

**TEACHER EDUCATORS' PERCEPTIONS OF THE USE OF MOBILE
PHONES IN THE TEACHING OF SOCIAL AND ENVIRONMENTAL
SCIENCES**

MEd (PRIMARY) THESIS

By

LLOYD MIND CHAULUKA

B.Ed. (General Education) Lakeland College, Wisconsin, USA

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CHANCELLOR COLLEGE

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DECLARATION

I, the undersigned hereby declare that this thesis is my own original work which has not been submitted to any other institution for similar purposes. Where other people's work has been used acknowledgements have been made.

LLOYD MIND CHAULUKA

Signature

Date

CERTIFICATE OF APPROVAL

The undersigned certify that this thesis represents the student's own work and effort and has been submitted with approval.

Signature: _____ Date: _____

E.D. Kunkwenzu, Ph.D (Senior Lecturer)

Main Supervisor

Signature: _____ Date: _____

M.F. Salanjira, Ph.D (Senior Lecturer)

Co-Supervisor

DEDICATION

I dedicate this work to my late mother, Hilda Chauluka for her support towards my education. I don't forget my wife Veronica and my daughters Ivy, Irene, Iness, Immaculate, and my grand-daughter Ekari whom I missed much during my study period.

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ABSTRACT

Ministry of Education Science and Technology (MoEST) encourages the use of the Information and Communication Technology (ICT) for teaching and learning in colleges and universities. Mobile phones, also known as cell phones are one type of ICT gadgets which are useful in teaching and learning process. They provide almost similar functionality with computers or laptops in terms of internet connectivity. The study aimed at exploring perceptions of teacher educators of the use of mobile phones in the teaching of Social and Environmental Sciences (SES) in Teacher Training College (TTC). Both public and private TTCs were sampled for the study. The study used both qualitative and quantitative methods of data generation. Thirty-eight lecturers who teach Social and Environmental Sciences in TTCs completed questionnaires while six heads of department and two principals were interviewed. The results of the study show that lecturers in TTC own mobile phones with required facilities for teaching and learning such as internet, whatsapp and facebook; however, most lecturers reported to have skills of using these facilities mainly for social interaction rather than academic purposes. The study also found out that students in TTC are not allowed to use cell phones in the classroom; probably this is yet another reason why some lecturers perceive the use of cell phones in lessons as a challenge. The study recommends TTCs to provide smart phones which can be used alongside the computers as part of teaching and learning resources. However, there is a need for TTCs to review their policies governing the use of mobile phones in the classroom.

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ACROYNMS AND ABBREVIATIONS

BBC	:	Born Before Computer
CPD	:	Continuous Professional Development
DTED	:	Department of Teacher Education and Development
EDC	:	Education Development Centre
HoD	:	Head of Department
ICT	:	Information, Communication and Technology
IPTE	:	Initial Primary Teacher Education
ILP	:	Interactive Learning Program
KSU	:	King Saud University
LOLS	:	Life Orientation and Life Skills
MIE	:	Malawi Institute of Education
MTPDS	:	Malawi Teacher Professional Development Support
MoEST	:	Ministry of Education, Science and Technology
ODL	:	Open and Distance Learning
OBE	:	Outcome Based Education
PCAR	:	Primary Curriculum and Assessment Reform
PL	:	Principal
SES	:	Social and Environmental Sciences
TTC	:	Teacher Training Colleges
TAM	:	Technology Acceptance Model

CHAPTER 1

INTRODUCTION TO THE STUDY

1.0 Chapter Overview

This chapter introduces the aim of the study. It also presents the background of the study. The chapter has also presented the background of Social and Environmental Sciences (SES) as one of the learning areas in Teacher Training Colleges (TTCs) which is also the focus of the study. It has also highlighted global perspectives on the use of mobile phones in teaching and ICT policies in Malawi. The chapter further presents statement of the problem, research questions, and finally the chapter outlines the significance of the study.

1.1 Background to the Study

Primary school teacher educators, also known as lecturers or tutors train primary school teachers in TTC. There are three types of TTCs in Malawi. These are public colleges, grant aided colleges, and private colleges. Public colleges are run by the government through the Ministry of Education, Science and Technology (MoEST). Grant aided colleges are those that are especially run by missions but get financial aid and support from the government. Finally, private colleges are those that are solely run by missions, organizations or religious affiliated organizations. The graduates from these TTCs, whether public or private, are posted to various primary schools in Malawi by the Ministry of Education, Sciences and Technology.

Currently, there are two modes of training primary school teachers in TTCs known as Initial Primary Teacher Education (IPTE) conventional mode and distance mode.

Despite the differences in mode of offering the two programmes, both undergo same content, examinations, certification as well as period of training. However, the IPTE conventional mode splits their training programme into two phases; these are one year for college based phase and another year for field based phase. Under college based phase, students do theory part of their training while on field based phase they are sent into schools to do teaching practice. The IPTE distance mode is sometimes referred to as Open and Distance Learning (ODL) programme. This mode also takes two years but the students are mainly field based. They take some breaks where they attend face to face sessions in their respective TTCs. This programme is only implemented in public TTCs whereas IPTE conventional programme is for both public and private TTCs in Malawi.

There are five departments in Teacher Training Colleges. These are department of Foundations, department of Sciences and Mathematics, department of Literacy and Languages, department of Expressive Arts and department of Social and Environmental Sciences.

There are also ten learning areas from these five departments which the students study without options. Social and Environmental Sciences is one of the learning areas offered in TTC but also happens to be the name of the department which includes Life Skills and Religious Studies as other subjects under this department. Currently, Social and Environmental Sciences is only offered in TTCs and primary schools as a learning area. In TTC and primary school, this learning area is known as

Social and Environmental Sciences because it incorporates social and environmental issues. In secondary schools and other institutions of higher learning, it is called Social Studies. However, Social Studies is the original naming of the subject.

1.2 Social Studies Curriculum in Malawi

The history of Social Studies curriculum in Malawi dates back to the colonial era where it was offered using the multi-disciplinary approach; these subjects include history, geography, and civics. The focus was on citizenship education but it was observed that much of the content was focused on glorifying the colonial masters and the western power (ASESP, 1994). It is further observed that “even at Malawi’s independence in 1964, Social Studies was still taught as geography in standards one to six, history in standards three to six, and civics in standards five to six” (Meryfield & Tlou, 1995, p. 263). Similarly, Tlou and Kabwila (2000) indicate that after independence, even though the goal of Social Studies remained promotion of citizenship, but still there were no major reforms in this subject until Mombasa conference in Kenya which took place in 1968.

The Mombasa conference laid a foundation to the concept of new Social Studies as a subject. An African Social Studies Programme was formed by conference members, Malawi inclusive which later changed to African Social and Environmental Studies Programme (ASESP, 1994). Ministry of Education and Culture (1982) also indicates that even after the new Social Studies in 1968, still Malawi offered Social Studies as geography, history and civics; thus the same structure and content of British education system in the syllabus of primary school.

A great change in the subject of Social Studies was noted between 1987 to 1991 when the Malawi Institute of Education (MIE) was mandated to revise Social Studies syllabus by integrating geography, history and civic. These were named Social Studies in standard 5 to 8 and General Studies in standard 1 to 4 (Tlou & Kabwila, 2000). This syllabus had much emphasis on the issues of conserving the environment and the natural resources compared to the previous syllabus which was mainly learning about landforms, climates etc. (Tlou & Kabwila, 2000). It is also observed that “the secondary school Social Studies programme still remained unchanged with emphasis on the three main Social Science subjects; geography, history and civics which is called Social Studies” (Tlou & Kabwila, 2000, p. 219).

A wave of political change that took place in 1994 from one party state to multiparty system of government prompted the Malawi government to revise the syllabus of Social Studies in order to include new political and social developments. These include civic rights and responsibilities (Tlou & Kabwila, 2000). The rationale for Social Studies curriculum review and revision for the primary school was to develop Malawian children to become graphically and culturally competent in their society as well as being mindful of the proper utilization and conservation of the environmental resources.

1.3 Social Studies Pedagogy

The Primary Curriculum and Assessment Reform (PCAR) introduced Outcome Based Education (OBE) in Malawi, and in TTCs this was effected in 2007. This new curriculum promotes constructivist learning theory and has brought about a paradigm shift in teaching approach from teacher centred to learner centred methodologies.

The new Social Studies curriculum under OBE also advocates participatory teaching and learning approaches that include use of ICT (Tlou & Kabwila, 2000). As stated earlier in this chapter, this new Social Studies curriculum is currently offered as Social and Environmental Sciences in TTCs and primary schools. Lecturers in TTCs are expected to teach Social and Environmental Sciences in an interactive manner using these learner centred methodologies, which include use of ICT as advocated by OBE.

1.4 Use of Mobile Phone in Teaching

Mobile phone is one of modern ITC gadgets that offers several communication channels. This mobile technology provides social networking platforms which are mainly used to communicate different issues between or among users such as text messages, whatsapp, facebook, twitter and just to mention a few. Despite the intended purpose of mobile phone facilities, thus for socialisation or entertainment, it is observed that use of mobile phone for educational purposes is becoming a common expectation especially among learners (Lan & Huang, 2012). Hence, it is contended by Iraki (2015) that mobile phones have grown to such an extent that they are gradually replacing personal computers in modern education contexts; for it is a pocket-sized internet connected computer and convenient for young learners. Through the use of mobile phone internet, students are able to find useful information which is readily available on the net, including e-books.

Use of ICT such as mobile phones in teaching and learning by pre-service teachers prepares them for the immediate and future challenges; for they are equipped with knowledge, skills and values of handling lessons to young learners who are full of

technology. Obiefuna and Offorma (2014) describe these young learners as twenty first century digital natives who understand and speak in the language of technology.

Literature indicates how mobile phones have been incorporated in education globally. For instance, in California (USA) high school students went through a project of using smart phones and laptops in their lessons. Teachers engaged their students to search information pertaining to activities assigned to them through the use of smart phones or laptops. According Goundar (2011) students preferred use of smart phones compared to laptops due to the tablets' light weight, mobility, touch screen, and apps.

In a similar note, mobile phones have also been used by students to evaluate teaching and learning after lessons in some colleges of Japan. Students give feedback to their lecturers after a lesson through text messages. Through this interaction, students also ask for clarification of some areas not understood during lessons. By so doing, both the student and the lecturer have equal opportunity of interacting each other academically through the use of mobile technology such as mobile phone (Susono & Shimomura, 2006).

Furthermore, a project known as Dr. LOLS in South Africa also involves teaching of Life Orientation and Life Skills using mobile phones. The project involves a team of dedicated tutors who support learners and teachers with guidance on life skills topics through the use of mobile phones (UNESCO, 2012a). The above mentioned cases are just some instances whereby mobile phones have played a big role in teaching and learning in various subjects and learning areas in schools and colleges globally.

1.5 ICT Policies in Malawi

The government of Malawi adopted a National ICT policy in December 2005 with support from the United Nations Economic Commission for Africa (UNECA). According to Isaacs (2007) this National ICT policy includes the promotion of ICT in education, which covers areas such as commitment to promote ICT access in schools and colleges, as well as integrated library and information services and networks. The National ICT policy is driven from a visionary 2020 policy statement which sets Malawi as a nation to be technologically driven middle-income economy by the year 2020 (Isaacs, 2007)

The implementation of National ICT policy involves a number of stakeholders and one of them is the Ministry of Education Sciences and Technology (MoEST). According to the National ICT policy, the MoEST is to implement the following among others: mainstreaming ICTs throughout the entire educational system to promote lifelong learning; ensuring that primary and secondary schools and colleges have adequate and reliable computers; intensifying ICT education and training in all training institutions; and promoting awareness on available opportunities to enable students, teachers, and educational institutions to purchase ICTs (Isaacs, 2007). Therefore, the ICT education policy mandates the Ministry of Education, Science and Technology to promote and facilitate the ICT skills acquisition and utilisation in all areas and levels of education and training in order to eliminate ICT illiteracy in the country.

However, the ICT education policy seems to experience a number of setbacks in its implementation, hence creating some gaps in the policy. For instance, the policy

emphasises the availability of computers in schools and colleges. This is contrary to the situation on the ground; for example, some TTCs have very few computers which do not match with students' enrolment. Additionally, the policy mainly emphasises use of computers as ICT resources yet smart phones also provide internet services similar to computers and laptops. Probably the policy was framed at a time when advanced mobile phones such as smart phones were not as common compared to the current trend. The policy also encourages training of human resources for effective implementation of the policy, but such commitment to develop human resource is not demonstrated like in TTCs. Finally, according to Isaacs (2007) most ICT initiatives depend on donor funding such as the World Bank, United States Agency for International Development (USAID), Swedish International Development Agency (SIDA), Department for International Development (DFID), and the Japanese International Co-operation Agency (JICA).

Therefore, Malawi as a nation has a well-documented policy on ITC in education but lacks the muscle to implement such policy due to a number of challenges and some of them are indicated above. Looking at the significance of ICT policy in education and challenges to availability of ICT gadgets such as computers and laptops, it is felt that use of other ICT gadgets such as mobile phones would make a difference in educational setting; hence, there is a need to investigate perceptions of lecturers in TTC of the use of mobile phones in teaching and learning process.

1.6 Statement of the Problem

Although mobile phones could be used as ICT resources in teaching and learning process in TTC, where computer services are a challenge (Kadzera, 2006), it seems this opportunity is not effectively utilised.

The National ICT policy in Malawi which was developed in 2005 advocates for the use of ICT for teaching and learning in schools and colleges such as Teacher Training Colleges (Isaacs, 2007). The new Social Studies curriculum also advocates for the use of ICT in teaching and learning process (Tlou & Kabwila, 2000). A study conducted by Kadzera (2006) indicates that TTCs have inadequate ICT facilities such as computers. It is observed that mobile phones have comparable functionality with desktops and laptops in terms of internet connectivity. Elsewhere, studies show that teachers use mobile phones for teaching and learning in universities or colleges (Altameem, 2011; Goundar, 2011; Humphrey, 2010; So, 2008; Susono & Shimomura, 2006; UNESCO, 2012a). Iraki (2015) also indicates that mobile phones have grown to such an extent that they are gradually replacing personal computers.

Therefore, the study wanted to explore perceptions of Social and Environmental Sciences tutors of the use of mobile phones in teaching. Perceptions of teacher educators are important because they have potential on determining the use of cell phones in the classroom.

1.7 Purpose of the Study

The purpose of the study was to explore teacher educators' perceptions of the use of mobile phones in the teaching of SES in TTCs.

1.8 Research Questions

This study was guided by the following main research question:

What are the perceptions of tutors regarding the use of mobile phones in the teaching of SES in TTCs?

The following are specific research questions which were used in the study:

1. What do tutors think they know about using mobile phones in the teaching of SES in TTCs?
2. What do tutors perceive as challenges of using mobile phones in teaching SES in TTCs?

1.9 Significance of the Study

This study will help SES tutors in TTCs to reflect their perceptions of the use of mobile phones in teaching and learning process. The study will also add to the body of literature pertaining to the use of mobile phones in teaching and learning of SES in TTCs.

1.10 Chapter Summary

This chapter has presented the background to the study, aim of the study, significance of the study, and history of Social Studies. It has been indicated that SES curriculum is only offered in TTCs and primary schools under the umbrella term of Social Studies. The chapter has further presented global perspectives on how mobile phones are used in teaching and learning process. Finally, the chapter has highlighted ICT policies in Malawi. The next chapter I will present a review of literature related to the study.

CHAPTER 2

LITERATURE REVIEW

2.0 Chapter Overview

This chapter presents a review of related literature to the study. The literature reviewed in this chapter is related to the use of mobile technology in schools, colleges and universities with emphasis of the use of mobile phones in teaching and learning. The chapter further introduces the Teacher Mobile Learning Adoption Model as a conceptual framework that guided the study for data generation and data analysis.

2.1 Use of Mobile Phones in Education

Literature indicates that use of technology and mobile phones in particular have the potential to transform education to a new way of teaching and learning (Cui & Wang, 2008; Ismail, Azizan, & Azman, 2013; Lan & Huang, 2012; West, 2013). It is observed that education systems throughout the world are changing and the learning environments are becoming more innovative, interactive and effective due to influence of technology.

Kim, Mims, and Holmes (2006) indicate a tremendous increase in number of colleges and universities which are adopting mobile technologies as teaching and learning tools. Ismail et al. (2013) agree with that observation and contend that the role of technology in education is undeniably significant. This has positively affected

education especially with the use of internet that gives wider access of information (Ismail et al., 2013). Much as the adoption of mobile technology is being appreciated, but it has to be noted again that the level of technology and financial support determine affordances of adopting these mobile technologies into classroom pedagogy.

However, Suki and Suki (2009) also argue that mobile phones as one of modern technology are educationally interesting because they offer several communication channels on one device. Another remarkable observation comes from Google vice president, who challenges that mobile phones are the future of the internet (Iraki, 2015). It is further argued that using mobile phone for educational purposes is becoming a common expectation of learners (Lan & Huang, 2012). Although the argument of Lan and Huang might be right, but this could be perceptions and opinions especially from those learners who have access to modern mobile phones; for they are able to use apps and other facilities convenient for learning. In contrast, the low socio-economic status group of students might only own simple cell phones just for making and receiving calls.

Jacob (2014) also observes that mobile phone is revolutionising the society. This revolution includes education sector for mobile phones seem to be relevant and offer multiple functions in teaching and learning process. At the same time, mobile phones are portable, less expensive, easier to operate and maintain. Similarly, Iraki (2015) argues that mobile phones have grown to such an extent that they are gradually replacing personal computers in modern professional, education and social contexts. This implies that use of mobile phones in education sector has brought a paradigm

shift from traditional way of offering education to modern and innovative ways which are relevant to students' generation.

2.2 Availability and Accessibility of Mobile Phones

It is observed that most teachers and learners already own and know how to use mobile phones for communication. The same observation applies to TTC lecturers and the student teachers. UNESCO (2012a) further emphasises that mobile phones are accessed even in remote areas. According to a research done in some African countries, featured in the Nation Newspaper, the results concur with UNESCO (2012a). This study, which was done in 16 African countries, indicates that mobile phone networks are near-universally available in these countries. It further contends that even for the poor people, “mobile phone comes first, before electricity, water, toilets or even food” and they “would rather skip a meal than be short of airtime.” (Mungai, 2016, February 4, p. 4). This gives an impression that mobile phone is now part and parcel of basic needs even in Africa. As such, mobile phone is perceived as a readily available ICT resource which can be utilised in teaching and learning in schools and colleges; for most people seem to have skills of operating them. This is in comparison with computers or laptops which are rather expensive.

However, it can also be argued that it is not all mobile phones which are conducive for teaching and learning especially cheaper mobile phones; for they don't have recommended facilities such as internet or social networking platforms and are just convenient for making and receiving calls.

Samarajiva and Zainudeen (2008) further observes that mobile phone ownership is increasingly more in the lower socio-economic segments of society. Whereas Ismail et al. (2013) indicate that mobile phone ownership is increasing in this segment of lower socio-economic status because mobile phones prices have currently gone down. It is therefore argued that with the power of portable computing in the hands of everyone and anyone, the time has come to consider using mobile phones for education (Grant & Barbour, 2013).

It is also observed that many developing countries do not have or cannot afford the level of electricity supply required by computers. Additionally, they don't have money to buy enough computers for their students as well as subscribing to internet service. In view of such challenges, Goundar (2011) argues that people are now embracing cheaper mobile devices such as mobile phones, which require less support, financial muscle and operating skills. It can be argued that these skills can even be applicable in education context if they are well supported by the institutions.

Similarly, UNESCO (2013) observes that the fall in prices of these technologies, mobile phones in particular, many people even in impoverished areas can afford and know how to use mobile phones. Bringing a comparison with computers, Goundar (2011) contends that fully charged mobile phone last longer than a laptop. Laptop also needs internet access which is available at fixed locations or wireless points whereas mobile phone internet accessibility is almost everywhere, anytime, especially in developed countries. Therefore, Buchegger (n.d) points out that increase in network connectivity through mobile phone is making young people get online with an autonomous connection, and which cannot be controlled by the school.

However, use of mobile phone internet has to consider financial implication on the part of the students. If students and lecturers are to use their personal mobile phones, it means that they meet the costs of airtime for their mobile phones compared to established computer labs which institutions meet the costs. Unless the institutions provide free internet Wi-Fi to students' mobile phones, then use of mobile phones in teaching and learning could be a challenge.

It is also contended that mobile phones are pocket-sized internet connected computers and convenient for young learners, yet "most schools treat the phone as a disruptive force that must be managed and often excluded from the school and the classroom" (Lenhart, 2010, p. 4). As such, West (2013) agrees with Lenhart (2010) and emphasises a need for educators to figure out how to harness mobile platforms for instructional purposes and employ them to boost educational learning. This includes engaging students to use social networking forums as platforms for discussing academic issues.

The literature reviewed above give an impression that use of mobile phones in teaching and learning might not be a challenge in schools or colleges like TTCs in Malawi; for mobile phones are perceived to be one of basic needs even in remotest areas. However, the challenge might be the quality of mobile phones owned by teachers or learners in terms of facilities required for classroom instruction as well as cost of operating the phones.

2.3 Technology and the Young Generation

There is a new culture of addiction to mobile technology in younger generation. As such, Cakir (2015) contends that today many children and youngsters own mobile devices, especially smartphones, as basic media equipment and they are able to connect to internet on mobile phones. This could be yet another chance of utilising what already exists in the students like in TTCs in terms of skills of accessing internet into classroom pedagogy.

Ally (2009) further observes that younger generations spend most of their time on mobile phones for socializing or entertainment for they are technologically friendly and digitally fluent. Hence, today's young generation is labelled "net generation," "digital natives," and "millennials," for most of them have grown up surrounded by digital technology since birth and that has influenced how they live, work, play, and learn (Grant & Barbour, 2013; Prensky, 2001; Rainer & Rainer, 2011; Tapscott, 1998). Here, it could mean that students even in TTCs have the knowledge of using mobile phone for communication and socialising. Cakir (2015) then argues that these can also be utilised in the classroom.

This could imply incorporating mobile devices which young learners are already familiar with into their learning environment. West (2013) also contends that students love mobile technology and use it regularly in their personal lives; and he argues that no wonder these young people want to employ mobile devices to make education more engaging and personalised.

It is further observed by Obiefuna and Offorma (2014) that the use of ICT by pre-service teachers prepares them for the immediate and future challenges; for it has been described that most 21 century children are digital natives who understand and speak in the language of technology. This implies that adopting use of mobile phones in teaching and learning in schools or colleges means incorporating relevant issues to the students. However, there is indeed a digital divide between the students and the teachers in schools and colleges like in TTCs. This is influenced by generation gap existing between the learners and the teachers. This gap seems to give a challenge to adoption of digital technology such as mobile phones in teaching of which TTC lecturers might have experienced the same.

2.4 Mobile Phones in Western Countries

Literature shows that around the world, and notably in the US, educators are exploring ways to use mobile technologies such as use of mobile phones in order to enhance teaching and learning (Gagnon, 2010; GSMA, 2011a; L. Kolb, 2008; L. Kolb, 2011). According to research carried out by Warschauer (2011) investigating the use of iPads (mobile phones) in K-12 schools in the US, some observations were made. For example, one private school in California, students had daily access to laptops and frequent access to iPads which were provided by the school. These laptops and iPads were meant for searching information using the internet. The students were required to search information on various issues in a lesson. These technological devices were provided by the school; however, students preferred use of iPads compared to laptops due to the tablets' light weight, mobility, touch screen, and apps (Goundar, 2011). This only indicates that mobile phones are the most prevalent mobile devices among American teens and love to use it even in schools.

Although the study is silent about the subjects that the students used iPads to search various information, it can be argued that in SES as a learning areas, there so many emerging and contemporary issues that could be searched using mobile phone internet if colleges provide such an opportunity.

The Mobile Learning Network (MoLeNET) programme in the UK administered mobile learning projects which focused on teacher professional development and teacher training. One of its projects is called “Mobile in Salford”. The project explored the use of mobile phones to enhance learning in and outside of college. The project involved integration of mobile devices into classroom pedagogy through use of social networks that are only open to a specific group of people known as “mobile-accessed closed social networks” in order to promote collaborative learning. Student teachers downloaded instructions and quizzes from their mobile phones to be used in the lessons in the classroom. The project’s results offer several useful lessons for educators and policy-makers interested in developing mobile learning programmes.

For example, some students showed an enthusiasm to use mobile phone in their learning while others were less confident and were overwhelmed by the tasks involved. Some lecturers reported that the production of digital materials for use on mobile devices was particularly time consuming and could have a negative impact on teaching and process (Dykes & Knight, 2012). This only indicates that even in advanced countries there are still some issues concerning use of mobile phones in teaching besides some benefits advocated by researchers such as promotion of participatory learning. However, the use of closed social networks could be similar to facebook or whatsapp forums where SES lecturers and student teachers in TTC can

use to discuss various educational issues in or outside the classroom, but of course with support from their lecturers.

2.5 Mobile Phones in Asia

In Asia, studies indicate that mobile penetration has doubled within a short span of time. In 2001, average penetration was 19.7 per 100 inhabitants while in 2005 the penetration rate rose to 40.9 (Orbicom, 2007). The continent has also registered an increase of mobile phone ownership especially in the lower socio-economic segments of society (Samarajiva & Zainudeen, 2008). These statistics signal the potential of utilizing mobile phone as teaching and learning tools in Asian schools since mobile phone ownership might not be a big issue (Ismail et al., 2013).

Valk, Rashid, and Elder (2010) examined the extent to which the use of mobile phones helped to promote new learning in Thailand. A project involving use of mobile phone in testing students' academic performance in their course of study was carried out at King Mongkut's Institute of Technology North Bangkok in Thailand. The project involved 56 students at the college who were assessed through the use of mobile phone in the classroom. The assessment involved the projection of questions on a screen, to which students responded by sending their answers via SMS. According to Valk, Rashid, and Elder (2010), the project demonstrated an innovative and alternative way of assessing students which represents a new way of learning beyond the traditional way of paper and pen/pencil. It can also be argued that this mode of assessment is environmental friendly, considering the issue of paper; for students only need a mobile phone to respond to questions. This is also one area that the subject of Social and Environmental Sciences promotes. However, issue of cost

for the use SMS needs to be considered on the part of the students and it can be argued that in this case, the project met the cost of the text messages.

In Japan, it is indicated that almost 100% of college students have their own mobile phones. These mobile phones among others are used for evaluating teaching and learning after class. Lecturers get feedback from students on the lessons taught. Similarly, lecturers provide feedback to the students on the issues raised from the lessons. However, the use of mobile phones is forbidden in Japanese traditional classes; but it is also reported that some advanced professors use mobile phones as useful learning tools in their college classes (Susono & Shimomura, 2006).

Getting feedback from students is one way of evaluating a lesson and helps the lecturer to reflect on successes and challenges in the lesson and possibly come up with a way forward. This reflective teaching also helps a teacher to grow professionally. In a similar manner, SES lecturers could find it beneficial to get feedback of their lessons from their students through mobile phone text messages.

In Saudi Arabia, some universities have adopted SMS for teaching and learning. Good example is King Saud University (KSU) in Riyadh, which initiated a new service in 2011. The service allows individual students or groups of students to receive SMS messages from the university's management of faculties, schools or administrative divisions (Altameem, 2011). This facilitates effective communication of academic issues between lecturers and students and the administrators as well.

2.6 Mobile Phones in Africa

Statistics show that mobile subscriptions in the developing world increased by one fifth between 2005 and 2010, standing at 73%. For Africa alone, penetration rates were projected to reach an estimated 41% at the end of 2010, leaving a significant potential for growth (International Telecommunication Union, 2010). Further, Goundar (2011) observes that the number of mobile phones is surpassing the number of computers, and there is now a real opportunity for innovative teaching and interactive learning with mobile devices in developing countries.

Literature indicates that various projects are implemented in Africa pertaining to the use of mobile phones for education purposes. For example in Mali, West Africa, mobile phones support teachers in their delivery of curriculum in classroom practice through a programme called the “Road to Reading.” This programme is organised by the Education Development Centre (EDC), an international non-profit organization based in the USA. Teachers use their mobile phones to download already prepared lesson plans which are used in teaching and learning. They also give feed back to the project activities through text messages (UNESCO 2012a).

In Kenya, Aga Khan University, an international university trains teachers partly through the use of mobile phones. Students are grouped in clusters and get course material support through an SMS system. However, it is argued that this course uses mobile phones more for communication purposes rather than a learning platform (UNESCO 2012a).

In South Africa, the MoMath project commenced in 2007 after the President's Office of the South African Government approached Nokia about a mobile learning intervention to support math education. The project supports participating grade 10 students with access to math content and support through the use of mobile phone. This project provides a platform for the students to participate in competitions based on multiple-choice questions, and engage in peer support and interaction using their mobile phones (UNESCO, 2012b).

There is yet another case of using mobile phones in schools during the time of national wide strike of teachers in South Africa. In August 2010, teachers went on strike at the same time when students were preparing for examinations. To support students in examinations preparation, volunteers communicated with Grade 12 learners via MXit. This is a chat platform with an estimated 27 million subscribers in South Africa that is particularly popular among South African youth. The students used the platform, accessed through their mobile phones to ask questions and download study materials (Humphrey, 2010). It is observed that the initiative involved students to use their own mobile phones in order to access information and download study materials. This could be considered as cost sharing in education; for the students met a certain cost in order to accomplish the assigned tasks during the striking period. It can also be argued that the same could be applicable in TTCs where such or similar initiatives are possibly introduced.

In Mozambique, the Ministry of Education developed a Technology Plan in 2012 which targeted integration of mobile phones in pre-service teacher training colleges across the country. The plan involved large scale use of mobile phones among the

student teachers in order to access curriculum content which they would implement in the schools after they qualify. The model incorporated use of mobile phones alongside established computer labs in order to access the content with the help of their lecturers (UNESCO, 2012b). It can be argued that since the project was initiated by the government at a large scale, then it meant that all financial costs for the activities put in place were met by the government. These may include provision of internet connection to students' mobile phones which would help them to access the content.

The literature which has been reviewed gives an impression that the perception of using mobile phones in teaching and learning has gone far and wide. It is perceived that use of mobile phones in schools would be convenient and cheaper; for a mobile phone is an ICT resource which is locally available even among the people in low socio-economic status compared to computers. However, the level of adopting mobile phones into education system seem to favour advanced nations for they have advanced mobile phones such as smart phones or iPad. Additionally, they have the potential to finance projects aimed at investigated applicability of mobile phones in education. This is a different scenario to developing countries whose students have basic phones mainly for communications. It is again observed that in developed countries, it's less expensive to maintain mobile phones compared to developing nations. This could be one of the challenges that less developing countries might face in the course of adopting mobile technology into their education system such as TTCs in Malawi.

2.7 Mobile Phones in Malawi

Malawi is one of the developing countries. Literature does not indicate much of the use of mobile phones in education. However, some surveys and case studies indicate use of mobile phone or alternative mobile devices in education which have been implemented to improve teaching and learning (Nyondo, 2016; Hollow & Masperi, 2009; Carrier, Finholt_Daniel, & Sales, 2012)

A survey conducted by Nyondo (2016, May 21) in secondary schools indicated that most teachers and students agreed that cell phones are significant in teaching and learning process. Among other issues, students argued that they use mobile phone internet to search academic information which they use to complete assignment tasks given by their teachers; for textbooks alone are not sufficient.

The survey further established that students even contributed money as a group to buy airtime bundles to access mobile phone internet from one of them who owns smart phone in order to search information for the assignments. However, the survey found out that all teachers appreciated the importance of using mobile phone in teaching and learning but most teachers raised concern that allowing learners to use of mobile phones in classroom would mean students spending more time on social networking than learning. It was contended that this is only best suited in colleges; for they have lectures which need supplementary information rather than in secondary schools where learning is detailed like spoon feeding (Nyondo, 2016, May 21). This is a clear indication that students have really embraced technology such as use of mobile phones in searching academic information; but teachers show resistance to integrate mobile phone technology into their pedagogy. The same attitude of secondary schools

teachers might also be applicable to SES lecturers in TTCs where use of mobile phone in teaching seem not to be utilised.

A case study on the use of portable technologies in primary schools was conducted through the initiative program of Interactive Learning Program (ILP). This study, which was in conjunction with Ministry of Education, Science and Technology (MoEST) aimed at exploring the potential of using mobile technology on primary education. The ILP program targeted 50 primary schools across Malawi (Hollow & Masperi, 2009).

The targeted schools were supplied with 520 custom-made handheld interactive learning aids also known as gadgets or learning machines (Hollow & Masperi, 2009). The targeted classes include standards 3, 4 and 5. Gadgets were programmed with interactive lessons of Chichewa, English and also other primary learning subjects. Teachers were fully trained how to assist the learners regarding the use of the gadgets based on objective of the case study.

The results of the study indicate that use of ILP had; increased learners' attendance, reduced dropouts rate, improved learner and teacher enthusiasm, promoted learner centred learning approach as attributed by OBE. It also helped learners to attain higher test scores due to effective retention of information (Hollow & Masperi, 2009). However, it was noted that the gadgets were not sufficient for learners and groups were used instead. Another limitation of the project was sustainability of the program due to pressure of economic resources experienced by MoEST.

In 2011, the Malawi Teacher Professional Development Support (MTPDS) launched a project that aimed at providing support to student teacher under the programme of Open and Distance learning (ODL) in Teacher Training Colleges. The project involved use of low-cost portable MP3 multi-purpose mobile devices. This 3- year project was funded by USAID and it was designed to enhance teacher performance through alternative technology. Content materials for in-service CPD activities were converted and modified for delivery to the ODL students using this alternative technology.

Results of the project show that majority of ODL participants in the pilot project reported that the devices had been helpful to them and that other teachers in their schools had also made use of their media player (Carrier, Finholt-Daniel, & Sales, 2012). From the literature reviewed above, it shows that most of the education activities involving use of alternative mobile devices are project based. This indicates that use of mobile phone in Malawian schools and colleges seem not to be in favour due to a number of factors. These could be availability of advanced mobile phones or skills of using it compared to advanced countries; hence reliance on donor trial projects.

2.8 Educational Impact of Mobile Phones

West (2013) contends that mobile learning makes it possible to extend education beyond the physical confines of the classroom and beyond the fixed time periods of the school day. Therefore, mobile phone is a digital device that allows students to access content from home, communicate with teachers, and work with other people online.

It is also observed that use of mobile phones in teaching and learning has impacted students' life academically. Thus, rather than meeting somewhere at the university campus with their peers to discuss a project, students are said to use chat, SMS, emails and free video telephony by using mobile phone (Bradley & Holley, 2010). But, it can be argued that this mode of discussion, thus through use of chats or SMS, needs proper guidance and monitoring by the lecturer; for students might deviate from academic discussion to social discussion. However, a survey carried by Nyondo (2016) on perceptions of secondary school teachers and students of using cell phones in the classroom for academic purpose indicates that some teachers agree that this would promote independent learning among learners; for students would be getting more updated information through mobile phone internet search. Although this might be true but, again, there is a need to look into cost, availability of the cell phones, and management issues since secondary school students are young learners compared to college students.

Bradley and Holley (2010) further observe that learning is no longer restricted in the classroom; for with lecturer's consent, a lecture could be recorded using mobile technology and be played at student's convenient time and location after classes. Oliver (2005) also agrees with Bradley and Holley (2010) that use of mobile devices has alleviated the students from a burden of carrying heavier tools like laptops, and they are freely carrying with them their files, working on them while on a train or bus or at the park.

Acarturk (2012) also contends that use of mobile devices has become more common in many areas of daily life than in previous years; for technologies like e-books which

are also available and accessed on mobile phones have begun to replace printed materials in colleges or universities. Banister (2010) further emphasises that mobile phones have been used at all levels from primary to tertiary in a variety of curriculum and subject areas; these include literacy, math, social studies and science.

However, Goundar (2011) observes that many pilot projects on using mobile devices in education in developing countries are currently funded by donors such as those research projects carried by universities and also trials by mobile network operators. This also applies to Malawi as observed by Isaacs (2007). It is argued that time has come for the respective government of developing countries to move from pilot and trail phase to nationwide full implementation of such projects (Goundar, 2011).

Finally, a report from mobile manufacturer Ericsson also indicates that “by 2015, 80% of people accessing the internet will be doing so from mobile devices, and perhaps more important for education as internet-capable mobile devices were focused to outnumber computers within the next year.” (L. Johnson, Adams, & Haywood, 2011, p. 12).

2.9 Limitations of Using Mobile Phones in Education

Much has been highlighted pertaining to the use of mobile phones in education context, but still there is a lot that needs to be done in order to fully accept and adopt its existence. Some of the traditional barriers hindering integration of technology into the classroom, and mobile phone inclusive are fear of change, lack of training and modelling, lack of personal use, motivation and negative school environment (Bitner & Bitner, 2002).

2.9.1 Operational Knowledge and Skills

Teachers are the key factors in integrating technology such as adopting mobile phones in teaching and learning. Cui and Wang (2008) emphasise government and schools' effort to offer training opportunities to teachers, so that they are thoroughly prepared and confidently use these technologies. Similarly (UNESCO, 2012b) contends that teachers need to be trained in both content knowledge, technology, and pedagogical strategies for incorporating mobile phones into their instruction.

Elsewhere, it is argued that challenges related to teachers' adoption of mobile technologies have emerged from the fact that they are not effectively prepared to investigate the advantages of these technologies (Kukulska-Hulme, Sharples, Milrad, Arnedillo-Sánchez, & Vavoula, 2009; Schuck, Aubusson, Kearney, & Burden, 2013). Therefore, Newhouse, Williams, and Pearson (2006) contend that teacher education programs require theoretical and pedagogical implementation of sound mobile learning initiatives.

West (2013) argues that unless teachers believe that use of mobile phone and technology as a whole improves instruction, they are not likely to adopt the new approach and organise it in ways that will be effective. He therefore wonders whether teacher training institutions and universities teach their students how to use mobile devices for teaching in classroom or they just meet these stuff when they start teaching, after graduating. Similarly, Goundar (2011) argues that a focus on how to use the mobile technology is not sufficient, but instead there is need to encourage teachers to research and visualise how technology can be used to create new educational horizons.

2.9.2 Attitude of Teachers and Institutions towards Use of Mobile Phones

It is also observed that attitude of teachers and the institutions towards use of mobile phone in teaching and learning impedes its usage. UNESCO (2012b) contends that many people usually associate mobile phones with communication and entertainment, rather than learning. It is further argued that many schools prohibit students from using mobile phones or electronic devices in classroom arguing that they distract school work; for students use mobile phones for cheating and sending sexually portrayed photos or messages (Tindell & Bohlander, 2012).

A study conducted on 777 college students in the US established that 80% believed that using digital devices in classroom such as mobile phones, distracted them from learning (McCoy, 2013). However, O'Bannon and Thomas (2015) observe that the negatives associated with the use of mobile phones have prompted school officials to ban them from classrooms; but it is also argued that this is denying teachers and students instructional benefits associated with use of mobile devices.

Machado (2012) also agrees with the observation that mobile phones may distract schoolwork but he too argues that it is necessary to establish restrictions towards the use of the device in classroom in order to bring discipline so as to achieve its pedagogical actions. Gibson, Taylor, Seymour, Smith, and Fries (2012) concur with the observation and argue that, even though many teachers consider mobile phones a distraction in the classroom, others believe they are beneficial. Thus, many teachers tend to believe that use of mobile phones is significant in teaching and learning but they are reluctant to let learners use them because they are afraid learners might abuse the facilities (Nyondo, 2016, May 21).

Therefore, Grunwald Associates (2013) contends that many parents now believe that mobile phones and apps teach academic skills and content. They also expect schools to make more use of mobile devices in education and look to teachers and schools for guidance on how children can use mobiles for education purpose. Considering the benefits of using mobile devices in education, Kearney and Maher (2013) argue that mobile learning is under-theorised especially in teacher education; for they seem not to utilise these mobile learning devices in teaching and learning such as mobile phones.

The literature reviewed has shown that there is a tremendous change in education sector which has been triggered by the use of mobile phones in teaching and learning either in colleges or schools. Use of mobile phones in colleges is perceived to have lessened academic challenges brought by shortages of books; for e-books and other information are easily accessed on mobile phone internet. However, the issues of using mobile phones in teaching seem to be influenced by level of technology, support from government and institutions, and attitude of teachers towards this mobile technology. These factors may also affect adoption of mobile phones in teaching of SES in TTC.

2.10 Conceptual Framework

This study was informed and guided by Teacher Mobile Learning Adoption Model by Mac Callum, Jeffrey, and Kinshuk (2014) as a conceptual framework. The Teacher Mobile Learning Adoption Model has been derived from Technology Acceptance Model (TAM) which advocates users' beliefs and attitudes as major influences on acceptance of new technology (Venkatesh, Morris, Davis, & Davis, 2003).

These beliefs and attitudes include perceived usefulness and perceived ease of use. These factors are said to determine educators' behavioural intention to use mobile learning. However, the Teacher Mobile Learning Adoption Model has five major aspects which are considered to impact educators' adoption of mobile learning technology. These five major aspects are perceived usefulness, perceived ease of use, digital literacy, teaching self-efficacy, and ICT anxiety. Figure 2.1 shows diagrammatic presentation of the Teacher Mobile Learning Adoption Model.

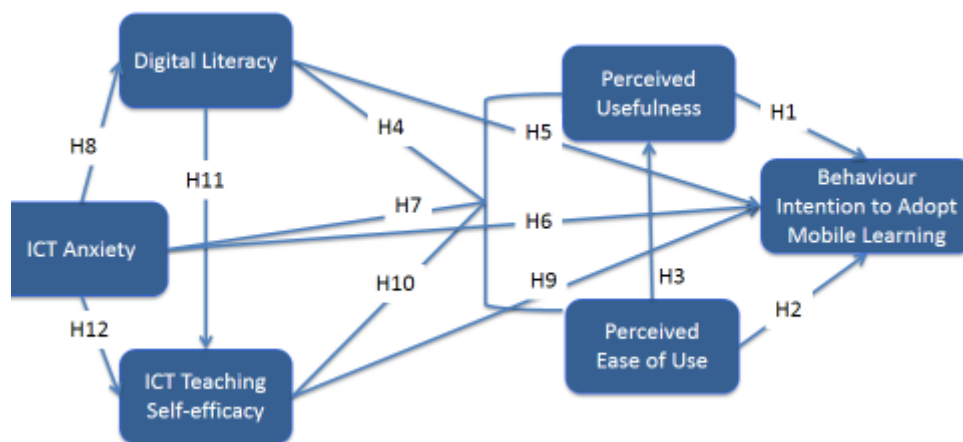


Fig. 2.1 Teacher Mobile Learning Adoption Model

Source: Mac Callum, Jeffrey, and Kinshuk (2014)

This conceptual framework offers valuable information in understanding the perceptions of primary teacher educators of the use of mobile phones in teaching and learning process in TTC. The following is the comprehensive analysis of the framework in relation to the study.

Perceived Usefulness

Perceived usefulness of technology is the degree to which people believe that a particular technology will be beneficial to their lives (Chang & Tung, 2008).

Therefore, if people believe a new technology will be of benefit to them, this new technology will likely be adopted (Chin & Todd, 1995). The model indicates that perceived usefulness will have a positive effect on the behavioural intention of educators to adopt and use mobile technology in teaching and learning (H1). Therefore, perceived usefulness of using mobile phone in teaching may lead to some teacher educators in TTC either to adopt or resist it. For instance, UNESCO (2012b) contends that many people usually associate mobile phones with communication and entertainment, rather than learning.

Perceived Ease of Use

Perceived ease of use is the measure of the degree an individual believes a particular technology is free from effort. In the model, H2 indicates that perceived ease of use will have a positive effect on the behavioural intention to use mobile learning. It is assumed that, if a technology is free from challenges, many educators enthusiastically adopt and use it in teaching and learning. Therefore, some teacher educators in TTC may have some challenges in terms of operating and maintaining mobile phones; and that would be another factor to impede adoption and use of this facility in teaching. Bitner and Bitner (2002) consider this as lack of training and modelling which college authorities could come in to assist. Mc Callum, Jeffrey, and Kinshuk (2014) further indicate that perceived ease of use will have a positive effect on perceived usefulness (H3). Here it simply indicates that if teacher educators face no challenges in the use of a particular technology such as mobile phone, it is easy to adopt and use it in teaching and learning process.

Digital Literacy

Digital literacy is the measure of an individual's ability to use digital technology, communication tools or networks to access, manage, and integrate digital resources (Markauskaite, 2007). The model indicates that digital literacy will have positive effect on the behaviour intention to use mobile learning (H4). Lack of knowledge and skills of operating technological gadgets is observed to be controlling factor for educators to adopt use of technology in their profession (Mc Callum, Jeffrey, & Kinshuk, 2014). In this case, some teacher educators in TTC may seem to lag behind the era of technology; and sometimes especially those who are old in the system sarcastically term themselves Born Before Computers (BBC). According to Bitner and Bitner (2002) this only demonstrates lack of personal use. This deficiency in technological knowledge and skills is likely to affect adoption of mobile phones in teaching and learning by TTC teacher educators. Mc Callum, Jeffrey, and Kinshuk (2014) further contend that digital literacy will also have positive effect on perceived ease of use and usefulness as well (H5).

ICT Anxiety

ICT anxiety has been defined as “the feeling of discomfort, apprehension and fear of coping with ICT tools or uneasiness in the expectation of negative outcomes from computer-related operations” (Rahimi & Yadollahi, 2011, p. 204). The model indicates that ICT anxiety will have a negative effect on the behaviour intention to use mobile learning (H6). Thus, if teacher educators are overwhelmed with technicality of technology like computers or smartphones, they are likely to give up and be contented with what they are able to use (Mc Callum, Jeffrey, & Kinshuk, 2014). In this case, ICT anxiety would make teacher educators in TTC to refrain from

using mobile phones in teaching due to technicalities which one faces when operating smartphones. The model further indicates that ICT anxiety will have a negative effect on the perceived ease of use of mobile learning (H7); and also a negative effect on an educator's digital literacy (H8).

ICT Teaching Self-Efficacy

Teaching self-efficacy is the belief educators have that they are able to effectively teach their students. According to Gibbs (2003) educators who exhibit high levels of teaching self-efficacy tend to take more risks with the curriculum, use new teaching approaches, and make better gains in students' achievement. The model indicates that ICT teaching self-efficacy of educators will have a positive effect on the behavioural intention to technology in teaching and learning (H9). For instance, if teacher educators in TTC have intrinsic motivation of the use of mobile phones in their teaching, they are likely to adopt and use it in the classroom. It is also believed that if teacher educators have ICT teaching self-efficacy, this may lead to a positive effect on the perceived ease of use and use-fullness of mobile phones in teaching (H10).

The model also indicates that digital literacy on the part of teacher educators will lead to a positive effect on teaching self-efficacy (H11). Finally, H12 indicates that ICT anxiety will have a negative effect on educators' teaching self-efficacy.

The conceptual framework informed and guided the study. It assisted to formulate instruments which were used to generate data for the study. Additionally, the framework also assisted in data analysis whereby teacher educators' perceptions of the use of mobile phones in teaching were compared to what the model advocates. However, emerging issues outside the framework were also considered in the

analysis of the data; for the framework could not provide solution to all issues raised in the study.

2.11 Chapter Summary

This chapter presented a review of literature related to the study. The literature reviewed has highlighted an impact of using mobile devices in education worldwide. The chapter has also shown some limitations pertaining to use of mobile phones in learning. These include level of technology, knowledge and skills of teachers, attitude of teachers and school administrators towards use of mobile phones. The chapter also introduced the Teacher Mobile Learning Adoption Model as a conceptual frame work which informed and guided the study during data generation and data analysis phases. The next chapter I will present research design and methodology of the study.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

3.0 Chapter Overview

This chapter describes and justifies the design and methodology of the study. The chapter explains in details how data was generated. It also describes how data was analysed. The chapter further highlights the limitations of the study.

3.1 Research Design

Research design is a plan that guides the organization of data collection and analysis in a way that aims to combine relevance to the research purpose (Blannche, Durrheim, & Painter, 2006). Therefore, it ensures that the study fulfils a purpose and also it can be completed with available resources. The study employed both qualitative and quantitative research designs/paradigms; hence it used a mixed methods research design.

3.2 Research Methodology

The study was designed to use mixed methods research design. Hence, it employed the combination of qualitative and quantitative approaches.

3.2.1 Qualitative Research Approach

Qualitative research is based on the phenomenological paradigm, which use a variety of interpretative research methodologies. It is also referred as naturalistic inquiry or participant observational approach (Best, & Kahn, 2006). Qualitative research rests on world view that knowledge is everywhere and is socially constructed. According to Best and Kahn (2006) it is a means for exploring and understanding the meaning individuals or groups ascribe to a social or human problem.

The strengths of qualitative research approach include use of open-ended questions which give participants the opportunity to respond in their own words, rather than forcing them to choose from fixed responses. It also gives the researcher the flexibility to probe participant's responses for further clarification. This approach also provides understanding and description of peoples' personal experiences of phenomena such as perceptions or experiences (R. Johnson & Onwuegbuzie, 2004). However, qualitative research approach has some shortfalls. For instance, knowledge generated cannot be generalised to other people or settings; for the findings might be unique to the relatively few people including the study site. It is difficult to make quantitative predictions since it does not mainly involve numbers but explanations, narrations etc. It is also more difficult to test hypotheses and theories with large participants' pool in a study; for it takes much time to attend to each participant.

Finally, the results are more easily influenced by the researcher's personal biases for the researcher plays a more central role in interpretation of the behaviour observed (Best & Kahn, 2006; Johnson, 2004).

3.2.2 Quantitative Research Approach

Quantitative research is based on the logical positivism paradigm, which utilises experimental research methodologies. Creswell (2009) contends that it's a means for testing objective theories by examining the relationships among variables. Use of this approach in a study provides the following merits: data generation using some quantitative methods such as questionnaire is relatively quick, and therefore it is useful for studying large numbers of people; research findings can be generalized when the data is based on random samples of sufficient size; it provides precise, quantitative, numerical data which is useful for obtaining data that allow quantitative predictions; the research results are relatively independent of the researcher for data analysis is done objectively using software; and finally it may have higher credibility with many people such as those who fund programs as its findings can be generalised (Harding, 2013; Johnson, 2004).

However, the following are some weakness of using quantitative approach in a study. First, the researcher might miss out on phenomena occurring because of the focus on theory or hypothesis testing rather than on theory or hypothesis generation known as confirmation bias. Knowledge produced in quantitative study approach might be too abstract and general for direct application to specific local situations, contexts, and individuals (Johnson, 2004). As a result of its rigidity, quantitative research approach misses insights which participants provide through open-ended interviews and probing questions under qualitative research approach.

The study therefore employed both qualitative and quantitative research paradigms. The researcher chose to use qualitative research approach in the study for he wanted

to get in-depth views/perceptions of SES lecturers in TTC through interviews. Further, the researcher also used quantitative research approach to generate data for the study because he wanted to get more views from a large group of SES lecturers through likert scale questionnaire. Hence, triangulation of data from both research approaches made the results of the study to be robust and valid. According to Creswell (2009) mixed methods design of data generation is not simply generating and analysing both kind of data but to ensure that the overall strength of the study is greater than if it was only either quantitative or qualitative research. Therefore, use of mixed design helped to strengthen the research design in order to fully address the research questions.

3.3 Data Generation Methods

Data generation is an essential component of research study. Therefore, this study generated data using methods employed by both qualitative and quantitative research approaches since the study used mixed methods research design. Under qualitative approach, semi-structured interviews and document analysis were used. Under quantitative approach, a questionnaire in the form of likert scale was administered to SES lecturers in all public TTCs.

3.3.1 Interviews

An interview is a discussion with someone through questioning in which you try to get information in form of facts, opinions, attitudes or combination of those (Thomas, 2009). Use of interviews in data generation helps the researcher to source highly personalised data such as opinions, views, or facts. It also gives an opportunity to the researcher of probing the respondent further within the interview. Finally, interviews

provide flexibility in terms of the respondent to ask for clarification where the question is not clear (Gray, 2004). However, interviews are only convenient when the study involves a small sample of participants; for it takes much time to interview one participant compared to a questionnaire. The researcher administered the interviews for the study to six heads of SES department and two principals from both public and private TTCS.

The researcher opted for interviews in the study as Koshy (2010) also contends that transcripts from interviews provide powerful evidence when you are presenting your data, and make conclusions. The study therefore used heads of department interview schedule and principals' interview schedule as interview instruments (see appendices 3 & 4).

3.3.2 Document Analysis

Document analysis involves studying the content and structure of the documents in order to specify or identify issues under-study and establish their interrelationships (Prior, 2003). It is argued that the modern world is made through writing and documentation. Therefore use of document analysis helps to access information that would be difficult to get in any other way such as cases, or people who might not be willing to talk in formal research interview. However, Prior (2003) contends that documents need to be considered as situated products rather than as fixed and stable things in the world since information changes with period of time. The researcher included document analysis in the study as one way of generating data from official documents that would not be obtained through interviews or questionnaires. The documents reviewed in the study include the IPTE programme handbook and

student's registration forms. These were used to analyse policies, rules and regulations governing use of mobile phones in TTCs (Appendices 1 and 2 are samples of documents analysed).

3.3.3 Questionnaire

A questionnaire is one of the methods used to generate data in a research study. It contains questions or statements which the participant is required to respond in writing (Best & Kahn, 2006). It is argued that a questionnaire is used in a study when the desired data is in the form of factual information. However, when opinions or perceptions rather than facts are desired, an opinionnaire or attitude scale is used; hence, this study used likert-scale questionnaire (opinionnaire) since it aimed at investigating perceptions of teacher educators of the use of mobile phone in teaching and learning in TTC. Some of the advantages of using questionnaire in a study according to Best and Kahn (2006) include availability of participants in one place that helps to meet an economy of time and expense. It is also argued that participants can as well get the questionnaires through mailing although it is mostly criticised as the "lazy person's way of gaining information" (Best & Kahn, 2006, p. 313). However, it is observed that it's not possible for the researcher to probe more information from the participants with the use of questionnaire in a study; for the questions are fixed. The study, therefore, administered a likert-scale questionnaire to SES lecturers in all public TTCs in Malawi.

The researcher opted to use a likert-scale questionnaire in the study in order to explore perceptions of many respondents pertaining to the use of mobile phones in teaching of SES in TTCs. This questionnaire required the respondents to rate their

opinions ranging from strongly disagree, disagree, uncertain, agree and strongly agree. The design of the likert-scale questionnaire was based on Best and Kahn (2006); where it is also called an opinionnaire (Appendix 6 is a sample of likert-scale questionnaire).

The items in the questionnaire and the semi-structured interviews were framed based on the research questions and the reviewed literature. In addition, they were also based on the conceptual framework which was used in the study. The items in the questionnaire and interview guide were structured in a way that they answer the research questions. At the same time, they conceptualised, problematized and theorised issues and themes from the literature reviewed concerning perceptions of educators of the use of mobile phones in teaching. Similarly, the questions also took a deeper consideration on the conceptual framework used in the study. The Teacher Mobile Learning Adoption Model highlights major factors affecting adoption of mobile learning technology such as mobile phones as explained in chapter 2 of the study. So, the researcher took on board those factors when designing the questionnaire and the semi-structured interviews. It was assumed that perceptions of teacher educators in TTC of the use of mobile phones in teaching and learning might be affected by the same factors.

Therefore, use of interviews in combination with document analysis and questionnaire in the study allowed me to appropriately gain a rich understanding of teacher educators' perceptions of the use of mobile phones in teaching and learning because the methods complemented each other.

3.4 Research Sites

The study was conducted in TTCs. The TTCs were chosen as study sites because the study involved exploring perceptions of primary school teacher educators. All eight public TTCs across the country were involved. The researcher used pseudo names to represent the colleges. The pseudo names used in the study representing the eight public TTCs are Patsa, Mwezi, Kadothi, Chitsime, Goloza, Umodzi, Pawiri, and Mwera. One private TTC bearing a pseudo name of “Makesi” was also included in the study to make a total of nine. The inclusion of a private TTC in the study was done in order to check for any differences or similarities that might exist between public and private TTCs in terms of perceptions of the use of mobile phones in teaching and learning among SES lecturers.

3.5 The Population and Sample of the Study

3.5.1 The Population

Primary school teacher educators composed a population of the study. However, it was not all the lecturers from the TTCs who were targeted for the study but only those who teach SES as the study was exploring perceptions of SES lecturers of the use of mobile phones in teaching and learning. Principals of the colleges sampled were also targeted to provide information in the study.

3.5.2 The Study Sample

Sampling is the selection of research participants from an entire population, and involves decisions about which people, settings, events, behaviour or social processes to observe (Blannche et al., 2006). All 47 lecturers reported to teach SES in eight public TTCs were sampled to complete a questionnaire. The researcher sampled all

47 SES lecturers from the public TTCs because he wanted to get perceptions from many lecturers as possible. This helped to come up with a true picture of SES lecturers' stand in regards to use of mobile phones in teaching and learning. The sampled SES lecturers were comprised of both males and females, regardless of their age or teaching experience. However, out of 47 lecturers sampled to complete the questionnaire, only 29 male and 9 female lecturers returned the completed questionnaires; and this represented 80.9% return rate.

In addition to the questionnaire administered to all 47 SES lecturers, 5 heads of SES department (HoDs) from the public TTCs and one from private TTC were also engaged in semi-structured interview. These heads of department were purposively chosen for the interviews because they are custodians of the department and were thought to provide rich information towards the study.

Two principals (PLs) were also engaged in semi-structured interview as well since they are interpreters of policies, rules and regulations in their respective institutions. One principal was again purposively sampled because he happened to be a chairperson of principal's forum. This is an association which is composed of principals from all public and private TTCs, Domasi College of Education, Department of Teacher Education and Development (DTED) and GIZ. This association meet regularly to discuss various issues pertaining to teacher training and education. Hence the chair for this association was targeted to provide information for the study.

3.6 Pilot Study

A pilot study was conducted in one TTC which was not part of the sampled colleges for the actual generation of the data for the study. This was in line with Harding (2013) who contends that piloting helps to establish whether the research questions are clear, logical or need to be rephrased. In addition, it is to check if interview guide is of appropriate length among others. Van Tejlingen and Hundley (2002) also agree with Harding and contend that pilot study helps to establish whether the proposed methods or instruments are inappropriate or too complicated. As a result of this pilot study, some items on the questionnaire were re-ordered to make a good flow of related issues. The interview guide for the heads of department was also adjusted in terms of timing; for it was taking close to an hour for one participant alone.

3.7 Data Analysis

This is a process of systematically searching and arranging the interview transcripts, field notes, and other materials that you accumulate to enable you come up with findings (Bogdan & Biklen, 1999). The data generated in this study was analysed in two categories. Data from in-depth interviews and document analysis were qualitatively analysed while data from the likert-scale questionnaire was quantitatively analysed.

3.7.1 Qualitative Data Analysis

The qualitative data for this study was analysed using thematic analysis method. Thematic analysis is a method used for identifying, analysing, and reporting patterns or themes within data (Braun & Clarke, 2006). Therefore, this study analysed the data from interviews based on Braun and Clarke (2006) as follows:

In the first place, audio recordings were transcribed into written documents. The transcribed documents were cross checked against the audio readings. The transcripts were looked over and over in order to familiarise with the depth and breadth of the content. The repeated reading of the data helped to search for meaning and patterns before coding started. Secondly, initial codes were developed from the data. According to Tuckett (2005) this was one way of organizing data into meaningful groups and patterns. Thereafter, codes were analysed and sorted into potential themes. Some themes were later combined to form one based on their relationship.

Later, themes were further reviewed and refined. Some themes were collapsed into one while others were broken down into separate themes. Furthermore, themes were defined and refined by looking at what aspect of data each theme captured. Themes were then organised into story telling form about the data and this included searching for sub-themes.

Finally, it was a stage of report write-up, whereby sufficient evidence of the themes was used in the study. It also needed support from the descriptive data in order to achieve concurrent triangulation of the study; for it employed mixed design approach.

3.7.2 Quantitative Data Analysis

The questionnaire administered in this study was analysed quantitatively. Data from the likert scale questionnaire was analysed using Microsoft excel. Frequencies and summaries represented in percentages were generated for the study. This is in agreement with Best and Kahn (2006, p. 330) who contend that “the simplest way to describe opinion is to indicate percentage responses for each individual statement.”

The likert rating scale ranged from strongly disagrees, disagree, uncertain, agree, and strongly agree.

The responses were collapsed into three categories. On one hand, strongly disagree and disagree were combined to make an overall category known as “disagree”. It was expressed as percentage based on number of respondents (N=38). On the other hand, strongly agree and agree were also combined to make an overall category known as “agree”. This category was also expressed as percentage base on number of respondents (N=38). Finally, the category of uncertain responses remained independent and a stand-alone category as a percentage to the total respondents (N=38).

The three categories of opinions which were developed such as disagree, uncertain, and agree were finally used to plot graphs, charts, and tables based on percentages to the total respondents using Microsoft excel package. The graphs, tables and charts indicated the degree of perceptions of SES lecturers on the use of mobile phones in teaching and learning process.

3.8 Limitation of the Study

The heads of SES department in all the eight public TTCs are male lecturers except one. Unfortunately, that only one female head of department was not available for the interview since she had gone for further studies during the interview period. This was indeed a challenge to the researcher; for he purposively sampled the heads of SES department for the interviews. As a result, the interviews concerning perceptions of SES lecturers of the use of mobile phones in teaching were

dominated by male participants. However, the perceptions of female SES lecturers were captured as well through the likert-scale questionnaire administered to the rest of SES lecturers in TTCs.

3.9 Trustworthiness of the Study

The triangulation of qualitative and quantitative data helped the study to be rigorous and trustworthy. Gunawan (2015) contends that triangulation of data in a study increases its trustworthiness; for it reduces the effect of researcher's bias. This explains why it was important for the researcher to triangulate the qualitative and quantitative data generated in the study.

3.10 Ethical Issues

This is a reflection of respect for those who take part in research. It is argued that research is neither a basic right nor a necessity for society or an individual. As such, Ensign (2003) argues that participants involved in a study need informed consent, a protection of their identity and a right to withdraw from the study. To address the issues of ethics in the study, the identity of the participants including the TTCs were treated as confidential and protected. Pseudo names were used to represent names of the participants as well as the participating TTCs. The researcher also took consent of the participating lecturers through TTC principals and the heads of SES department in each college involved in the study. The researcher obtained an introductory letter from the office of the dean of education (Chancellor College) which was used to introduce himself and the purpose of the study to TTC principals involved in the study (see appendix 5).

3.11 Chapter Summary

This chapter has presented the research design and methodology used in the study.

The next chapter will present and discuss the research findings of the study.

CHAPTER 4

PRESENTATION AND DISCUSSION OF THE FINDINGS

4.0 Chapter Overview

This chapter presents and discusses the findings of the study on the perceptions of primary school teacher educators of the use of mobile phones in teaching of SES in TTC. The findings presented and discussed in this chapter are generated from both qualitative and quantitative data as described in chapter 3.

4.1 Background Information of the Participants and Research Site

The study involved participants from TTC and the data was generated through interviews and a questionnaire.

4.1.1 Questionnaire Participants

The researcher identified 47 SES lecturers across all the public TTCs according to statistics provided by the heads of SES department. Out of 47 SES lecturers, 38 lecturers (80.9%) successfully completed and returned the questionnaires. Seven questionnaires (14.9%) were not retrieved because it was reported that they were either misplaced or went missing. Finally, two questionnaires (4.2%) were returned uncompleted because some lecturers were unwilling to take part in the study. As discussed in chapter three, the participants in the study had a right to withdraw from participating in the study as part of ethical issues.

All the participants who completed the questionnaire hold bachelor's degree in education except one who has Master of Arts Education. Their ages also varied from 32 to 58 years old. Their teaching experience ranged from 2 to 36 years. The fact that the participants varied in years of teaching experience was important for getting wide range of information in terms of their perceptions of the use of mobile phones in teaching of SES in TTC.

Table 4.1 describes characteristics of participants who were involved to complete the questionnaire. Pseudo names have been used for the participating institutions and participants so as to maintain their confidentiality.

Table 4.1: TTC and Gender of Participants in the Study

Name of TTC	SES Lecturers		Total
	M	F	
Patsa	2	1	3
Mwezi	4	2	6
Kadothi	5	0	5
Chitsime	2	2	4
Goloza	6	0	6
Umodzi	5	2	7
Pawiri	4	0	4
Mwera	1	2	3
Total	29	9	38

4.1.2 Interview Participants

Five heads of SES department from the public TTCs and one from private TTC were also engaged in an interview. Two principals from the sampled colleges were also

engaged in an interview. Table 4.2 gives details of the heads of department and principals who were interviewed in this study.

Pseudo names have been used for the participating institutions and participants so as to maintain their confidentiality.

Table 4.2: Details of Heads of Department and Principals in the Study

Name of Interviewee	Position	Sex	Age	Education Qualification	TYPE OF TTC
Makolo	HOD	M	38	Bachelor's degree in Secondary Education	Private
Mwale	HOD	M	38	Bachelor's degree in Secondary Education	Public
Kabwe	HOD	M	48	Master of Arts in Education	Public
Chapita	HOD	M	35	Bachelor's degree in Education	Public
Thombozi	HOD	M	47	Bachelor's degree in Primary Education	Public
Dimba	HOD	M	46	Bachelor's degree in Primary Education	Public
Masiketi	PL	M	48	Master of Education Sciences	Public
Lyphane	PL	M	47	Bachelor of Education Sciences degree	Public

4.2 Findings of the Study

The study identified six themes which answered the research questions. Research question (1) was looking at what tutors think they know about using mobile phones in the teaching of SES in TTC. The following themes were generated from this question: Ownership of mobile phones with recommended facilities by SES lecturers in TTC, perceived knowledge and skills of using mobile phone by TTC lecturers, reported usage of mobile phones by TTC lecturers, and perceived academic usefulness of mobile phone in teaching. On research question (2), the researcher wanted to establish what SES lecturers perceive to be challenges of using mobile phone in teaching. The following are the two themes generated from this research question: perceived academic challenges on the use of mobile phone in teaching, and suggested solutions to challenges on the use of mobile phone in teaching.

4.2.1 Ownership of Mobile Phones with Recommended Facilities by SES Lecturers in TTC

This theme shows the extent of mobile phone ownership and facilities available in the phones of SES lecturers in TTCs. Under this theme, all 6 heads of SES department interviewed in the study admitted to own a mobile phone with required facilities such as internet, whatsapp and facebook. For example, one head of department had this to say:

“Yes I do own one. It has got all the facilities like whatsapp, facebook, and internet” (Thombozi, February 29, 2016).

Another head of department also said that:

“Yes sure I have one; internet, whatsapp, facebook, and other facilities are available in the phone” (Mwale, February 22, 2016).

Similarly, descriptive data generated from the survey indicates that 36 lecturers (94.7%) own mobile phones that have internet facilities. It also shows that 35 lecturers (92.1%) have facebook facilities in their mobile phones. Finally, 23 lecturers (60.5%) indicated that their mobile phones have whatsapp facilities. Figure 4.1 shows the percentage of SES lecturers in TTCs whose mobile phones have internet, facebook and whatsapp facilities.

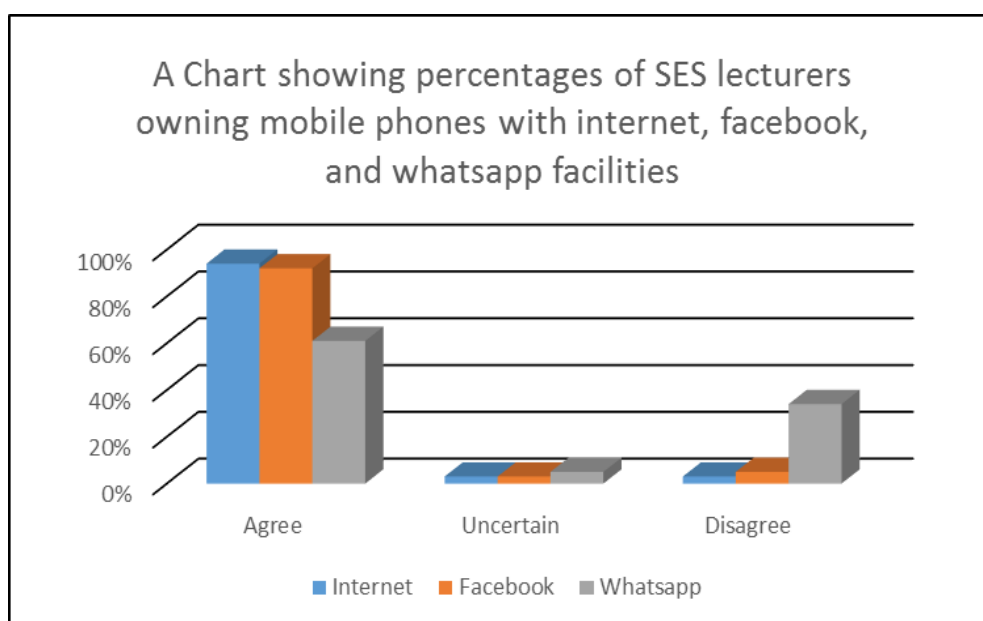


Figure 4.1: A chart showing percentage of SES lecturers owning mobile phones with internet, facebook, and whatsapp facilities

The study established that ownership of mobile phone with required facilities is not a problem to SES lecturers in TTCs. This means that SES lecturers in TTC have all the opportunities to use mobile phone facilities such as internet, whatsapp and facebook in teaching; for these are readily available in their phones. Literature supports the fact that in Africa, ownership of cell phones is no longer an issue; for even in rural areas many people are regarding a cell phone as a necessity and comes first before

food or clean water to drink (Mungai, 2016, February 4). The availability of mobile phones with required facilities among SES lecturers in TTCs implies that lecturers might have skills and knowledge of operating mobile phones which is also needed for adoption of mobile phone in classroom pedagogy.

4.2.2 Perceived Knowledge and Skills of Using Mobile Phones by TTC

Lecturers

This theme indicates the knowledge and skills of using mobile phones by SES lecturers in TTC. Out of 6 heads of department interviewed, 5 of them reported to have knowledge and skills of using mobile phone to interact with friends on social networking platforms such as whatsapp and facebook. Additionally, they also acknowledged having knowledge and skills of searching information using mobile phone internet besides the usual mobile phone operations such as making calls and sending text messages. One head of department had this to say concerning his knowledge and skills of using mobile phone:

“Normally am able to use my phone for social interaction, sending some official messages as well as trying to possibly update myself on the current affairs [using mobile phone internet]” (Mwale, February 22, 2016).

Another head of department also commented on the same issue in terms of operation knowledge and skills of mobile phone and said:

“Actually I use facebook, it’s like social network you just share with friends what is new and also read what friends are posted on the facebook..... actually for internet most of the times its reading emails and of course sometimes I also use to research like find out like current issues” (Makolo, February 26, 2016).

Descriptive data from the questionnaire administered to 38 SES lecturers indicates that 25 lecturers (65.8%) have knowledge and skills of using facebook platform on their mobile phones. Whereas 23 lecturers (60.5%) and 34 lecturers (89.4%) are able to use whatsapp and internet facilities on their phones respectively.

The study therefore established that most SES lecturers in TTC as the statistics indicates above have basic skills of using mobile phone facilities such as internet, whatsapp, facebook, and text message. It can be argued that these facilities are also useful in teaching and learning as indicated by the reviewed literature. For instance, mobile phone internet operates in a similar manner with internet services provided by a computer or laptop. According to Iraki (2015) mobile phones are pocket-sized internet connected computers, which are gradually replacing personal computers in current and modern education contexts; for they can be used to search useful information which is readily available on the net, including e-books.

Furthermore, lecturers' knowledge of operating text messages on their mobile phones is also equally useful in teaching and learning process. It provides a communication interface between a teacher and a learner. This is supported by literature which indicates that students and lecturers in some colleges interact each other academically through the use of text messages. For example, in some colleges in Japan, lecturers get feedback of their lessons from students through mobile phone text messages (Susono & Shimomura, 2006). Similarly, knowledge of searching information using mobile phone internet which lecturers claim to have is also of great value to classroom pedagogy. Here, it shows that most SES lecturers in TTC have the potential to use mobile phones in teaching; for they have demonstrated to have

knowledge and skills of operating various mobile phone facilities which are educationally useful as literature also indicate.

4.2.3 Reported Usage of Mobile Phone by TTC Lecturers

The theme indicates how SES lecturers in TTC use mobile phone and its facilities professionally. These facilities include internet, facebook and whatsapp. Under this theme, 3 heads of SES department out of 6 interviewed indicated that they have ever used mobile internet for academic purpose. For example, one head of department narrated:

“I used it [mobile phone internet] when teaching Egyptian civilization where I downloaded on internet pictures depicting preserved pharaoh” (Dimba, February 23, 2016).

However, 1 head of department expressed a resistance to the use of mobile phone internet for academic purpose and had this to say:

“My phone has internet connection but I do not necessarily use it because am bit reluctant to do so or just because I depend on college internet probably” (Thombozi, February 29, 2016).

These findings are supported by descriptive data from the survey. The survey indicates that 12 lecturers (31.6%) show that they have ever used mobile phone internet in their teaching. On the use of face book facilities for educational purpose, 5 lecturers (13.2%) were in agreement while 11 lecturers (28.9%) also agreed to have used whatsapp facilities for academic use. However, 57.9% of the lecturers indicated lack of knowledge and skills of using mobile phone facilities for teaching and learning process though they use the same for social networking. Those lecturers who indicated to lack knowledge and skills of using mobile phones for teaching and

learning process requested for orientation on how to use mobile phone facilities in teaching as indicated in table 4.3.

Table 4.3: Frequency distribution table indicating percentage of lecturers who need an orientation on how to use mobile phone in teaching (N=38)

Response	Frequency	Percentage
Agree	22	57.9
Disagree	10	26.3
Uncertain	6	15.8

The study found out that despite most of SES lecturers having knowledge and skills of operating mobile phone facilities as indicated in theme two of the study, it appears some of them are mainly competent in using these skills for social interaction rather than academic purposes. This is evidenced in table 4.3 where 57.9% of the participants indicated not to have knowledge and skills of using mobile phone in teaching and requested for an orientation on how to use mobile phones in teaching. Additionally, even though some lecturers demonstrated to have knowledge and skills of using mobile phones for academic purpose, it seems some of them are unwilling to use mobile phones for teaching and learning process.

For instance, one head of SES department (Thombozi) indicated that he owns a mobile phone with internet facilities which can be used for academic purpose but he doesn't do so because he is reluctant. Furthermore, one principal who was also interviewed in the study (Masiketi) commented on the same and argues that lecturers seem to live behind the time and until today they are not accepting use of mobile

phone in teaching. He further contends that they need to accept it and then transfer it to the students. This may imply that some lecturers do not appreciate use of mobile phones in teaching because of lack of pedagogical skills while others it's just lack of ICT self-efficacy as observed in the Teacher Mobile Learning adoption Model.

The study also found that some SES lecturers use their mobile phone internet only to search information in lesson preparation such as downloading pictures and searching definitions of terms. They do not engage learners to use mobile phones as a gadget in actual teaching. Some of these SES lecturers also use cell phone in lessons just to demonstrate it as an ordinary teaching and learning resource. Similarly, findings from the lecturers who participated in the survey show that SES lecturers are not utilising mobile phone facilities for teaching. For instance, only 5 participants (13.2%) admitted to have used facebook, 12 participants (31.6%) had used internet, and 11 participants (28.9%) used whatsapp for educational purpose. This is a clear indication that use of mobile phones in the teaching of SES is not patronised by many lecturers.

According to the Teacher Mobile Learning Adoption Model, resistance to adoption of mobile technology in teaching and learning is a result of five major aspects. One of them is the perceived usefulness of a particular technology in teaching. In this this case, it is perceived usefulness of mobile phones in teaching and learning process. It is believed that this aspect impacts educators' behavioural intention to adopt mobile learning as narrated in chapter 2. In this study, it can be pointed out that perceived usefulness of using mobile phone in teaching of SES affects lecturers' intention of adopting it in the classroom pedagogy. It is observed that some lecturers have no intention of using mobile phone facilities despite its usefulness because they don't

perceive it as important to their teaching as earlier narrated by one head of department in the study. UNESCO (2012b) also indicates that many people usually associate mobile phones with communication and entertainment, rather than learning.

4.2.4 Perceived Academic Usefulness of Mobile Phones in Teaching

The theme indicates the extent to which SES lecturers in TTC perceive the usefulness of mobile phone facilities academically. This theme has two sub-categories. These are perceived usefulness of mobile phone internet and perceived usefulness of whatsapp or facebook in teaching and learning process.

4.2.4.1 Perceived usefulness of internet

Under this sub-theme, all 6 heads of department who were interviewed agreed that use of internet is very important on educational aspect. It was reported that internet connectivity helps one to access important information on the net whether for personal or educational use. Therefore, mobile phone serves same functionality of internet connection to computers or laptops. One head of department commented:

“.... we can say the world is becoming globalised like one village due to this network [internet].... to find the current information it means you need to be exposed to internet and that’s the best way mainly to learn new things related to different learning areas like SES” (Makolo, February 26, 2016).

Another head of department had the following to say:

“Of course students could use their mobile internet to search information when given assignment because we have few computers connected to internet” (Dimba, February 23, 2016).

One principal who also interviewed in the study commented as well:

“It’s very useful because libraries are outdated and there is lack of computers” (Thombozi, February 29, 2016).

The descriptive data indicated that 35 lecturers (92.1%) agreed that use of mobile phone internet in teaching and learning would promote participatory learning. It was also indicated that 31 participants (81.6%) admitted that mobile phone internet is more convenient for SES lessons that involve information search. Table 4.4 indicates the degree of lectures’ agreement that mobile phone internet helps to search information relevant to SES lessons.

Table 4.4: Frequency distribution of lecturers in agreement with use of mobile phone internet in SES lessons by responses (N=38)

Response	Frequency	Percentage
Agree	31	81.6
Disagree	1	2.6
Uncertain	6	15.8

4.2.4.2 Perceived usefulness of facebook and whatsapp

Under this sub- theme, all the six heads of department indicated that mobile phone facilities such as facebook and whatsapp could be utilised for discussions of academic issues. For example, one head of department said that:

“The students use their phones for sending messages to one another through whatsapp or facebook what is happening so on and so forth; however, it would be of educational benefit if we turn the social networking into educational networking” (Mwale, February 22, 2016).

Another head of department concurred with his colleague and said:

“Students can also use the other facilities of cell phones such as facebook and whatsapp to facilitate transfer of knowledge among themselves and between them and lecturers; turning social media into educational platforms would mean sharing educational issues in SES” (Makolo, February 26, 2016).

The descriptive data from the study on this sub-theme indicates that 34 lecturers (89.4%) agreed that facebook or whatsapp forums could be utilised for discussion of various educational issues. The same number of 34 lecturers (89.4%) also agreed that use of whatsapp and facebook forums would increase interactive and participatory learning.

The study found that use of mobile phone internet would promote interactive and participatory learning as indicated by all six heads of department interviewed in the study and also 89.4% of the participants in the survey. This is in agreement with what PCAR curriculum under OBE advocates. The new Social Studies, which is termed SES in TTCs also advocates use of ICT in order to promote interactive and participatory learning (Tlou & Kabwila, 2000).

It is indicated in the study by the heads of department that college libraries do not have enough books. Additionally, the study revealed that there are few computers connected to internet in TTCs, and that other colleges are not even connected to internet services (Kadzera, 2006). The study, therefore, established that use of mobile

phone internet in TTC would assist students to access updated information whilst interacting with the devices within the lesson. This is in agreement with what literature indicates as well that e-books which are also available and accessed on mobile phones have begun to replace printed materials in colleges or universities (Acarturk, 2012).

One principal (Masiketi) who was interviewed in the study observed that use of technology such as mobile phones would match with students' generation which is full of technology. This is an indication that both lecturers and principals appreciate that use of mobile phone in teaching is equally important. It is felt that both students and lecturers would get updated information using mobile phone internet; for there are no enough books in college libraries and internet access is also a challenge in TTCs as it has been observed in the study.

The study also established that mobile phone facilities such as whatsapp and facebook have the potential to provide new way of offering education to our students. The facilities are observed to be meant for social communication but they have proved to be equally important in education; for they provide similar platforms to online programmes. All the heads of department interviewed in the study indicated that these facilities offer interactive platforms and lecturers could use these facilities for group discussions on academic issues in SES. Similarly, 34 lecturers (89.4%) also agreed that use of whatsapp and facebook forums would increase interactive and participatory learning. For instance, the heads of department suggested that lecturers and students would use these platforms to discuss emerging or contemporary issues on Social and Environmental Science. This could be either in or out of class activity.

It could also be used to present group work activities in the classroom through a projector. Individual groups would be posting their work on facebook platform and eventually beamed on the projected screen. This would be an alternative way of presenting group work assignment which would need a chart paper and a marker if the same would be presented using traditional way.

However, it can be argued that use of facebook platforms to discuss and present issues does not supersede the traditional way of presenting group work activities but this could be considered as innovative, flexible, convenient, and does not need paper or pen. It could also be argued that lecturers can access the discussed issues even when he or she is away from the classroom through the use of the platform. However, cost implication on management and accessibility to the platform could be a challenge.

The study also discovered that some students, especially those in year two, are using facebook platforms to discuss and share academic issues though informally as indicated by one head of department (Chapita). It is observed that in a similar manner, this could also be done with college based students, but with the guidance of the lecturers concerned. Therefore, use of mobile phone facilities such as facebook or whatsapp seem to be an innovative way of approaching teaching and learning process though most lecturers perceive these facilities as only for social networking. Literature also indicates that using mobile phone in teaching and learning would mean incorporating mobile devices which young learners are already familiar with into their learning environment (Cakir, 2015). Therefore, lecturers need to equip themselves with knowledge and skills in technology so as to match with emerging

technological issues in education. According to the Teacher Mobile Learning Adoption Model, this is referred as digital literacy and has positive effect on behaviour intention to use mobile learning technology in teaching and learning like mobile phones as described in chapter 2 of the study.

4.2.5 Perceived Challenges of Using Mobile Phones in Teaching

This theme indicates some challenges associated with the use of mobile phone in teaching and learning. These challenges are comprised of three categories. These are: policy governing use of mobile phones in TTC, technical know-how, and misuse of mobile phones by the students in the classroom.

4.2.5.1 Policy governing use of mobile phone in TTC

All six heads of department who were interviewed in the study acknowledged that students are not allowed to use cell phones in classroom as per college rules, but not ICT education policy. For example, one head of department indicated:

“Students are not allowed to use their phones in class as a rule in college” (Makolo, February 26, 2016).

Another head of department also concurred with his colleague and said:

“No, not in class but after classes when I give them assignments to do. They are advised to use mobile internet to search and download PDF documents.....”(Dimba, February 23, 2016).

However, all six heads of SES department interviewed indicated no knowledge of any ICT education policy that forbids students to use mobile phones in classroom but it's just a college rule. One head of department had this to say:

“To be honest, I have not seen such a policy but I think it’s just a college rule, that is an internal arrangement so to speak; but there is no written black and white document not to allow phones in class” (Kabwe, February 17, 2016).

Both college principals interviewed in the study admitted not to allow students use cell phones in the classrooms in their respective colleges. For example, one principal commented:

“But not in class while learning, but when they are out of class to avoid abuse” (Lyphane, April 5, 2016).

Analysis of programme handbook however indicated that there was no any ICT education policy regulating the use of cell phones in the classroom but these are just rules and regulations established by host colleges (see appendix 2).

Descriptive data from the study also agrees with these findings. For instance, 18 lecturers (47.4%) from the questionnaire survey agreed with what the heads of department and the principals narrated that there is no any ICT education policy that prohibits use of mobile phones by TTC students in classroom; however, 27 lecturers (71.0%) from the questionnaire survey indicated that prohibition of cell phones in the classroom by the college administrators is only based on internal rules established by host colleges but not ICT education policy.

The study, therefore, established that students are not allowed to use cell phones in the classroom because of college rules as indicated by all six heads of department and both college principals interviewed. This is also indicated by 27 lecturers (71.0%) from the survey. It can be argued that it’s difficult for SES lecturers to adopt use of mobile phone in teaching and learning process because students are not allowed to

use mobile phones in the classroom. One head of department indicated that he doesn't use mobile phone in SES lessons because students are not allowed to use cell phones in the classroom. He expressed a concern that it would be him alone using the phone in the lesson, and not the learners. It can also be argued that if students are not allowed to bring cell phones into the classroom, how would the lecturer facilitate a lesson that needs use of mobile phone? This challenge could be one of the deterrents to adoption of mobile phones in teaching by SES lecturers in TTC.

Document analysis in TTCs showed that two documents were referred to as containing the rules and regulations of colleges. These are training programme handbook and students' registration forms. The study established that the programme handbook had not indicated any ICT education policy forbidding the use of mobile phones in the classroom by the students (see appendix 2); but the students' registration forms which are designed by colleges themselves indicate a rule that does not allow students to bring cell phones into the classroom (see appendix 1). Programme handbook provides guidelines and direction for every programme that has been established. Therefore, if the programme handbook is silent about ICT education policy governing use of mobile phones in the classroom, it might imply that some lecturers may not take this rule seriously.

For instance, one head of department in the study reported to have observed a colleague teaching an English lesson (about phonics) using cell phone and students were also using their cell phones in that lesson. The lesson involved searching correct pronunciation of words as spelt using phonics; and these words were searched on the net using mobile phone internet. This was done despite the rules and regulations that

forbid use of cell phones in the classroom. Probably this only indicates that use of mobile phones in classrooms is inevitable since we are living in a technological era.

Literature also indicates that some countries do not allow college students to use mobile phones in classroom. For example, it is indicated that almost 100% of college students in Japan own mobile phones but they are forbidden to use these mobile phones in traditional classes; however, it is also reported that some advanced professors use mobile phones as useful learning tools in their college classes (Suson & Shimomura, 2006). This only indicates how controversial the issue of using mobile phones in classroom setting is.

However, one college principal who was interviewed in the study revealed that he only knows an ICT education policy that promotes use of ICT in teaching in TTCs but this policy does not ban use of cell phones in the classroom. It was pointed out that rules and regulations forbidding use of mobile phones in TTC are solely decisions of individual colleges but not ICT education policy. Earlier, the study established that some TTCs lack computers and internet connectivity which students are supposed to use as part of ITC resources; but it is argued that mobile phones are part of modern ICT facilities and could be utilised in teaching and learning. Therefore, it is logical to argue that ministry of education could come up with a clear policy or direction concerning the use of cell phones in TTCs. This may include providing support through provision of recommended mobile phones which could be used alongside computers but in an organised manner.

4.2.5.2 Technical know-how

The heads of department interviewed in the study indicated that not everybody has knowledge and skills of using mobile phones in teaching. One head of department had this to say:

“..... again the technical know-how is another challenge for not everybody has technical know-how on the use of mobile phones”
(Makolo, February 26, 2016).

Descriptive data from the study showed that 12 lecturers (32%) indicated not to have knowledge on how to use mobile phones in teaching.

The study established that not all lecturers who teach SES in TTC have knowledge and skills of using mobile phone facilities professionally. This is one of the challenges making some SES lecturers not to adopt use of mobile phone in teaching as indicated earlier in this chapter. The fact that some lecturers are admitting not to have knowledge and skills of using mobile phones in teaching and learning process, it means they cannot adopt this technology in their pedagogical practices. This calls for colleges to organise internal training for the lecturers to get acquainted with knowledge and skills of integrating technology into their teaching and learning process. UNESCO (2012b) contends that teachers need to be trained in both content knowledge, technology, and pedagogical strategies for them to incorporate mobile phone technology into their instruction. The Teacher Mobile Learning Adoption Model equates lack of knowledge and skills of operating mobile phone as digital literacy (Mc Callum, Jeffrey, & Kinshuk, 2014). Digital literacy is said to have negative impact on educator's intention to adopt mobile learning technology in teaching and learning.

4.2.5.3 Misuse of mobile phones in class

Five out of 6 heads of department who were interviewed in the study indicated a fear that student might misuse the mobile phones in the course of teaching and learning process. For example, one head of department had this to say:

“It may also lead to misuse of cell phones; instead of classroom work you may find out some might use it to chat with friends and to do other things on the phone” (Chapita, February 9, 2016).

Another head of department had a similar observation on misuse of cell phones in classroom and said:

“One of the challenges is that a student may be using a cell phone at a wrong time when somebody is teaching; instead of following the lesson the student may be busy viewing or chatting on a facebook or whatsapp” (Thombozi, February 29, 2016).

Descriptive data from the study indicates that 24 lecturers (63.1%) agreed that students would misuse the phone facilities during lessons. Further, 26 lecturers (68.4%) agreed that it would be difficult to monitor whether the students are using mobile phone internet for education purpose. Figure 4.2 indicates percentage of lecturers who feel that students would misuse the cell phones in a lesson.

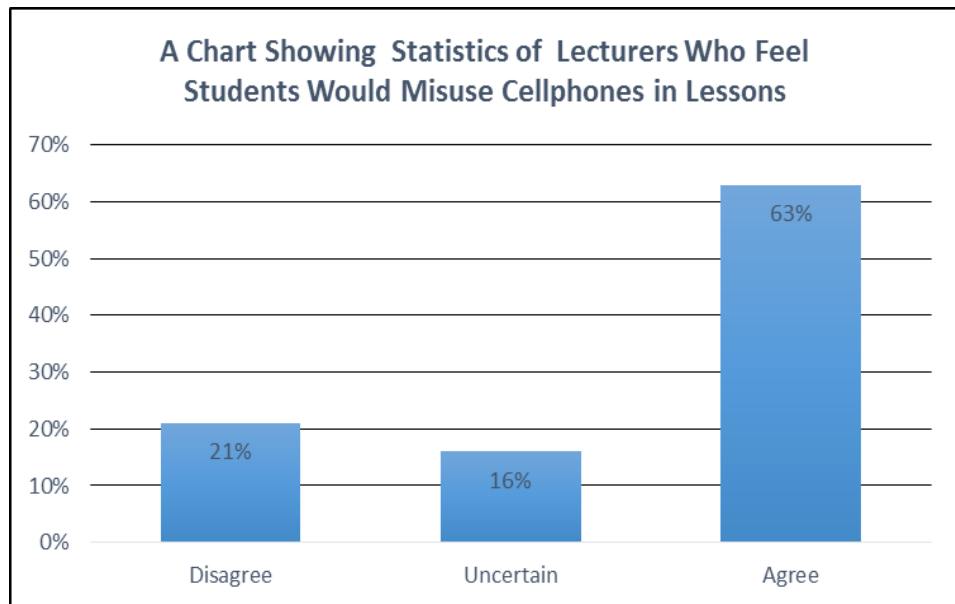


Figure 4.2: A chart showing statistics of lecturer who feel students would misuse cell phones in lessons

The study established that there are fears that students might misuse the cell phones in the course of teaching and learning as indicted by 5 heads of department and the lecturers as well (see fig. 4.2). This might mean that if the students are allowed to use mobile phones in a lesson, they would be doing things contrary to what they are supposed to do; for it would be difficult for a lecturer to monitor each and every student in the course of teaching. It was observed by one head of department (Mwale) that some mobile phones are small and if a student is using the mobile phone alone, he or she may pretend to be doing what has been instructed by the lecturer; however, he or she might be doing other things not related to the lesson. This could probably be one of the reasons why colleges do not allow students to use their phones in classroom as indicated in appendix 1. But it should be noted that fears are not necessary truth and these are just perceptions of the lecturers.

Surprisingly, it has been observed earlier in the study that some students still bring their phones into the classroom despite the rules and regulations being in place; however, it is observed that cases of misusing the cell phones are not alarming. This might be a signal to college authorities that students have embraced the technology and what is needed is just to formalise use of mobile phone in the classroom by reviewing the college rules.

4.2.6 Suggested Solutions to Challenges of the Use of Mobile Phone in Teaching and Learning

This theme indicates some solutions pertaining to challenges associated with the use of mobile phone in teaching and learning of SES in TTC. Under this theme, the study identified four sub-themes that will be discussed in this section. These are: rules and regulations, use of group work, internal training, and purchase of smart phones by colleges.

4.2.6.1 Rules and Regulations

All the heads of department interviewed in the study suggested use of rules and regulations to minimise misuse of cell phones in the course of teaching and learning process. One head of department had this to say:

“Rules and regulations towards the use of mobile phones in class needs to be put in place” (Thombozi, February 29, 2016).

This was echoed by another head of department who said:

“We may have rules set in place on how we can make use of those phones” (Dimba, February 23, 2016).

This was also supported by descriptive data from the survey which showed that 34 lecturers (89.4%) agreed to suggestion of setting rules and regulations to achieve effective use of mobile phone in teaching and learning. Figure 4.3 indicates the number of lecturers out of total 38 who agree to use of rules and regulations in lessons that involves use of mobile phones.

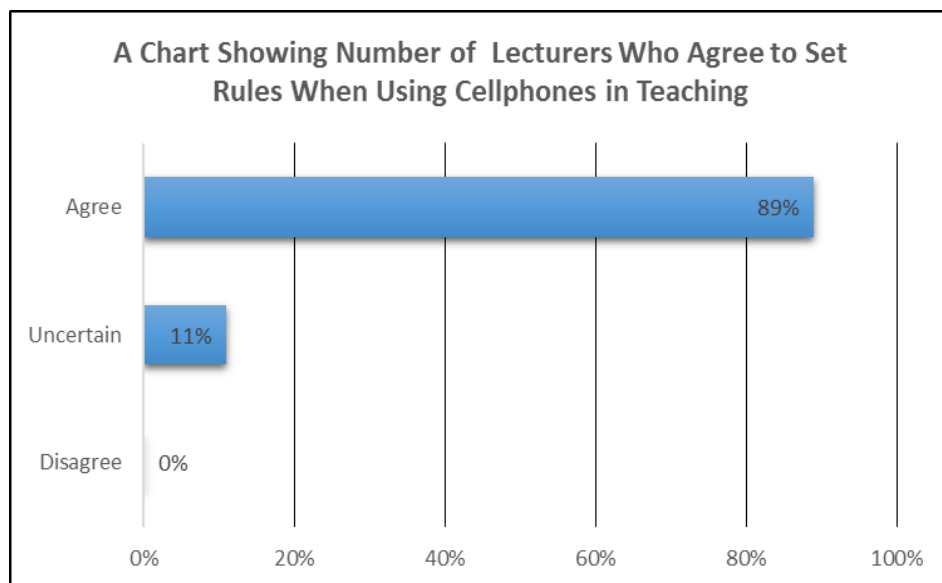


Figure 4.3: A chart showing number of lecturers who agree to set rules when using cell phones in teaching

4.2.6.2 Use of group work

All the six heads of department interviewed in the study suggested use of group work as one way of sharing the few phones that might be available in the classroom. For example, one head of department commented:

“If the phones are insufficient, use of group work would work in the same way we do with scarce resources such as text books” (Mwale, February 22, 2016).

Another head of department also had this to say:

“Another alternative is to make the students sit in groups with at least a cell phone in each group” (Thombozi, February 29, 2016).

This was supported by descriptive data from the survey. The survey indicated that 30 lecturers (78.9%) agreed with the use of group work when using mobile phones in teaching. Figure 4.4 is a pie chart that shows number of SES lecturers who are in agreement with the use of group work when using mobile phones in the teaching of SES.

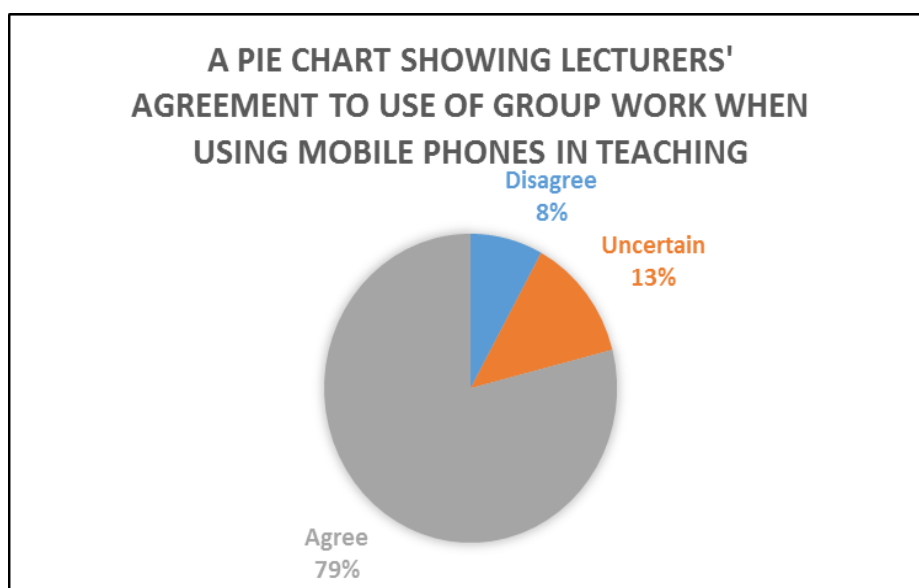


Figure 4.4: A pie chart showing lecturers’ agreement to use of group work when using mobile phones in teaching

4.2.6.3 Internal Training

Two heads of department suggested that internal training in form of continuous professional development (CPD) would help lecturers who are novice on how to use cell phones in teaching and learning process. One head of department had this to say:

“There can be internal training amongst themselves so that everybody is equipped with the knowledge” (Makolo, February 26, 2016).

The descriptive data generated from the study also indicated that there is a need for CPDs among SES lecturers who lack knowledge and skills of integrating the use of mobile phones in lessons. The survey shows that 34 lecturers (89.4%) agreed to use of CPDs in order to get oriented on how to use cell phones in teaching. Figure 4.5 indicates the extent of lecturers' need for CPDs on how to use mobile phones in teaching.

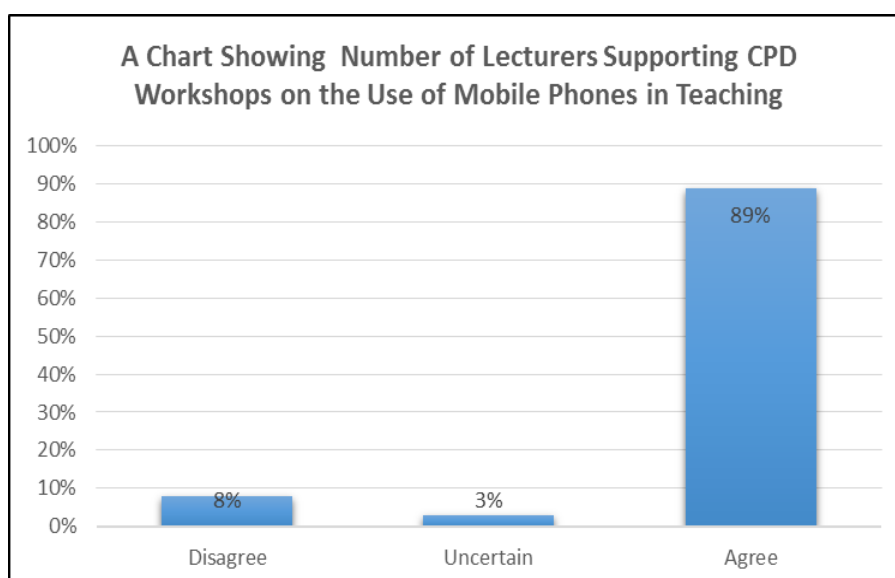


Figure 4.5: A chart showing number of lecturers supporting CPD workshop on the use of mobile phones in teaching

4.2.6.4 Purchase of Smart Phones by Colleges

The heads of department interviewed in the study revealed that colleges have a provision to buy teaching and learning resources for the students; so, likewise they can buy smart phones to provide an opportunity for SES lecturers to use in teaching and learning. One head of department commented:

“If the college has tablets which we can use in course of learning, we, may have rules set in place on how we can make use of those phones, rules can be developed” (Dimba, February 23, 2016).

Another head of department echoed similar sentiments on the issue of colleges to buy smart phones for education purpose and had this to say:

“May be as a solution the college can buy a few tablets just for teaching” (Makolo, February 26, 2016).

One principal also commented that:

“Colleges could buy some tablets as it is done with computers and these could be used by the students in an organised manner” (Masiketi, April 4, 2016).

The study established that effective use of mobile phones in the teaching of SES would probably depend on what rules and regulations are set up in the classroom to regulate use of cell phones in the teaching and learning process. Setting rules and regulations would help to effectively use mobile phones in teaching as indicated by the heads of department and the lecturers (see fig. 4.3). The impression is that college rules which were set on the use of mobile phones in classroom are prohibitive in nature. The suggestion of setting new rules regarding the use of mobile phones in the classroom might mean that these new rules could be accommodative; for the students would be allowed to bring their phones in the classroom but conditions will be set as how and when to use them for academic purpose.

This means that the process of making the rules would be democratic in nature; for all class members including the lecturer would be involved in making such rules. It is likely that student teachers would follow these rules without reservations since they will be the architectures of the rules. Machado (2012) also agrees with the observation that mobile phones may distract school work but he too argues that it is

necessary to establish restrictions towards the use of the device in classroom in order to bring discipline so as to achieve its pedagogical actions.

The study also established that SES lecturers in TTC advocated use of group work also known as collaborative learning when using mobile phones in teaching. It was argued that even scarce resources in the classroom are best utilised by using groups. Apart from being used for sharing scarce resources, group work is also valued in teaching; for it provides more information than a single individual, stimulates creativity, helps learners to remember discussions better, fosters learning and comprehension, learners gain a better understanding of themselves and it is also highly valued by employers (Burke, 2011). The survey indicated that 78.9% of the lecturers favoured use of group work when using mobile phones in teaching and learning as shown in figure 4.4. This probably meant that those students with recommended phones could share with their friends in a group as it was observed that not all students might have mobile phones with internet, facebook or whatsapp facilities. However, it is also observed that the issue of privacy needs to be considered; for a mobile phone contains confidential issues. So, this could be yet another challenge to use of groups and sharing of mobile phones in teaching of SES in TTC.

The use of group work also raised yet another challenge in terms of phone size to be used in lessons. The study observed that some phones are very small to be used for effective group work compared to tablets. Definitely, smaller phones with small working interface may not allow full participation of all learners in the lesson. As such, smart phones are perceived to be appropriate type of cell phones to be used for

group work since they have wider screen surface. However, not all students could own such type of cell phones; for they are a bit expensive.

It was also revealed in the study that SES lecturers in TTC need CPD on how to use mobile facilities in teaching and learning process as cited by the heads of department interviewed and lecturers in the survey as indicated in figure 4.5. This probably indicates the willingness of the lecturers to use the mobile phones in teaching and learning but they lack its technical know-how. The Teacher Mobile Learning Adoption Model translates this as digital literacy which may also affect their self-efficacy as described in chapter 2. It can be argued that in colleges, teachers are not provided with everything pertaining to their profession; but are prepared with pertinent issues that hold their profession and also skills of problematizing, theorising and applying new educational developments into their classroom instruction. As such, CPDs provide a platform of learning new things that emerge in education system; hence, the issues of integrating technology, and mobile phone in particular into classroom instruction needs CPD meetings whether at departmental or institutional level.

It is emphasised that government and schools need to make an effort to offer training opportunities to teachers so that they are thoroughly prepared and confidently use these technologies in teaching and learning such as mobile phone technology (Cui and Wang (2008). However, it is also argued that teacher training institutions and universities need to provide basic skills to their students on how to use mobile devices for teaching in classroom; not just letting them meet these stuff when they start teaching, after graduating (west 2013). This may imply that apart from relying on

CPD meetings that are facilitated in their working institutions on the use of technology in teaching and learning, lecturers are supposed to acquire basic skills on how they can integrate technology into their lessons during training period in their respective colleges.

According to the discipline of educational technology, this is described as Technological Pedagogical Content Knowledge (TPACK) – knowledge of facilitating students' learning of a specific content through appropriate pedagogy and technology (Chai, Koh, Tsai, & Tan, 2011). This helps to prepare student teachers so that they can confidently incorporate mobile phones into their instruction.

The study also found that colleges have provisions for buying resources for teaching and learning of the students such as computers. It was observed that likewise, colleges could buy smartphones as part of ICT resources to be used alongside computers in teaching and learning process. This is a clear indication that lecturers appreciate use of mobile phones in teaching and learning; and they are optimistic that colleges can provide smart phones for use in lessons. For instance, Iraki (2015) contends that mobile phones have grown to such an extent that they are gradually replacing personal computers in modern professional, education and social contexts. Similarly, Ismail et al. (2013) indicate that mobile phones are cheaper, but have comparable functionality with desktops or laptops.

One principal in the interview indicated that he had to rely upon mobile phone for searching information during his masters' programme of which one third of the programme was done through e-learning; likewise, he would like student teachers to

benefit use of mobile phone in their lessons as well. This only demonstrates that adopting use of mobile phones in teaching by SES lecturers in TTC would not be a challenge; for concerned stakeholders such as lecturers and principals seem to be in favour of such proposal.

4.3 Chapter Summary

This chapter has presented and discussed findings from the study which used a mixed methods research design to collect data. The study findings show that most SES lecturers lack knowledge and skills of using mobile phones for academic purposes; consequently, they perceive use of mobile phone as for social networking, rather than academic purposes. The chapter also presented what SES lecturers perceive as some challenges associated with the use of cell phones in teaching such as policy governing use of mobile phones in TTCs, and misuse of the gadgets by the students among others. This chapter also presented what SES lecturers perceived as possible solutions to some challenges associated to the use of mobile phones in teaching such as; using group work, setting of rules and regulations, and reviewing ICT policies in TTC. In the next chapter, I present conclusions and recommendations of the study.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

5.0 Chapter Overview

This study explored the perceptions of primary school teacher educators of the use of mobile phones in the teaching of SES in TTC. The main question in the study was: What are the perceptions of tutors regarding the use of mobile phones in the teaching of SES in TTCs? The following were the specific research questions: (1) What do tutors think they know about using mobile phones in the teaching of SES in TTCs? This question wanted to establish knowledge and skills of SES lecturers of the use of mobile phone facilities and their perceptions of using this knowledge and skills in teaching and learning process. (2) What do tutors perceive as challenges of using mobile phones in the teaching of SES in TTCs? The second research question aimed at finding out challenges that SES lecturers perceive to impact the use of mobile phones in teaching and learning and also what they think to be solutions to these challenges. The chapter also presents the conclusions of the study based on these research questions. Finally, recommendations and suggested areas for further research are presented.

5.1 Conclusions

On perceptions of tutors of the use of mobile phones in the teaching of SES in TTCS, it can be concluded that some SES lecturers have positive attitude towards the use of mobile phones in the teaching of SES. For example, some lecturers are observed to use mobile phone internet for searching information pertaining to their lessons. However, a large number of SES lecturers were observed not to appreciate the use of mobile phones in teaching and learning of SES because of a number of challenges. First, college rules do not allow students to use cell phones in the classroom. Secondly, some lecturers reported to have no knowledge and skills of using mobile phone facilities for academic purpose; hence they requested for orientation on how to utilise these facilities in their SES lessons as table 4.3 indicates in the study. Finally, lecturers indicated that colleges need to provide them and the students with smartphones which they could use in the lessons.

The study, therefore, indicates that SES lecturers perceive the significant of using mobile phones in teaching and learning but there are so many impeding factors. As such, SES lecturers feel that colleges need to review the rules governing the use of mobile phones in the classroom. It is believed that this would help to create a conducive environment for lecturers to adopt use of mobile phones in teaching and learning.

On what tutors think they know about using mobile phones in the teaching of SES, it can be concluded that very few lecturers use mobile phone facilities for academic purpose, but most of them use their phones mainly for social interaction. It was also found out that even those few lecturers who use mobile phone internet for academic

purpose, it's just only to download resources like pictures and searching definition of terms. This does not include using cell phone as a gadget to engage learners in actual teaching and learning process in the classroom as observed in theme four, chapter 4. Some lecturers also use cell phone in lessons just to demonstrate it as a simple resource. Furthermore, some lecturers requested for training on how to use mobile phone teaching and learning process. This probably could be one of the reasons why most SES lecturers perceive the use of mobile phones in teaching and learning process as a challenge.

Based on the results of the study, it implies that most SES lecturers perceive use of mobile phone facilities for social networking but not for academic purposes. Literature also indicates that some teachers fail to integrate technology into the classroom, and mobile phone inclusive due to a number of factors. These include fear of change, lack of training and modelling, lack of personal use, motivation and negative attitude towards the use of technology (Bitner & Bitner, 2002). The Teacher Mobile Learning Adoption Model in chapter 2 also shows that educators' failure to use mobile technology in teaching and learning is an effect of five major aspects. These are perceived usefulness, perceived ease of use, digital literacy, teaching self-efficacy, and ICT anxiety. Lack of appreciation to use mobile phones in teaching and learning by some lecturers in TTC as indicated in the study may imply that they are experiencing one or more of the five aspects of this model.

On challenges of using mobile phones in teaching SES, it can be concluded that lecturers regard college rules and regulations, lack of knowledge and skills of using mobile phones for academic purpose, and fears that students may misuse mobile

phones in the course of teaching as some factors to impede effective use of mobile phones in teaching. On rules and regulations governing use of mobile phones in colleges, it can be concluded that SES lecturers perceive it as a challenge to use mobile phones in teaching and learning process because colleges do not allow students to take with them cell phones into the classroom as indicated by lecturers in theme six, chapter 4. It would be difficult for the lecturers to use their mobile phones in lessons without involving the students

SES lecturers also feared that allowing students to use mobile phones in lessons would lead to misuse of the phone facilities. SES lecturers reported that it would be difficult for them to monitor whether the students are using mobile phone internet for education purpose. It was established that this would defeat the purpose of using mobile phones in teaching and learning process although it can be argued that this has to be proved by empirical evidence through a study.

The study also established conclusions on other issues raised by the participants; these include perceived significance of using mobile phones in teaching, and possible solutions to challenges that lecturers perceive to face in the course of using mobile phones in teaching and learning process. On perceived significance of using mobile phones in teaching and learning, it can be concluded that most SES lecturers in the study felt that use of mobile phone internet and social media forums such as whatsapp and facebook would promote interactive and participatory learning. The lecturers recommended use of mobile phone facilities in teaching and learning of SES on two reasons. On one hand, college libraries are said to have no enough books. On the other hand, there are few computers connected to internet in TTCs and other TTCs

are not even connected at all. This is also established in the study done by Kadzera (2006) as indicated in the first chapter of the study. Therefore, it was felt that use of mobile phone internet would assist in searching of academic information in the teaching and learning of SES.

On possible solutions to academic challenges pertaining to use of mobile phones in teaching, it can be concluded that SES lecturers felt that colleges are in the right position to provide smart phones (tablets) as part of teaching and learning resources as well as meeting operational costs. However, there is a need to review college policies governing the use of cell phones in the classroom; for college rules do not allow students to use cell phones in classrooms. It was also observed that some SES lecturers lack technical skills of using mobile phones for academic purpose; therefore colleges need to provide CPDs to lecturers on how to facilitate lessons using mobile phones as part of ICT resources.

In a nutshell, the study found out that most lecturers generally own cell phones that have recommended facilities for teaching such as internet, whatsapp, and facebook. However, these facilities are mainly used for social interaction, not for academic purposes. The study established some reasons why SES lecturers do not use mobile phones for academic purpose. These include college rules which do not allow students to use cell phones in classroom and skills of using mobile phone facilities into the classroom pedagogy. However, the study overlooked the cost of operating mobile phones by the lecturers and the students, which could also be one of limiting factors to the use of mobile phones in teaching and learning process. SES lecturers appreciated that use of mobile phones in the classroom would be one way of

promoting interactive and participatory learning. It was also felt that colleges need to provide smart phones as part of ICT resources in teaching and learning process. However, there is also a need to review college policies on the use of mobile phones; for mobile phones are not allowed in the classroom.

5.2 Recommendations

The following are recommendations based on the findings of this study:

5.2.1 Recommendations to the Ministry of Education

Education policy emphasizes use of ICT in teacher education. However, there is no clear direction of the use of ICT in TTCs and this includes use of mobile phones. The ministry has to provide clear direction to TTCs pertaining to use of mobile phones in teaching and learning.

5.2.2 Recommendations to Teacher Training Colleges

College rules do not allow students to use cell phones in the classroom. However, both principals and lecturers appreciated that use of mobile phones in lessons may promote interactive and participatory learning. In view of this development, there is a need for colleges to review their policies of the use of mobiles phones so that they can be utilised as one of ICT teaching and learning resources in the classroom. To effectively implement use of mobile phone in the teaching of SES in TTCs, colleges need to organize CPDs on how to integrate use of mobile phones in teaching and learning process. Some SES lecturers who have knowledge and skills of using mobile phones in lessons could be used as resource persons to these CPDs. These trainings

could help some SES lecturers who are novice to learn from their fellow colleagues on how best they can use mobile phone facilities for academic purpose.

5.3 Areas for Further Research

The study explored the perceptions of primary school teacher educators on the use of mobile phones in teaching SES in TTCs. Teaching and learning process involves both a teacher and learners. However, this study mainly focused on the part of the teacher. Therefore, this study suggests a study on the:

Exploration of student teachers' perceptions on the use of mobile phones in teaching and learning of SES in TTC.

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APPENDICES

APPENDIX 1

MINISTRY OF EDUCATION

AGREEMENT FORM FOR TEACHER TRAINING COLLEGE STUDENTS AND CONDITIONS OF TRAINING FOR STUDENTS OF THE MALAWI INITIAL PRIMARY TEACHER EDUCATION (IPTE)

This agreement Form is to be signed by all student-teachers in all the Colleges (at the beginning of the course)

**ANY STUDENT WHO DOES NOT AGREE TO ADHERE TO THESE LAID
DOWN CONDITIONS AND DOES NOT SIGN THIS AGREEMENT FORM
AUTOMATICALLY DISQUALIFIES HIMSELF/HERSELF FROM THE
COURSE**

I

(Name of student in capital letters)

Hereby accept a place offered to me at

I fully understand that the following conditions regarding my admission, stay and conduct at the above teacher training college are binding.

That on being admitted to the college, I will observe and follow ALL the rules and regulations as laid down by the Ministry of Education and the college authorities acting in conformity with these regulations.

During my stay, I shall follow rules and regulations as laid down below:

- Should report within two weeks failing which I will not be admitted.
- Drinking and drug abuse is not allowed and is punishable by suspension.
- Bullying and fighting is not allowed.
- Theft is not allowed.
- Immoral behaviour is not allowed.
- Obscene language is not allowed – written or spoken.
- Absconding classes or truancy is not allowed.
- Spending a night out without permission is not allowed.
- Smoking is not allowed
- Vandalism is not allowed.
- Cooking in hostels is not allowed.
- Visitors are not allowed during learning time and in hostels.
- Dressing: gentlemen to be in neckties during working hours. Slippers, head-gear, jeans, T-Shirts, earrings (for male students), Buda hair cut are not allowed. Always keep hair short.
- Female students are not allowed to wear pairs of trousers during official working hours.
- Instigating other students to go on strike is not allowed.

- All students shall take part in cleaning and upkeep of hostels, classrooms and the surrounding places of the college.
- Observe punctuality for all activities.
- Pornography is not allowed.
- Any student responsible for pregnancy or impregnating will be withdrawn and readmitted after delivery.
- Staff houses are out of bounds to all students.
- Relationships/activities that interfere with your studies and welfare of other students are not allowed.
- Food from the cafeteria is not allowed in hostels.
- Students shall be responsible for their private hospital bills.
- Evening prep is compulsory.
- Any student who misses classes for a week for no good reason shall be withdrawn from the college.
- Cell phones are not allowed in class.
- Use of radios is at owners' risk and should not disturb other students.
- All illegal electrical connections are prohibited
- Writing all assignments is compulsory.
- Use of chairs outside classrooms is not allowed unless on instruction.
- Defiance of authority will lead to suspension.
- Writing on walls and other school property is prohibited.
- Allowances will be paid to the students as soon as the funding is available.
- K500.00 will be deducted on your first allowances for the students' welfare. An account will be opened and whoever borrows will pay back with an interest of 10%/month.

I understand that as a student-teacher, unless training conditions are reviewed, I will:

- Conduct myself in my behaviour, dressing, speech and personality as responsible, respectable person according to the normal and acceptable standards laid down by the Ministry of Education, and the ethics of teaching profession to carry out as a students teacher diligently at all times. I also realize that the college authorities have the right to exclude me from the list of their trainees if my academic performance is below average.
- The college authorities have the right to take any disciplinary action such as immediate rustication, suspension or recommend dismissal from college as may see it fit.

I have read and fully understood the rules and regulations above. I therefore declare on this date of in the month of in the year that I will abide by them.

Signature

Date

APPENDIX 2

College rules and regulations

During the course, students will be expected to follow rules and regulations of the host college as well as rules and regulations of the Ministry of Education and Vocational Training. Some of the rules and regulations are as follows:

- a Students must attend all classes and take their studies seriously.
- b Students must be punctual at all college activities and use their time profitably.
- c Students must use college property properly and respect other peoples' property.
- d Hostels are out of bounds to visitors.
- e Staff quarters are out of bounds to students.
- f Hostels of the opposite sex are out of bounds.
- g Students must be exemplary in appearance, dress and conduct at all times.
- h Students must refrain from:
 - drunkenness.
 - smoking and taking drugs.
 - disorderly behaviour (conduct).
 - possessing pornographic materials
 - leaving or spending nights out of college without permission
 - open defiance of authority
 - immoral sexual behaviour
 - use of abusive language
 - bullying fellow students
 - absconding classes or truancy
 - instigating other students to go on strike theft



Failure to adhere to any one of these rules will lead to disciplinary action which may include:

- withdrawal of privileges
- written warnings
- internal punishments
- rustication
- 6 weeks suspension from the course
- expulsion from the course



Reporting students' discipline cases

Principals should report students disciplinary cases in writing to the Ministry of Education through the Department of Teacher Education and Development. The report should include signed minutes of the Discipline Committees' recommendations and student's own report.

Readmission of a suspended student

A suspended student may be re-admitted to the course after his/her suspension as long as the suspension period is not more than 6 weeks and the student did not miss continuous assessment tasks.

Expulsion from the course

Students will be expelled from the course if they commit gross misconduct.

Students' union

A students' union serves as a link between the staff and the student's body. It is responsible for entertainment, discipline, catering services and administration of funds and other assets in the interest of the students themselves. The union helps in the running of the college especially in matters concerning students welfare. Colleges should ensure that a students' union is established.

Appendix 3

Interview Schedule/Guide for HoDs

Name of interviewee	
Sex	
Age	
Teaching qualification	
Teaching experience	

1. Do you own a mobile/cell phone?
2. What facilities does your mobile phone have?
3. How do you use your mobile phone?
4. As a SES lecturer, have you ever used mobile phone in your teaching?
5. Have you ever observed a colleague (s) using mobile phone in teaching of SES?
6. Do you allow students to use mobile phones in your lessons of SES?
7. If not, why are they not allowed?
8. Do you have any knowledge of policy that encourages or forbids students to use mobile phone as a resource in lessons?
9. In what ways would mobile phones be useful in teaching of SES in TTCs?
10. What do you think are the challenges likely to be faced in the use of mobile phones in teaching SES:
 - a. to lecturers
 - b. to students
11. How best could these challenges be addressed?
12. Could you recommend use of mobile phone in teaching SES in TTCs?
 - a. Why? or
 - b. Why not?

Appendix 4

Interview Schedule/Guide for Principals

Name of interviewee	
Sex	
Age	
Teaching qualification	
Teaching experience	

1. Do you allow students to use mobile phones in lessons such as SES?
2. If not, why are they not allowed?
3. Do you have any knowledge of policy that encourages or forbids students to use mobile phone as a resource in lessons?
4. How do you orient your new students about rules and regulations of their training programme including use of mobile phones in class?
5. In what ways would mobile phones be useful in teaching such as SES lessons in TTCs?
6. What do you think are the challenges likely to be faced in the use of mobile phones in teaching:
 - a. to lecturers
 - b. to students
7. How best could these challenges be addressed?
8. What is your way forward concerning the use of mobile phones in teaching and learning in TTCs?

APPENDIX 5



CHANCELLOR COLLEGE

Principal: Richard Tambulasi
B.A (Pub Admin), BPA(Hons) MPA, PhD

P. O. Box 280, Zomba, MALAWI
Tel: (265) 01 524 222
Telex: 44742 CHANCOL MI
Fax: (265) 01 524 046
Email: deaned@cc.ac.mw

OFFICE OF THE DEAN OF EDUCATION

21st December, 2015

TO WHOM IT MAY CONCERN

Dear Sir/Madam

LETTER OF INTRODUCTION (MASTER OF EDUCATION)

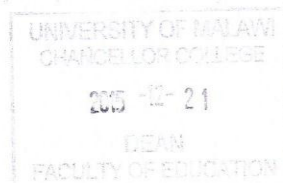
The Faculty of Education would like to introduce to you **Mr Lloyd M. Chauluka, Reg. No. MED/PR/SS/08/14**, Chancellor College M.Ed Student who is supposed to do research in area of his interest.

This letter serves to request you to assist him with data collection in your zone.

The Faculty of Education will appreciate your support in this very important aspect of our students' training.

Yours faithfully,


F. Kholowa, (PhD)
DEAN OF EDUCATION



Appendix 6

Survey on Primary Teacher Educators' Perceptions on the use of Mobile Phone in Teaching of Social and Environmental Sciences in Teacher Training Colleges

SECTION A: BIOGRAPHICAL INFORMATION

Sex:

Age:

Academic Qualification:

Teaching Experience (Years):

SECTION B: PERCEPTIONS/OPINIONS

Indicate the degree to which you agree with each of the following statements using a 5-point rating scale where:

Strongly Agree = 5

Disagree = 2

Agree = 4

Strongly Disagree = 1

Uncertain = 3

- | | | | | | |
|---|---|---|---|---|---|
| 1. I own a mobile phone which has internet facilities | 1 | 2 | 3 | 4 | 5 |
| 2. I use my mobile internet as a teaching/learning tool | 1 | 2 | 3 | 4 | 5 |
| 3. My mobile phone has facebook facilities | 1 | 2 | 3 | 4 | 5 |
| 4. I use facebook for social interaction only | 1 | 2 | 3 | 4 | 5 |
| 5. I am able to use facebook in teaching/learning process | 1 | 2 | 3 | 4 | 5 |
| 6. My mobile phone has whatsapp facility | 1 | 2 | 3 | 4 | 5 |
| 7. I use whatsapp for social interaction only | 1 | 2 | 3 | 4 | 5 |
| 8. I am able to utilize whatsapp facilities for professional use | 1 | 2 | 3 | 4 | 5 |
| 9. Students have mobile phones which could be used for teaching and learning in SES lessons | 1 | 2 | 3 | 4 | 5 |
| 10. Students are allowed to use mobile internet to search information in my SES lessons | 1 | 2 | 3 | 4 | 5 |
| 11. I only allow students to use mobile internet for searching information outside class time | 1 | 2 | 3 | 4 | 5 |
| 12. Administrators in my college do not allow students to use mobile phones in a lesson | 1 | 2 | 3 | 4 | 5 |
| 13. Education policy does not allow TTC students to use mobile phones in a lesson | 1 | 2 | 3 | 4 | 5 |
| 14. Traditionally, it is not appropriate to allow TTC students to use mobile phones in a lesson | 1 | 2 | 3 | 4 | 5 |
| 15. There is no any policy prohibiting TTC students to use mobile phones in lessons | 1 | 2 | 3 | 4 | 5 |
| 16. My college prohibits the use of mobile phones in class only for the sake of discipline issue | 1 | 2 | 3 | 4 | 5 |
| 17. Mobile internet is more readily available and more accessible among lecturers and students in TTC | 1 | 2 | 3 | 4 | 5 |
| 18. Use of mobile internet as pedagogical tool could motivate learners | 1 | 2 | 3 | 4 | 5 |

19. Use of mobile internet is more convenient for SES lessons that involve information search	1	2	3	4	5
20. Facebook/whatsapp forum can be used for group discussion of various educational issues/topics after classes	1	2	3	4	5
21. Use of facebook/whatsapp can increase interaction and participatory learning	1	2	3	4	5
22. I have used mobile phone as a pedagogical tool (teaching/learning resource) in my SES lessons	1	2	3	4	5
23. I have observed colleague(s) using mobile phones in SES lessons	1	2	3	4	5
24. I personally regard as a waste of time using mobile phones in SES lessons	1	2	3	4	5
25. I am not aware of how to use mobile phone facilities in SES lessons	1	2	3	4	5
26. Use of mobile internet as pedagogical tool consumes time	1	2	3	4	5
27. Use of mobile phones encourages learners to be too playful in class	1	2	3	4	5
28. Not all learners have mobile phones to use in class activities	1	2	3	4	5
29. Not all learners have mobile phones with internet, whatsapp or facebook facilities	1	2	3	4	5
30. Students would misuse mobile phones by texting or surfing during class time	1	2	3	4	5
31. It would be difficult to check whether students are using mobile internet for education purpose or not	1	2	3	4	5
32. Mobile phones can effectively be used as teaching/learning tools by setting rules and regulations in the classroom	1	2	3	4	5
33. Use of group tasks would help to accommodate students without mobile internet in information search	1	2	3	4	5
34. Groups can be formed in class to use whatsapp/facebook forum to discuss some issues or topics in SES	1	2	3	4	5
35. It is possible to organize CPDs in order to orient tutors with less skills in operating mobile phone	1	2	3	4	5
36. I recommend use of mobile phone for instruction purpose in SES lessons	1	2	3	4	5
37. I recommend an orientation for use of mobile phones in SES lessons	1	2	3	4	5