systems: current applications and future considerations, *American Journal of Pharmaceutical Education,* 72 (4), 1–6.

Caldwell, J.E. (2007) Clickers in the large classroom: Current research and best-practice tips, *CBE Life Sciences Education,* 6 (1), 9–20.

Campbell, C. & Monk, S. (2015) Introducing a learner response system to pre-service education students: Increasing student engagement, *Active Learning in Higher Education,* 16 (1), 25–36.

Cardoso, W. (2011) Learning a foreign language with a learner response system: The students' perspective, *Computer Assisted Language Learning,* 24 (5), 393–417.

Cheesman, E.A., Winograd, G.R. & Wehrman, J.D. (2010) Clickers in teacher education: Student perceptions by age and gender, *Journal of Technology and Teacher Education,* 18 (1), 35–55.

Cohen, L. & Manion, L. (1980) *Research Methods in Education*. London, Croom Helm Ltd.

Crawford, A. (1999) We can't all understand the whites' language: An analysis of monolingual health services in a multilingual society, *International Journal of the Sociology of Language,* 136 (1), 27–46.

Crystal, D. (2011) *Internet linguistics: A student's guide.* London, Routledge.

DeBourgh, G.A. (2008) Use of classroom 'clickers' to promote acquisition of advanced reasoning skills, *Nurse Education in Practice,* 8 (2), 76–87.

Duncan, D. (2006) Clickers: A new teaching aid with exceptional promise, *Astronomy Education Review,* 5 (1), 70–88.

Edens, K.M. (2008) The interaction of pedagogical approach, gender, self-regulation, and goal orientation using student response system technology, *Journal of Research on Technology in Education,* 41 (2), 161–177.

Evans, J. News 24. 25 April 2017. In partnership with *City Press*, CPUT students protest over lack of facilities at res.

Gachago, D., Morris, A. & Simon, E. (2011) Engagement levels in a graphic design clicker class: Students' perceptions around attention, participation and peer learning, In Scott, E. (ed) *Journal of Information Technology Education*, 10, 253–269.

Garrison, D.R. (2011) *E-learning in the 21st century: A framework for research and practice.* 2nd ed. London, Taylor & Francis.

Gee, J. (1996) *Social linguistics and literacies: Ideology in discourses.* 2nd ed. London, Routledge.

Gee, J.P., Hull, G.A. & Lankshear, C. (1996) *The new work order: Behind the language of the new capitalism,* Boulder CO*,* Westview Press.

Hancock, D. R. & Algozzine, R. (2017) Doing case study research: a practical guide for beginning researchers. 3rded. New York, Teachers College Press.

Hayden, L.C. & Lumma, A. (2007) Learning to talk and talking about talk Professional identity and communication technology. *The social construction of normality.* New York: Routledge, 18-39.

Bylund, E. & Oostendorp, M. (2014) Second language acquisition In: Bock, Z. & Mheta, G. (eds.) *Language, Society and Communication,* Pretoria, Van Schaik Publishers, 255–278.

Heugh, K., Siegruhn, A. & Pluddemann, P. (1995) *Multilingual Education for South Africa,* Johannesburg, Heinemann Publishers.

Hwang, I., Wong, K., Lam, S.L. & Lam, P. (2015) Student response (Clicker) systems: Preferences of biomedical physiology students in Asian classes, *Electronic Journal of e-Learning,* 13 (5), 319–330.

Investopedia, L. (2015) [https://www.investopedia.com/terms/h/heavy_industry.asp]

Johnson, M. & Robson, D. (2008) Clickers, student engagement and performance in an introductory economics course: A cautionary tale, *CHEER Virtual Edition,* 20, 4–12.

Jones, S., Henderson, D. & Sealover, P. (2009) Clickers in the classroom, *Teaching and Learning in Nursing,* 4 (1), 2–5.

Kay, R.H. & LeSage, A. (2009) Examining the benefits and challenges of using audience response systems: A review of the literature, *Computers & Education,* 53 (3), 819–827.

Kemp, C. (2009) Defining multilingualism. In L. Aronin & B. Hufeisen (eds) *The Exploration of Multilingualism*: *Development of research on L3, multilingualism and multiple language acquisition,* (6) 11–26. Amsterdam, John Benjamins.

Kese, P. (2012) Teaching non-indigenous speakers of isiXhosa: a critical evaluation of own practice, *Per Linguam: a Journal of Language Learning= Per Linguam: Tydskrif vir Taalaanleer,* 28 (1), 92–110.

Kilian, S., Swartz, L. & Joska, J. (2010) Competence of interpreters in a South African psychiatric hospital in translating key psychiatric terms, *Psychiatric Services*, 309–312.

Kitzinger, J. (1995) Qualitative research. Introducing focus groups, *British Medical Journal (Clinical research edition),* 311 (7000), 299–302.

Kuh, G.D. (2009) What student affairs professionals need to know about student engagement, *Journal of College Student Development,* 50 (6), 683–706.

Lantz, M.E. (2010) The use of 'clickers' in the classroom: Teaching innovation or merely an *amusing novelty? Computers in Human Behavior, 26 (4), 556–561.*

Lee, A.W.M., Ng, J.K.Y., Wong, E.Y.W., Tan, A., Lau, A.K.Y., & Lai, S.F.Y. (2013) Lecture Rule No. 1: Cell phones on, please! A low-cost personal response system for learning and teaching. *Journal of Chemical Education,* 90 (3), 388–389.

Levin, M. (2006) Language as a barrier to care for Xhosa-speaking patients at a South African paediatric teaching hospital, *South African Medical Journal,* 96 (10), 1076–1079.

Lumma-Sellenthin, A. (2009) Talking with patients and peers: medical students' difficulties with learning communication skills, *Medical Teacher,* 31 (6), 528–534.

Martyn, M. (2007) Clickers in the classroom: An active learning approach, *Educause Quarterly,* 30 (2), 71–74.

Marx, A.E., Nel, P. S. & Du Plessis, A.J. (2007) Human resources: what should the profile be in 2010? 49–52.

Mazur, E., & Watkins, J. (2010) Just-in-Time Teaching and Peer Instruction. In: Simkins, S. & Maier, M. (eds.) *Just in Time Teaching Across the Disciplines, and across the academy,* Sterling, VA, Stylus Publishing, 39–62.

Meyen, E.L., Aust, R., Gauch, J.M., Hinton, H.S., Isaacson, R.E., Smith, S.J. & Tee, M.Y. (2002) e-Learning: A programmatic research construct for the future, *Journal of Special Education Technology,* 17 (3), 37–46.

Mollborn, S. & Hoekstra, A. (2010) A meeting of minds using clickers for critical thinking and discussion in large sociology classes, *Teaching Sociology,* 38 (1), 18–27.

Neal, M. (2008) Look who's talking: discourse analysis, discussion, and initiation-response-evaluation patterns in the college classroom, *Teaching English in the Two Year College,* 35 (3), 272–281.

Premkumar, K. & Coupal, C. (2008) Rules of engagement: 12 tips for successful use of 'clickers' in the classroom, *Medical Teacher,* 30 (2), 146–149.

Rabiee, F. (2004) Focus-group interview and data analysis, *Proceedings of the Nutrition Society,* 63, (04), 655–660.

Republic of South Africa 1996, Constitution of the Republic of South Africa, Act 108 of 1996, *Government Gazette,* 378.

Salemi, M.K. (2009) Clickenomics: Using a classroom response system to increase student engagement in a large-enrollment principles of economics course, *Journal of Economic Education,* 40 (4) 385–404.

Simelane, S. & Dimpe, D. (2011) Clicker technology: The tool to promote active learning in the classroom, In Méndez-Vilas, A. (ed.) *Education in a Technological World: Communicating Current and Emerging Research and Technological Efforts,* Formatex, 83–98.

Song, D. & Oh, E.Y. (2016) A participatory design approach for a mobile app-based personal response system, *Journal of Educational Technology Systems,* 44 (3), 346–361.

Stake, R.E. (1995) *The art of case study research.* Thousand Oaks, CA, Sage.

Stellenbosch University (2016) *Language Policy of Stellenbosch University*. [http://www.sun.ac.za/english/Documents/Language/Final%20June%20Language%20Policy%20November%202016.pdf] (Accessed 16 August 2017).

Thistlethwaite, J. & Morris, P. (2006) *The patient-doctor consultation in primary care. Theory and Practise,* London, Royal College of General Practitioners.

Tlhoaele, M., Hofman, A., Naidoo, A. & Winnips, K. (2014) Using clickers to facilitate interactive engagement activities in a lecture room for improved performance by students, *Innovations in Education and Teaching International,* 51 (5), 497–509.

Traxler, J. (2010) Students and mobile devices, *Alt-j,* 18 (2), 149–160.

Trowler, V. (2010) *Student engagement literature review*, Heslington, The Higher Education Academy.

Trumbull, M. (2005) Qualitative research methods. In George R. Taylor (ed.) *Integrating Quantitative and Qualitative Methods in Research,* 101–126, Lanham, MD, University Press of America.

Tyam, N. (2016) *An exploration of teaching and learning in an isiXhosa communicative language skills course in a medical school.* [https://open.uct.ac.za/handle/11427/20631]

Wood, W.B. (2004) *Clickers: A teaching gimmick that works*. Cambridge, MA, Cell Press.

Yin, R. (2003) *Case Study Research: Design and Methods,* Thousand Oaks CA, Sage Publications.

Appendices

Appendix 1

CLICKER QUESTIONS

GROUP A

Select the correct isiXhosa translation for the the English / Afrikaans words in brackets / Kies die korrekte isiXhosa vertaling vir die Engelse / Afrikaanse woorde tussen hakies.

1. John, (get-off / klim-af) ebhedini.

    A. hlika
    B. hlikani*
    C. khwela
    D. khwelani

2. Nomsa, sebenzisa ipensile (in-the-book / in-die-boek).

    A. Encwadini*
    B. incwadi
    C. iincwadi
    D. ezincwadini

3. Bafundi, (put-down / sit-neer) iincwadi ekhabhathini.

    A. beka
    B. bekani*
    C. thathani
    D. thatha

4. Abafundi (are-speaking / praat) isiXhosa esibhedlele.

    A. bathetha*
    B. sithetha
    C. thetha
    D. thethani

5. Nkosazana Masiba noMnumzana Ntuli, (open-up / maak-oop) ucango.

    A. vula
    B. vulani*
    C. ukuvula
    D. valani

6. Bafundi, (go / gaan) kakuhle.

A. hamba
B. hambani*
C. sala
D. salani

7. Ndiyavuya (to-know-you / om-u-te-ken).

A. ukusebenza
B. ukukwazi*
C. ukudibana
D. ukuthetha

8. (I-am-trying).

A. Ndiyazama*
B. Bayazama
C. Siyazama
D. Uyazama

8 Marks

*Correct answer

Appendix 2

CLICKERS - LECTURERS' INTERVIEW QUESTIONS / PROMPTS

The questionnaire initially prepared for the lecturers and consequently, used for interviews:

1. Did the students benefit from the exposure to clickers as an assessment procedure?

   Yes / No ……

   Please explain why this procedure was helpful /not helpful.

   ……

2. Did clickers stimulate feedback? Yes / No …….
   Please motivate your response.

   ……..

   3.1 Could you make adequate time to discuss identified problem areas? Yes / No …….

   Please explain your response.

   ……

   3.2 Were these discussions following the clicker sessions helpful? Yes / No ……

   Give a reason for your response.

   ……

4. Have the clicker sessions motivated you to use clickers as a formative assessment in future? Yes / No ……..

   Why do you think so?

   ……
   ……

Appendix 3

Putting the click into clickers: A novel formative assessment approach developed for isiXhosa Clinical Communication by Linda Mhlabeni

This questionnaire consists of Sections A and B.
Section A contains questions about the clickers as formative assessment tools.
Section B contains questions about the clickers as interactive devices that enhance active engagement in the classroom.

SECTION A

Please read the statements below and mark with a cross (X) the statement that reflects your opinion about the clicker as an assessment tool that improves outcomes the best.

	Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	The clicker sessions have provided extra support in my learning of isiXhosa.					
Please motivate your answer:						

	Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
2	The clicker sessions have reinforced my isiXhosa proficiency.					
Please motivate your answer:						

	Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
3	The clicker sessions have helped me to take an interest in my learning of isiXhosa.					
Please motivate your answer:						

	Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
4	The clicker sessions have helped me to be better prepared for WebCT Test 2 and the OSCE.					
Please motivate your answer:						

5	Statement The clicker sessions have enhanced my knowledge of isiXhosa for clinical communication.	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Please motivate your answer:						

6	I would recommend the use of clickers to other lecturers as an approach to improve students' learning outcomes.	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Please motivate your answer:						

SECTION B

Please read the statements below and mark with a cross (X) the statement that reflects your opinion about the clicker <u>as tool</u> <u>to enhance interaction</u> the best.

	Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
7	The clicker is easy to use.					
Please motivate your answer:						

	Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
8	The clicker is fun to use.					
Please motivate your answer:						

	Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
9	The clicker sessions motivated my learning of isiXhosa.					
Please motivate your answer:						

	Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
10	The clicker sessions made it easier for me to interact with my lecturer.					
Please motivate your answer:						

	Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
11	The clicker sessions encouraged me to share ideas with my peers.					
Please motivate your answer:						
	Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
12	I participated more in class than I would have without the clicker sessions.					
Please motivate your answer:						

Appendix 4

Focus group interview questions / prompts

1. Have you ever been exposed to clickers before your clicker session on 12 April?

2.

2.1 What did you like **most about clickers?** Why?

2.2 What did you like **least about clickers?** Why?

3. How did you experience being assessed **using your own phone?**

4.

4.1 Most students revealed that the clicker questions forced them **to revise their work**; did you have the same experience?

4.2 Would you have prepared for them the way you did if they were **not an assessment procedure?**

4.3 Are clicker questions **better than other conventional tests**? Why?

5. One of the benefits of clickers is that they give you **immediate feedback** through the display of results? Would you agree with that statement?

6. How did it feel to see **your responses on display** after each clicker session?

7. How did you feel about **your access to your classmates' responses?**

Appendix 5

Students' consent form - English

Dear Student

By now you are aware of an e-learning course which is presently being developed to complement and reinforce all relevant Xhosa language content covered during lectures to improve your language proficiency. It is also designed to assist you to prepare for your Xhosa OSCEs through interactive text-to-speech lessons and assessment procedures.

You are invited to participate in this research project. Your participation is **entirely voluntary** and therefore you are free to decline. Declining to participate will not impact on you negatively in any way, whatsoever. However, you will still be required to complete the e-learning course as it forms an integral and compulsory component of your Xhosa language module as stipulated in your 2012 course outline.

If you indeed decide to participate, you will be requested to complete a pre- and post-questionnaire. In doing so, each student will each be assigned a unique number which will be made accessible to only one member of the research team. Furthermore, it will not be disseminated to anyone else and will remain confidential.
In addition, you will also be asked to make yourself available for a semi-structured group interview of not more than an hour.

By participating in this research project you are, apart from improving your own Xhosa language proficiency, also assisting in the development and improvement of the e-learning course. In this way future students will benefit from your contribution to this research project.

If you have any questions you can contact Dr Philip Lewis at 021-938 9494.

Students' consent form - Afrikaans

Geagte student

Teen hierdie tyd is jy al bewus van die e-leerkursus wat onlangs ontwikkel is om alle relevante Xhosa taalinhoud, wat in lesings behandel is, te komplementeer en te versterk om jou taalvaardigheid te verbeter. Dit is ook ontwerp om jou te help om vir jou OGKE's voor te berei deur middel van interaktiewe teks-tot-spraak lesse en assesseringsprosedures.

Jy word uitgenooi om aan hierdie navorsingsprojek deel te neem. Jou deelname is vrywillig en daarom mag jy enige tyd weier om deel te neem. Indien jy weier, sal dit jou op geen manier negatief beïnvloed nie. Daar word nogtans van jou vereis om die e-leerkursus te voltooi, aangesien dit 'n volledige en verpligtende komponent van jou Xhosa taalmodule is, soos aangedui in jou 2012 moduleraamwerk.

Indien jy wel besluit om deel te neem, sal daar van jou verwag word om 'n pre- en post-vraelys in te vul. Elke student sal sy eie nommer ontvang wat aan slegs een lid van die navorsingspan toeganklik gemaak sal word. Dit sal aan niemand anders versprei word nie en sal vertroulik bly. Jy sal ook gevra word om jouself beskikbaar te stel vir 'n semi-groepsonderhoud wat nie langer as 'n uur sal duur nie.

Deur aan hierdie navorsingsprojek deel te neem, verbeter jy nie net jou eie Xhosa taalvaardigheid nie, maar jy help ook met die ontwikkeling en verbetering van die e-leerkursus. Op hierdie manier sal toekomstige studente baat by jou deelname aan hierdie navorsingsprojek.

Indien jy enige vrae het, kan jy dr Philip Lewis kontak by 021-938 9494.

Appendix 6

Ethics approval documents

UNIVERSITEIT•STELLENBOSCH•UNIVERSITY
jou kennisvennoot • your knowledge partner

Approval Notice
New Application

14-June-2017

Ethics Reference #: S12/02/040A

Title: Using clickers in an isiXhosa Communication Course: A case study on implementation of Interactive Student Response Systems (clickers) for learning isiXhosa as an Additional Language in Higher Education clinical settings

Dear Ms L Mhlabeni

The **New Application** received on **16-May-2017** was reviewed by members of **Health Research Ethics Committee (HREC) 1** via **expedited** review procedures on **14-June-2017** and was approved.

Please note the following information about your approved research protocol:

Protocol Approval Period: **14-June-2017 – 13-June-2018**

Please remember tou se your protocol number (S12/02/040A) on any documents or correspondence with the HREC concerning your research protocol.

Please note that the HREC has the prerogative and authority to ask further questions, seek additional information, require further modifications, or monitor the conduct of your research and the consent process.

After Ethical Review:
Please note a template of the progress report is obtainable on www.sun.ac.za/rds and should be submitted to the Committee before the year has expired.
The Committee will then consider the continuation of the project for a further year (if necessary). Annually a number of projects may be selected randomly for an external audit.
Translation of the consent document to the language applicable to the study participants should be submitted.

Federal Wide Assurance Number: 00001372
Institutional Review Board (IRB) Number: IRB0005239

The Health Research Ethics Committee complies with the SA National Health Act No. 61 of 2003 as it pertains to health research and the United States Code of Federal Regulations Title 45 Part 46. This committee abides by the ethical norms and principles for research, established by the Declaration of Helsinki and the South African Medical Research Council Guidelines as well as the Guidelines for Ethical Research: Principles, Structures and Processes 2015 (Departement of Health).

Fakulteit Geneeskunde en Gesondheidswetenskappe
Faculty of Medicine and Health Sciences

Afdeling Navorsingsontwikkeling en -Steun • Research Development and Support Division

Posbus/PO Box 241 • Cape Town 8000 • Suid-Afrika/South Africa
Tel: +27 (0) 21 938 9677

Provincial and City of Cape Town Approval

Please note that for research at a primary or secondary healthcare facility, permission must still be obtained from the relevant authorities (Western Cape Departement of Health and/or City Health) to conduct the research as stated in the protocol. Contact persons are Ms Claudette Abrahams at Western Cape Departement of Health (healthres@pgwc.gov.za ; Tel: +27 21 483 9907) and Dr Helene Visser at City Health (Helene.Visser@capetown.gov.za; Tel: +27 21 400 3981). Research that will be conducted at any tertiary academic institution requires approval from the relevant hospital manager. Ethics approval is required BEFORE approval can be obtained from these health authorities.

We wish you the best as you conduct your research.
For standard HREC vorms and documents, please visit: www.sun.ac.za/rds

If you have any questions or need further assistance, please contact the HREC office at 021 938 9677.

Yours sincerely,

Franklin Weber
HREC Coordinator
Health Research Ethics Committee 1