



UNIVERSITY OF CAPE TOWN

**Enhancing dialogue to reduce transactional distance:
A case of using mobile-mediated social media in a
virtual group activity**

By

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ABSTRACT

Transactional distance (TD) theory argues that psychological and communications barriers have the potential of creating misunderstandings in any formation of learning contexts. Distance education is seen as providing both opportunities and challenges. The distance programme being studied has experienced high deferment rates. However, the lack of communication infrastructural challenges and specifically lack of interaction is one major challenge hindering reduction of TD for remotely dispersed distance learners. It has become evident that WhatsApp popularity has risen; one unique feature is its affordance to enhance communication within a group. Hence, WhatsApp group was used to enhance interactions, as well as nurturing social engagement that creates dialogue and sharing amongst a virtual group. This study was aimed at enhancing dialogue as a potential of reducing TD amongst distance students for purposes of improving their study experiences. This study set out to explore how Salmon's (2000) 5-stage Model could be used as one way of implementing a mobile-mediated WhatsApp group activity as an opportunity to reduce TD. Six pre-service teachers participated in the WhatsApp mediated group activity virtually to try and find out how implementing a WhatsApp group activity could enhance dialogue consequently reduce TD.

TD theory argues that psychological and communications barriers have the potential of creating misunderstandings in any formation of learning contexts. Distance education is seen as providing both opportunities and challenges. The distance programme being studied has experienced high deferment rates.

The researcher was part of the WhatsApp group as a passive participant. The WhatsApp artefacts were analysed using Salmon's (2000) 5-stage Model and the Interaction Analysis Models indicators (Gunawardena, Lowe & Anderson, 1997) complemented measuring the knowledge generated. One-on-one interviews were conducted with three of the participants to assess social knowledge construction and applicability of the WhatsApp platform for accomplishing the group activity. Focus Group Discussion was meant to help assess the social construction knowledge.

The main finding of the study showed that mobile-mediated enhanced dialogues have the potential of generating socially constructed knowledge. In the discussions the participants related well with the Interaction Analysis Model indicators as highlighted throughout the WhatsApp discussion and linked it to their own context. The participants mentioned that the WhatsApp group discussion used had a positive effect on students as they were always connected. It afforded them the ability to use what they were using in their informal networks. There was also evidence of in-depth acquaintance with other participants which inevitably positively influenced the kind of dialogues.

The scope of this study activity was on what the participants were sharing, although regarding language use the findings showed that participants used diverse communication approaches. For example: emoticons, texting and vernacular languages were particularly noted throughout the interactions and activities of the participants. This was an important observation that can further be investigated to find its impact on reducing TD. It also showed that types of mobile devices have different capacities depending on the originality of the device, resulting in some participants' failure to engage effectively at some point during the interactions. It was also observed from the discussion that imitation mobile devices impose limitations on the quality of the output. Notably, one participant's mobile phone, although data-enabled, was not able to download pictures, perhaps due to low network connectivity.

The findings of the research suggest the great potential in the use of mobile-mediated WhatsApp to assist in enhancing dialogue to reduce TD. This in turn helps distance students in their virtual learning experiences. The findings of this case study can, however, only provide some insight into the possibilities of reaching and assisting more students. Furthermore, studies to investigate 'mobile social' language use on the reduction of TD are recommended.

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DEFINITION OF KEY CONCEPTS

The key concepts in this study were contextually defined to help readers conceptualise the terms used.

Transactional Distance (TD) refers to the psychological and communication barriers that take place in the mind of the learner when they cannot get help from peers and tutor (Moore, 1993). These barriers need to be overcome for dialogue to happen.

Dialogue is a potential indicator of TD (Moore, 1993; Park, 2011). In this study dialogue is a process of exchanging ideas to resolve an assigned group activity.

Interaction is defined in this study as ways in which participants communicate, react and act towards each other. The interaction is dependent on the activity structure. Lack of interaction is a potential indicator of high TD that is a communication barrier.

TD reduction is realised either by increased or decreased by changes to dialogue and structure making such changes resulting in predictable outcomes (Moore, 1993).

Structure refers to the elements of the course design activity; it is either flexible or rigid in nature. The activity design facilitates implementation of a variety of communications media for instructional delivery (Park, 2011).

Learner Autonomy is realised when flexible structure increases opportunities for enhancing dialogue; in other words, it provides more learner autonomy (Moore, 1993).

Virtual group refers to the distance students who are geographically separated and primarily interact through electronic communications, in this study context using WhatsApp (Park, 2011).

WhatsApp is a social network application that enables users to send text, pictures, videos and audio messages to individual or groups, ("WhatsApp Home," 2014). WhatsApp can be downloaded on personal computer and on a mobile device.

Mobile-mediated Social Networks (MMSN) refers to the social media application that the students used to interact virtually with each other; in this study the WhatsApp social media used on a mobile device like mobile phone.

MMSN WhatsApp is the term MMSN WhatsApp is used in this study to mean WhatsApp that is running on a mobile device, i.e. mobile phones, or tablets.

LIST OF ACRONYMS AND ABBREVIATIONS

BUSE	Bindura University of Science Education
DL	Distance-learning
EFA	Education for All
ETs	Emerging Technologies
F2F	Face-to-Face
FGD	Focus Group Discussion
HTDI	High Transactional Distance and Individualised activities
HTDS	High Transactional Distance and Socialised activities
LTDI	Low Transactional Distance and Individualised activities
LTDS	Low Transactional Distance and Socialised activities
MMSN	Mobile-Mediated Social Networks
PFML	Pedagogy Framework for Mobile Learning
TD	Transactional Distance
UNISA	University of South Africa
VODL	Virtual and Open Distance-learning

CHAPTER 1 INTRODUCTION

1.1. Background and overview of the study

Distance learners face potential psychological and communication barriers during their learning experiences (Moore, 1993; Park, 2011). Distance education has been established as a way of enabling learners not only to juggle personal commitments, but also to create access to learning from widely distributed locations, (Czerniewicz & Brown, 2013; Huang, 2012; Johnson, Becker, Cummins, Estrada, Freeman and Ludgate, 2013). Several studies, (Hodgkinson-Williams & Ng'ambi, 2009; Jaffer, Ng'ambi & Czerniewicz, 2007; Miyazoe & Anderson, 2012; Ng'ambi, 2013; Sultana & Kamal, 2012) have shown that uses of Information Communication Technologies (ICTs) may enhance pedagogically sound approaches to the learning processes. Park (2011) elaborated the potential of mobile technologies in reducing communication and psychological barriers in distance-learning programmes.

A sizable number of Higher Education Institutions (HEIs) in developed nations have demonstrated successful implementation of emerging technologies (ETs) for distance-learning (Anderson, 2004; Roshan & Mohammad, 2007; Smyth, 2011). This study aims at filling the gap of harnessing social media – WhatsApp – in virtual group activities. For instance, some HEI have distance programmes that offer blended or exclusively online courses, such as Open University UK that offers flexible distance and open learning for undergraduate and postgraduate courses and qualifications (Ng'ambi, 2006; Seipold, 2009). Veletsianos (2010:12) defined ETs as “tools for innovation and for concepts or advancements being utilised in diverse educational settings that serve varied education related purposes”. He further argues that ETs may not necessarily be new but does emphasise the dynamic nature of change as technologies are in a continuous process of refinement and development (p.13). For example, in Southern Africa the University of South Africa (UNISA) is one of the largest distance-learning universities in the world that has successfully implemented the use of technologies in their programmes (Mafenya, 2011; Pityana, 2009). This is in stark contrast to distance-learning programmes in other

Southern African developing nations, such as Malawi, Zambia and Zimbabwe. Few studies have been conducted to establish the power of harnessing ETs in blended distance education programmes (Mboya, Ferreira, & Gibas, 2009; Mporu, Samukange, Kusure, Zinyandu, Denhere, et al. (2012). As a matter of fact, Zinyeka (2004) makes reference to the lack of the communication infrastructural developments as one of the possible factors in the effective implementation of ETs in HEI's distance-learning programmes.

Distance-learning institutions, specifically in developing nations, are faced with many challenges to do with unavailability of resources, communications, administrative and academic support services (Walsh, 2011). For instance, in Zimbabwe most distance students are located in remote rural areas, with limited internet connectivity, and limited learning resources (Mporu et al., 2012). This means that for any course engagements the students have to travel long distances for the face-to-face discussion sessions, which has proven to be costly and time-consuming for them. Distance students feel isolated from others when they have fewer chances to work with other students on assignments or receive feedback from other students (Batchelor, 2007; Kuo, 2010), creating anxiety and uncertainties in the learner, thereby creating a psychological barrier. Furthermore, Tunjera et al., in their 2013 study, acknowledged that lack of students' interactions is a possible major problem currently facing the distance students, due to the limited or non-existence of communication networks infrastructure. The study by Rodríguez, García, de Miguel, & Kim (2011) formed a virtual learning community to provide a collaborative environment mediated by Information and Communication Technologies (ICTs) to improve communications amongst team members. Therefore, forming collaborative groups could lessen student isolation, thereby increasing the students' communication and support networks for each other (Motlik, 2008). These factors have led scholars (Bozalek, Gachago, Alexander, Watters, Wood, Ivala, & Herrington, 2013; Carr, 2013; Gachago, Ivala, Backhouse, Bosman, & Bozalek, 2013; Makoe, 2012; Musungwini, Zhou, & Ruvunga, 2014) to insist on innovation in the use of the available ETs, such as social media that most students have access to. It is also important to understand that the use of ETs such as mobile-mediated social networks (MMSN) should be context-specific and used appropriately. As mentioned earlier, ETs

are not new, but how they are being implemented should show innovations in their various contexts. Social media have been widely used in social contexts but few studies have demonstrated the potential of social media in learning, therefore this study appropriating social media in the teaching and learning environment makes social media an ET. The next section highlights the background of the distance-learning programme being studied.

1.2. The background of the BUSE's VODL programme

In the early 2000s, the Zimbabwe Open University (ZOU) opened its doors to distance education. ZOU established centres in every province to service its students using blended learning, meaning the students had scheduled face-to-face (F2F) meetings during the semester but they would also work independently. Women's University in Africa opened in 2002, also using blended part-time block learning, with little online interaction (Mashininga, 2012). Bindura University of Science Education (BUSE) is the only university in Zimbabwe whose name carries a mandate to ensure Science Education. From 1996 to 2003, BUSE enjoyed a progressive and steady increase in the number of science student teachers enrolment (Mpofu et al., 2012). Thereafter the enrolment statistics showed a drastic downturn to unsustainable levels in 2009 because of the economic meltdown of 2007/8. This threatened the BUSE's ability to fulfil its mandate of producing science educators. Realising the urgent need for trained science teachers to meet national needs could no longer be achieved through traditional conventional training; BUSE then launched an intervention in the form of a pilot project named Virtual and Open Distance-learning (VODL) in the Mashonaland Central Province, which is the least developed province in the country. The VODL programme aims to train post-secondary school students and Certificate/Diploma in Education holders to obtain diplomas or degrees in science education. The students recruited into the VODL programme include practising science teachers (relief and non-graduate) and non-practising school leavers with the prerequisite qualifications but who had no access to tertiary education. Deterrents to university teacher education include high entry requirements and the high cost of education in an era where Zimbabwe has entered into difficult economic times, which have lasted for more than a decade (Mpofu et al., 2012).

The project was initiated at a time when every nation was in pursuit of Education for All (EFA) (Thakrar, Zinn & Wolfenden, 2009), making it a necessary and thus significant innovation. The VODL programme is guided by the principle of taking university education to the doorstep of the student at an affordable cost, ensuring assistance for students who meet the minimum entry requirements for degree programmes but, who lack funding (Mpfu et al., 2012). The Google map in Figure 1.1. shows the study participants' locations as well as the BUSE's VODL centre. The Mashonaland central is highly populated (Population Services, 2012) but is the least developed province in Zimbabwe in the context of road networks and communication infrastructures (United Nations, 2010).

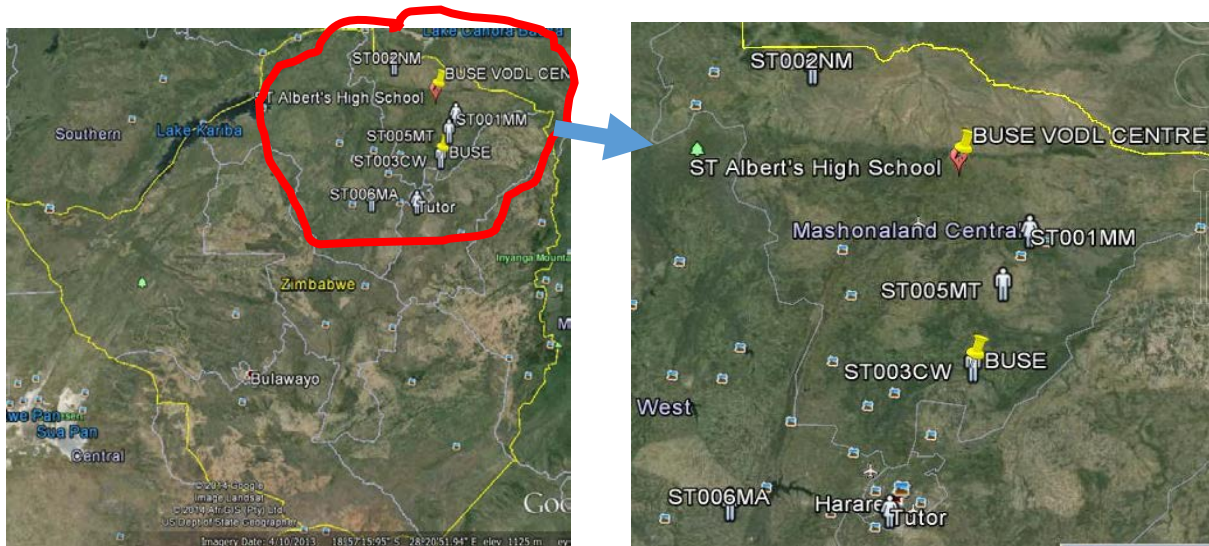


Figure 1-1: Geographical Location of this study's Dip.ScEd M.P.CS participants

The challenge facing VODL students

It is important to note that since the inception of the VODL initiative in 2010, the total number of distance students enrolled was 2 478 students. Semester reports from Centre Coordinators show that active students per block are on average around 1 874, representing a constant deferment rate of 24%. Various reasons given for this include isolation and the feeling of loneliness, as well as socio-economic challenges, and a lack

of support from the institution, instructors and peers that contributed to the overall feelings of being isolated and alone (Mpofu et al., 2012). The resource-constricted conventional curriculum adapted to the VODL programme presents a number of study mode incompatibility problems (Mpofu et al. 2012). The VODL programme follows a blended learning approach: the distance students have a residential period of three weeks during the school holidays. Here the students and lecturers meet at a VODL Centre for Face-to-face (F2F) learning and continue with the distance-learning during a three-month school term. During the residential periods students are exposed to rote learning because of the need to cover course content. Distance students are overloaded with work, leaving no time for comprehension or making meaning of what is being taught. According to Rubanju (2008), use of traditional teaching strategies defeats the purpose of context-based learning. In other words, distance students lacked the necessary interaction and collaboration with other students and also with their lecturers. In their findings, (Ng'ambi & Brown, 2009; Prensky 2005) have shown that the use of interventions that use tools that the students already own, makes learning more accessible and enjoyable. Some authors (Ng'ambi, 2013; Rambe, 2009; Wright, 2009) recommend the adoption of social networks as one of the many ways that could reduce the attrition of students caused by lack of interaction.

According to the Brahim (2013), the international mobile market consists of over 6.8 billion subscribers, with the large majority living in developing countries. In support Rutsito, (2014) agrees by reporting that Zimbabwe has reached a mobile penetration rate of 103%. Kabweza (2014) adds that more than 50% of mobile phone owners are using social media with Facebook, LinkedIn, twitter and WhatsApp having the biggest usage of more than 80%. Mobile-mediated social networking is seen as successfully redefining how people communicate and shape a new way of social engagement and connection (Chifamba, 2013; Tunjera, Mukabeta, & Zivanai, 2013). Moore's (1993) Transactional Distance (TD) theory argues that increasing dialogue has the potential to reduce misunderstandings that occurs in a learning process. As defined earlier, TD is a distance education pedagogical theory that highlights the psychological and communication barriers that take place in the mind of the learner when they cannot get help from peers and tutor. Moore views learning as a transaction of dialogue, structure,

and learner autonomy in a learning activity. He further explains how dialogue and the learning activity can either increase or decrease TD. Transactional Distance informs this study and it is illustrated in the following paragraph.

1.3. Transactional Distance and Social Constructivist theories

As explained above, Moore's TD theory stands as one theory underpinning distance education pedagogy. TD refers to the psychological and communication gap, best described as an understanding difficulty or misconception that occurs in the mind of the learner during the process of learning (Moore, 1993). Moore describes how dialogue, structure, and learner autonomy work together to either increase or decrease TD, in the learning process. The increase in dialogue reduces TD and increases learner autonomy. On the contrary, a tighter activity structure reduces dialogue and learner autonomy, resulting in high TD.

Dialogue is the principal objective of any instructional process because it is a fundamental expectation of both students and instructors (Kuo, 2010; Ravenscroft, 2010; Swan, 2001; Ussher, 2012). Dialogue plays a fundamental role in a student's retention of knowledge (Ng'ambi, 2013). The lack of dialogue therefore suggests that there is a high TD, and an increase in dialogue thus reduces TD. Conversely, if the structure is tight it reduces dialogue, thereby increasing the TD. In other words, socialised activities are a way of assisting students to share and construct knowledge together.

The early advocates of constructivist theorists, Dewey (1938); Piaget (1952); and Vygotsky (1978) (as cited in Hein, 1991) reasoned that knowledge does not simply exist dormant waiting to be discovered, but it is rather constructed by the people through their interactions with the world. Farris (2010) emphasises the fact that knowledge is constructed by people who are socially and culturally engaged rather than by isolated individuals. Social constructivists believe that what is considered knowledge is always informed by a particular perspective and shaped by various implicit value judgments within a learning transaction (Park, 2011; Veletsianos, 2013; Yang, Crook & O'Malley, 2013).

Moore's (1993) TD theory associates with Vygotsky's argument that social interaction plays a fundamental role in learners' mental understanding (Vygotsky, 1978). The latter alludes to the importance of social learning where a more knowledgeable learner or adult can help others. Moore argues for a loosely structured activity that has potential to increase the sharing and exchanging of information amongst peers. This distance can be measured by observing the interactions as they develop in the WhatsApp group discussion. Park (2011) emphasises that students could use mobile-mediated social media to intervene in their social activity through enhanced dialogue, thus reducing TD as students learn from each other in a Zone of Proximal Development (ZPD) (Hardman, 2005). As students engage with their group activity, the mobile-mediated social network, WhatsApp was used. These networks are discussed in the following section.

1.4. Mobile-mediated Social Networks (MMSN)

The current increase on the use of ETs, in particular the use of social media being adopted by the younger generation (Veletsianos 2013; Ng'ambi, 2013), necessitates an investigation into its adoption into learning. MMSNs have emerged as the new way in which people connect socially. MMSNs such as Facebook¹, WhatsApp², WeChat³ are examples of social media that researchers report could enhance student interactions (Davis, Deli-Amen, Rios-Aguilar & Gonzalez-Canche, 2012; Yang et al., 2013). MMSN dialogues are very open and people's engagement is not structured. Increasing dialogue within such unstructured activities is a desirable way to reduce TD (Moore, 1993). MMSN use is prevalent in Africa because Africans are a communal people; therefore interacting with others is part and parcel of their social fabric (Chaplin, 2006; Ikuenobe, 2006). Farris (2010) posits that using the social constructivist theory together with MMSN allows for social knowledge construction. Scholars are promoting the use MMSN in distance teaching and learning, as tools that are self-driven, self-motivated dialogue thereby helping increase dialogue amongst students and their tutors (Ng'ambi, 2013; Ngaleka & Uys, 2013; Yang et al., 2013).

¹ www.facebook.com

² www.whatsapp.com

³ www.wechat.com

The ubiquitous nature of MMSN brings a wide-range of possibilities for socially constructing knowledge in a learning environment through increased dialogue reducing TD (Park, 2011). It has been observed that students learn through their interactions with others and the world. The success of distance education could well depend on the ability of educational institutions to personalise the teaching and learning process to satisfy and retain distance students, as argued by Moore (1993) who suggests that if dialogue is increased, consequently TD is minimised. There has been a rise in the use of MMSN in the social networking circles (Musungwini et al., 2014; Ng'ambi, 2013; Rutsito, 2014; Yang et al., 2013). According to Pachler, Cook and Bachmair (2010), appropriating is a key concept for the recognition of mobile learning in formal learning. The term appropriation is a generic term that explains internalised pre-given cultural understandings within some societal settings (Maria & Moura, 2010; Pachler et al., 2010). They argue that mobile learning interventions are governed by three specific principles: structure, cultural practice, and agency. The structure is internalised mental arrangements that are built upon the social learning (cultural practices) which in turn capacitates (agency) its members to act on the world around them (Pachler et al., 2010:4). There are different contemporary conventional norms (cultural practices) within diverse societies (Grabinger, Aplin, & Ponnappa-Benner, 2007; Mutis, n.d.). Therefore, mobile device appropriation in these contexts varies as well. For that reason, this study's intervention aimed to enhance dialogue by harnessing WhatsApp for reducing TD.

WhatsApp is a free application that can be downloaded either on a desktop computer or on a mobile device. For the purpose of this study participants used their mobile devices to interact within the MMSN WhatsApp group platform created by their tutor for this study. Hence the term MMSN WhatsApp will be adopted in this study to mean WhatsApp that is only used on a mobile device. It is important to note that WhatsApp is a free synchronous and asynchronous application that is used to send multimedia messages between and amongst registered users. WhatsApp users can create groups, and send each other unlimited images, video and audio media messages, ('WhatsApp Home', 2014). MMSN WhatsApp is a cross-platform application that works in all models,

including feature phones, smartphones and other mobile devices (Ngaleka & Uys, 2013).

Currently, WhatsApp is recording 60 billion messages sent and 44 billion messages received by users, which calculates to 64 billion messages handled in just 24 hours, this computes to approximately 2.7 billion messages in an hour ('WhatsApp Home', 2014). These indicators demonstrate how self-driven dialogue phenomena afforded by WhatsApp provide opportunities to be explored and theorised for pedagogical adoption. The Econet Wireless mobile network provider in Zimbabwe is providing WhatsApp bundles as an alternative lower-cost communication to the traditional SMS service. This initiative is encouraging, as users are not directly charged on the amount of data used (Appendix I). Although there are other social networks such as Facebook, twitter, the affordability of WhatsApp made it particularly more relevant in this study. An Increased dialogue helped distance learners reduce any possible misunderstandings that may happen in the process of learning. It is important to note that WhatsApp enhanced student-student dialogues that made students share information, thereby helping students unpack their cognitive dissonance as they negotiate and co-construct meaning. Having highlighted the possibility of enhancing dialogue through use of WhatsApp, this calls for an implementing model that would help link the pedagogy to the mobile-mediated intervention and an evaluation procedure.

1.5. Salmon's 5-Stage Model

The model that was used in this study is Salmon's (2000) Five-stage Model. This model follows a systematic stage of developing a mobile-mediated learning activity. 5-stage is a pedagogical model for e-learning that has been researched and tested model that helps in the teaching and learning in online-mediated platforms. The 5-stage Model is going to be discussed more in section 2.10. Assessing virtual interaction can prove to be difficult, especially without a guiding assessment tool, in this study the 5-stage Model is both a pedagogical model and an assessing interaction that transpired in the WhatsApp group activity. Gunawardena, Lowe and Anderson (1997) developed an Interaction Analyse Model (IAM). They established indicators that can be used to

analyse online discussion to assess knowledge construction. This theory's phase indicators' potential to complement with the 5-stage Model in assessing reduction of TD is further discussed in section 2.10, Chapter 2.

1.6. Rationale of the study

As argued earlier, the BUSE distance education programme has experienced high deferment rates; one of the many possible factors attributed to this included isolation and loneliness. When a student has a question seeking clarification and does not get an answer on time, this leads to dissatisfaction and subsequently to withdrawal. The physical distance and inadequate networking infrastructural became evident as reported in the centre coordinators' reports (VODL, 2013). The VODL students feel isolated due to lack of interaction between students and between students with their lecturers. Moore (1993) argued that increasing dialogue is one possible way of reducing misunderstanding that may arise in the process of learning. Social media have proved to be a way of keeping people connected despite the physical distance separating them, and so reducing the loneliness that one can experience when one is socially isolated. The current system at BUSE's distance-learning programme limits students' commitment due to their remotely spaced geographical locations and limited access to advanced technologies. The proposed use of WhatsApp in a learning activity could enhance dialogue, thereby reducing TD (Moore, 1993). It is important to note that WhatsApp is not new to students as they already use it for social engagements. This prime focus of my study justifies the need to study WhatsApp interaction artefacts to ascertain the kind of learning relations and experiences that could contribute to the reduction of TD. The WhatsApp allows the creation of unlimited messages and is easy to navigate. It also allows both synchronous and asynchronous discussion. The discussion is downloadable and can be printed or saved as a text document.

The envisaged contribution would assist distance-learning institutions and distance learners' use of social media such as WhatsApp in enhancing dialogue to reduce TD in the learning process.

This study will contribute to learning the use of mobile-mediated social networks by demonstrating how technology can mediate TD in the process of learning.

1.7. Research Questions

According to Van't Hoofit (2009:171), the use of mobile devices in distance learning is characterised by an active process, where participants virtually interact with each other as they relate their new knowledge to real-life situations.

1. In what ways could social media like WhatsApp help to enhance dialogue?
2. How does the use of WhatsApp reduce TD for students who work in virtual groups?

1.8. Conceptual Framework

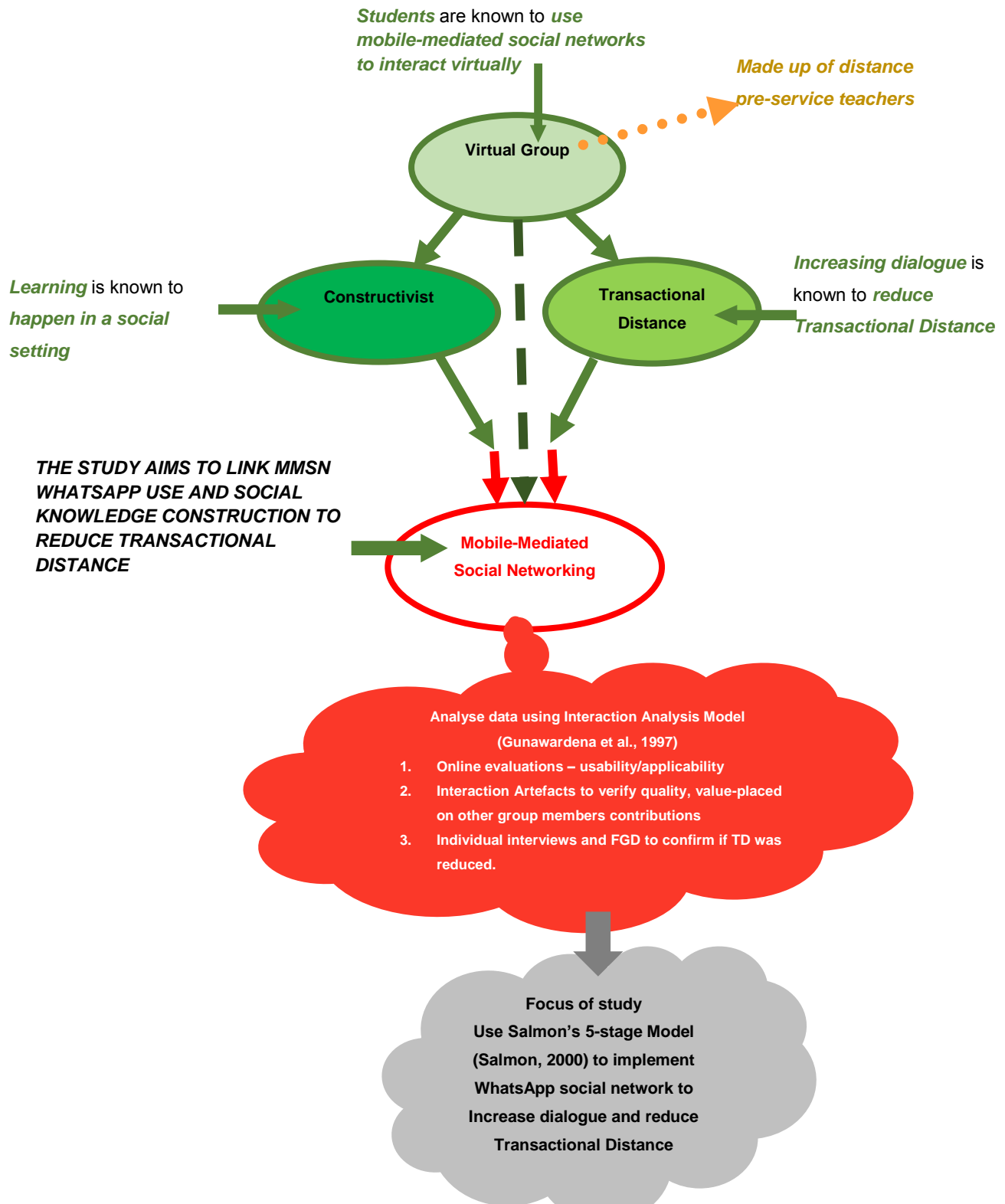


Figure 1-2: Conceptual Framework guiding this study

Virtual groups' interactions have been researched, and studies have shown that younger generations are increasingly using mobile-mediated social networks to quickly share and communicate with each other (Prensky, 2005). It has also been observed that in a social environment students share almost anything that is of interest to them and their peers (Rambe 2009; Lambropoulos, Faulkner & Culwin. 2012; Yang et al. 2013).

This social exchange of information among their peers is how the social construction of new knowledge takes place. Social constructivist theorists acknowledged that knowledge is socially constructed within learners shared environments (Mutis, n.d.; Ravenscroft, 2010; Smyth, 2011). Moore (1993) further argues that there is a need to harmonise the key principles of structure, dialogue, and learner autonomy in any learning environment as a way to reduce a psychological vacuum that is created when learners misunderstand some concepts in the learning process.

As the students are working in a group activity, using a mobile-mediated social network, they share and co-construct knowledge together. The creation of new meanings could be achieved through the sharing of different and conflicting perspectives through group sharing in MMSN WhatsApp.

1.8.1. What is already known about the topic under study?

1. Students learn better as they socially interact with peers (Grabinger, Aplin, & Ponnappa-Benner, 2007; Guldborg, 2010).
2. Students use social media to keep each other up-to-date with their current social activities (Gikas & Grant, 2013; Mäkital, Pääkkö, Raatikainen et al., 2012; Rios-Aguilar, Davis, & Gonzalez-Canche, 2013)

1.8.2. What this study aims to add

The potential of using social media, WhatsApp in particular, as a space for gathering and sharing experiences to enrich dialogue potentially reduces TD as the students endeavour to accomplish a group activity.

1.9. Study Design

The study was a case study of pre-service teachers who were enrolled in a distance education, studying towards a Diploma in Science Education at BUSE's VODL Mashonaland Central province. The unit of analysis was the distance students, who engaged in a WhatsApp-mediated group task discussion. The initial outcome was to determine means of ensuring social presence and quality of contributions as the participants socially interacted in the WhatsApp group-learning environment. The tutor interacted with the group during the discussion process. The researcher was a passive participant in the WhatsApp group. The study aimed to evaluate the WhatsApp learning activity artefacts (the process exchange of information, and the quality of dialogue exchanged).

The goal of this study aimed to increase dialogue to reduce TD using WhatsApp, which the students are currently using in their day-to-day social networking activities.

Salmon's 5-stage Model (Salmon, 2000) was used in designing and implementing the WhatsApp group activity. The WhatsApp dialogues were analysed based on the quality and not quantity of the members' contributions and the value placed on others posts (Gunawardena, Lowe, & Anderson, 1997). Interaction Analysis Model (IAM) (Gunawardena et al., 1997) indicators were used to examine WhatsApp interactions artefacts. I analysed knowledge construction by observing the developing of IAM' indicators as the participants collaboratively worked together to complete the given group task. Prior to the Focus Group Discussion (FGD), one-on-one interviews were conducted to reduce bias as well as well as to triangulate observed data. FGD was a way of collecting evidence of reductions of TD, which as highlighted earlier are mental constructs that cannot be assessed using observation or questionnaires. FGD was used as follow-up discussions of the whole WhatsApp group activity. The results and findings were discussed to substantiate whether the object of the study was met or not, and deduce the possible highlights of the study and make recommendations.

1.10. Outline of the chapters

The rest of the dissertation is structured as follows;

Chapter 2

This chapter comprises a discussion of reviewed literature of studies done that informed this study.

Chapter 3

This chapter highlights the study's methodology, theoretical approach, selection of participants as well as a discussion of the data collection instruments and the methods used for analysis of the data.

Chapter 4

Chapter 4 explains and interprets the results of the study linking them to the goals and what theoretical framework and literature highlights.

Chapter 5

This chapter concludes the study by summarising the thesis purpose, and reviewing the findings of the study. It also makes some recommendations based on the findings.

1.11. Chapter Summary

This introductory chapter has given an outline of the study, the background and the rationale that motivated the study as well as the study's research questions. The conceptual framework highlighting key concepts under study and defined them as they were applied in the context of this study. The identified gap found in literature helped to delineate the study's scope. Finally, a brief discussion of the study's design was also presented.

CHAPTER 2 LITERATURE REVIEW

2.1. Introduction

The purpose of this chapter is to discuss the key concepts explored in this study which are: distance-learning; Transactional Distance (TD) Theory and Pedagogical Framework for Mobile Learning (PFML); virtual groups; the role of dialogue virtual group activity; Mobile-mediated Social Networks (MMSN); WhatsApp MMSN; Salmon's 5-stage and Interactive Analysis Models were also reviewed.

2.2. Distance-learning (DL)

Most scholars (Anderson & Dron, 2011; Chaney, Chaney, & Eddy, 2010; Veletsianos, 2010) agree that Distance-learning (DL) is the fastest-growing method for both formal and informal learning. Since the late 20th century, the DL concept has evolved from education using radio-television to the present-day mobile learning (m-learning), (Burgess, 2006). The DL concepts use diverse terms such as "open and distance-learning" (Jakobsdottir, Mckeown, & Hoven, 2010), "flexible learning" (Tucker & Morris, 2011), "online learning" (Anderson & Elloumi, 2008) and "blended learning" (George-Walker & Keeffe, 2010). Most studies of distance education are aimed at improving the quality of Distance Education courses. Notably most of these studies were done in technologically resourceful learning environments (Boyinbode, 2013; Kirkwood & Price, 2013; Ng'ambi, Gachago, Ivala, & Bozalek, 2011; Rios-Aguilar et al., 2013). This study attempts to aid in filling some of the gaps in research on reducing

2.3. Transactional Distance (TD) theory

In distance-learning, learners and educators are physically separated in both space and time. According to Moore (1993), this separation causes what he calls transactional distance (TD). Moore argues that in any learning activity, there is the potential of developing a psychological and communication barrier whereby the need to have these both overcome aimed at the reduction of TD. Furthermore, Moore (1993) identified dialogue, structure, learner autonomy as key constructs that, when harmonised, would

help reduce TD. He deduced that increasing dialogue in loosely structured activity has the potential of reducing TD. In their study, Jakobsdottir et al. (2010) explored the use of new technologies in the professional training of a distance-learning teacher. They established that teachers in developing countries are increasingly turning to mobile devices to create their own learning communities aimed at helping each other. Jakobsdottir et al. (2010) also observed that as the teachers gained access to other community networks, knowledge construction becomes a social endeavour. However, they also pointed out that autonomy and responsibility on the part of the distance learners need further investigation. Park (2011) adapted Moore's TD theory to come up with mobile devices as mediation devices in either individual or social activities. Tunjera et al. (2014) also conducted research to investigate the applicability of mobile learning in enhancing interaction in a distance pre-service teacher-training programme. The study involved 20 remotely located pre-service teachers, who interacted using a mobile application tool that the researchers designed. The results suggested that technology used in distant learning enhances anytime-anywhere accessibility. In addition, they made recommendations for further investigations on pedagogical theories in mobile learning and DL in developing nation's context. As indicated earlier, the lack of dialogue is a major problem in DL and necessitates further study. Therefore, integrating mobile-mediated activities to enhance dialogues has the potential of reducing TD (as hinted at above), necessitates further study. Moore (1993) asserts that an increase in dialogue has the potential to reduce TD. This is particularly the case for pre-service teachers in this study context. TD theory is discussed in the following section

Moore's (1972) Independent Learning and Teaching (ILT) model was developed during the correspondence distance-learning period. He revised this ILT theory in 1993 to the current TD theory. This study used Moore's (1993) TD theory, linking it with social constructivist learning to coherently enhance dialogue using WhatsApp as participants negotiated their sense of meaning and understanding to maximise their learning experience. TD turned out to be a useful theory to overcome the physical or geographical distance. Moore (1993) establishes that misunderstanding or misconceptions trigger a need to 'transact' and TD theory is concerned with what it takes to reach understanding by reducing both psychological and communication

barriers of 'transacting' to resolve misunderstandings. In fact, Moore (1993) ascertains that TD is a result of mental constructs that happen in the mind of the students. It is this difference in perceptions and understandings that must be overcome by increasing dialogue and loosening the activity's structure. According to Moore (1993), TD is the relationship that exists between the three key components within a learning activity namely dialogue, structure, and learner autonomy (1993). The appropriate harmonisation of these components is the principle of Moore's TD theory. For this study, I used Moore's argument that asserts that enhancing dialogue has the potential to reduce some misunderstandings as they exchange ideas during the group activity (Moore, 1993).

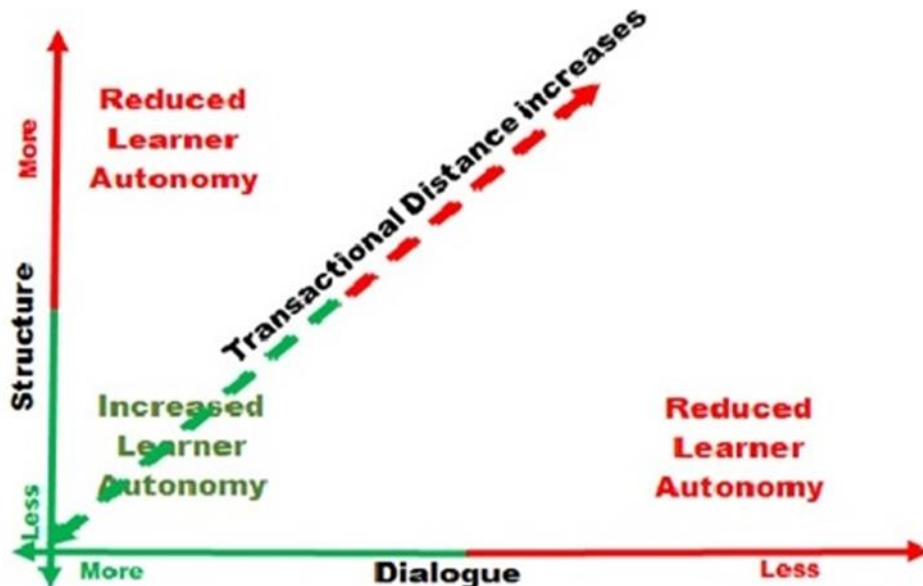


Figure 2-1: Moore's 1993 Transactional Distance Theory

Figure 2.1. illustrates the relationship between structure, learner autonomy, and dialogue and the resulting effect of their relations on TD. The less structure on an activity, the more dialogue, therefore an increase in learner autonomy. This entails a reduced TD. Similarly, more dialogue has the effect of reducing TD; as a result learner autonomy will increase as learners negotiate collectively to achieve their group activity's common goal (Adedoja, Adedore, Egbokhare, & Oluleye, 2013; Makoe 2012; Miyazoe & Anderson 2012). On the contrary, less dialogue and more structure reduce learner autonomy and inherently increases TD. Park (2011) proposed and adapted TD theory

by introducing his Pedagogical Framework for mobile learning. This underscores the importance of developing a learning theory for distance learners. This study was intended to engage with both theorists with the goal of enhancing dialogue by means of a MMSN WhatsApp application towards the reduction of TD in a virtual group work activity.

2.4. Park's 2011 Pedagogical Framework for Mobile Learning (PFML)

Park (2011) adapted Moore's (1993) theory of TD, highlighting four types of mobile learning interactions that take place in a distance-learning context within a single continuum mediated by mobile devices. Park (2011) further posits that TD is either high or low, depending on the organisation of the learning activities. Secondly, he views learning activities as either individualised or socialised. Figure 2 2. illustrates Park's mobile-mediated learning framework based on Moore's three main learning ideas that are embedded in any form of educational transactional activity (Burgess, 2006; Moore, 1993; Park, 2011). Common to each quadrant is the mobile-mediation that is central to the different types of learning activities. Park (2011) argues that in distance-learning activities, students can learn as individuals or in groups and will either experience high or low TD depending on the structure of the activity. The openness of dialogues that are allowed is dependent on what role the teacher takes in these activities, and therefore regulates the level of learner autonomy. Moore (1993) emphasises that learner autonomy is critical in reducing TD.

Given the facts that learning is a social activity that involves interactions, Moore (1993) argues that enhancing dialogue will reduce TD in the end. Park agrees and elaborates TD theory further, concluding that by adding mobile-mediating devices and considering individual and virtual group social activities the learning process is further enriched. Figure 2, is a diagrammatic illustration of Park's PFML model, each Quadrant type is discussed in detail in subsequent sections.

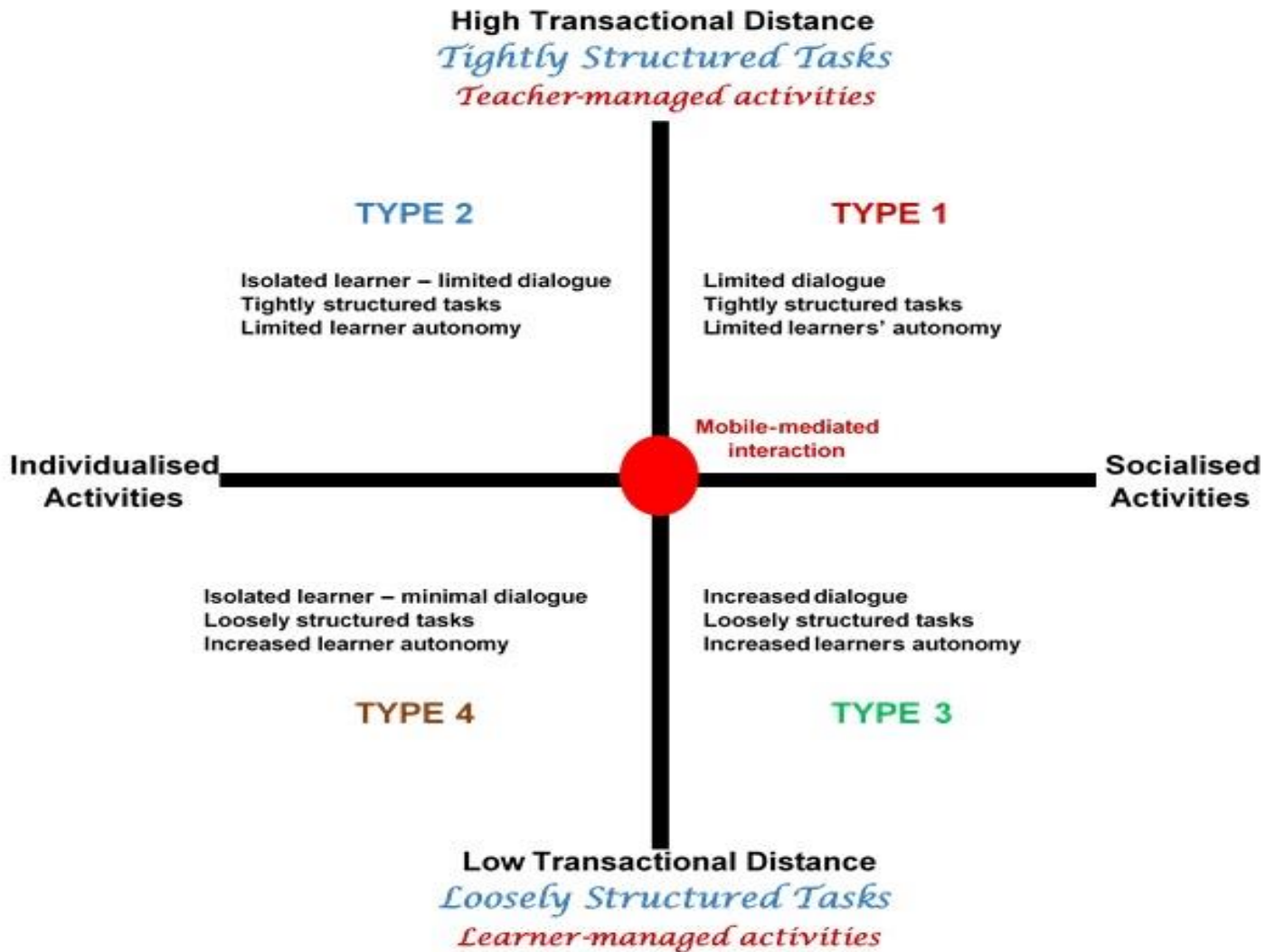


Figure 2.2.: Park’s 2011 Pedagogical Framework for Mobile Learning (PFML)

Quadrant Type 1: High Transactional Distance and Socialised Learning activity (HTDS)

According to Park (2011), in this Quadrant the students work in groups but there is high level of TD that points to the activities being highly teacher-centred. In other words, the teacher sets a tight structure and controls the activity by a set of restrictive rules. In this learning activity, the group of students work together to complete a teacher-led group activity. It is important to note that the learning activity, although it is socially mediated by mobile devices, is a tightly structured task predetermined by set rules and guided by learning objectives. This hinders the enhancement of dialogue in such a learning activity (Moore, 1993). Learner information exchange is thus governed by the teachers’ set

rules and on the instructions given and this creates boundaries on knowledge production.

In this setting, even though it is a social activity, the learners cannot explore outside the set rules, thus going outside the set boundaries' results is not allowed, because there is already a marking scheme. In designing mobile-mediated learning emphasis is placed on the structure and dialogue, considering the rigidity or flexibility of the instructional method used. With this in mind, this learning activity has a rigid instruction structure. The teacher manages the activities in this Quadrant. This is not desirable for the purpose of this study, as the enhancement of socialised open dialogue, in my opinion, is fundamental to the reduction of TD.

Quadrant Type 2: High Transactional Distance and Individualised Learning activity (HTDI)

Here the individual student is directed by a tight structure and given well-organised content and resources, hence student-content interactions are encouraged. The student is a self-directed learner. This is not the focus for this study as this isolates the learner whom the social constructivists say is a social learner (Park, 2011).

Quadrant Type 3: Low Transactional Distance and Socialised Learning activities (LTDS)

This involves students interacting with peers as well as with the tutor as they use the MMSN application. The activity is loosely structured, therefore challenges students to be creative and come up with ideas of solving a given problem. This shows the adaptability of MMSN applications, affording a learner-managed activity, thereby increasing learner autonomy in generating collaborative construction of knowledge through social negotiation (Gunawardena et al., 1997: 402). The dynamics of this group type affords equal opportunities to group members. Most compelling evidence on social learning theory studies is promoting this kind of learner-centeredness approach, which in turn affords learners the opportunity to have autonomy of their learning. This study is located in this Quadrant because it focuses on socialised learning activities mediated by MMSN, but the empirical findings may indicate otherwise.

Quadrant Type 4: Low Transactional Distance and Individualised Activities (LTDI)

The transactional distance between student and tutor is reduced as activities are loosely structured. In the LI environment, the tutor tends to lead and control what is learnt, although s/he keeps in mind the students' independence (Shearer, 2010). For this purpose, m-learning could work better in blended distance-learning environments, which are run from a distance and have some form of F2F sessions. In this case, students working on a socialised activity could consult with their tutor, followed by an individual activity. In the context of this study, the focus is on social learning that could eventually produce combined efforts of each group member. The group effort is then evaluated by the outcome of the learning task design.

The study places an emphasis on enhancing or increasing student(s)–student(s) dialogues using a MMSN as mediating tool. Sharples, Taylor and Vavoula (2007) note that critics of technology-mediated learning points to the static nature found in most technology-mediated learning as generating a high level of TD. Others (Crescente & Lee, 2011) pointed out that the technology-enhanced learning is distractive in nature considering the dynamic of the stream of sources it affords. Although this may be true in other contexts, the current developments in ETs can now afford students' closed group platforms to interact synchronously and asynchronously in diverse ways and over greater physical distances (Power, 2013; Ng'ambi et al. 2011; Park, 2011).

Research studies by Anderson & Dron (2011) and Park, (2011) agree that the use of mobile-mediated social networks has the potential to increase interactions amongst students, in particular in rural or very remote areas where environmental and infrastructure challenges hinder other learning modalities, such as e-learning. Sharples, Taylor & Vavoula (2007) argue that mobile-mediated social networks are likely to allow learners to engage in dialogue, thereby resolving differences, helping in the understanding of the experiences of others, and in creating common interpretations as well as sharing in the understanding of the concept being discussed.

Park's (2011) PFML was used as a theoretical framework to achieve the goal of the study that is enhancing dialogue in a mobile-mediated virtual group work activity. PFML

explicitly indicates the importance of mobile-mediation in learning. Participants in this study were pre-service teachers enrolled at BUSE's VODL programme. They worked as a group to achieve a common goal in the virtual group's task activity. The Quadrant type 3 is likely to allow students to have many social experiences as they interact with other virtual group members, thereby contributing their knowledge to achieving a common goal (Moore, 1993). The increased dialogue is likely to allow high-order thinking as the students negotiate, evaluate, and reflect on their and others' contributions (Park, 2011).

Park's (2011) PFML adapted Moore's theory of transactional distance providing a pedagogical framework for m-learning from which to develop a successful distance-learning environment. PFML harmonises the course structure, dialogue and student-tutor and student(s)-student(s) relationships mediated by mobile devices in both individualised and socialised activity contexts. In the following section there is a discussion of the context of the virtual group.

2.5. Virtual Group

A virtual group (also known as a virtual team or a geographically dispersed team, distributed team, or remote team) is a group of individuals who work across time, space and organizational boundaries with links strengthened by webs of communication technology (Nevogt, 2012). Group member will be interacting virtually using electronic communication media. Nevogt (2012) emphasises that virtual groups require effective leadership. He further elaborates that these virtual group members are linked for a purpose which holds them together.

In this study, a virtual group was made up of a group of distance learners physically dispersed through distance exchange ideas by means of a WhatsApp programme to accomplish their group learning activity. The virtual group depends on WhatsApp to work across time and, space. Social constructivists argue that learning is a socially mediated psychological activity that will ultimately lead to social knowledge construction (Gunawardena et al., 1997; Park, 2011; Yang et al., 2013).

According to Moore's TD theory, the virtual groups are not only physically isolated but also psychologically separated from a physical social learning environment. In other words, distance learners experience a psychological and communication barrier. This study's virtual group participants are not only distance-learning students who are geographically distributed, but also lack or have limited access to communication technologies for learning, thereby inhibiting the socialisation that the F2F programmes afford. The limited access to immediate exchange of ideas amongst distance learners and their tutors, regrettably in some instances, leads to the reduction of the opportunities and affordances inherent within a traditional F2F constructivist social learning process (Anderson & Dron, 2011; Rimor, Rosen, & Naser, 2010). Ng'ambi (2006) defines knowledge as an outcome of social interaction. In the next section, social construction of knowledge is discussed.

2.6. The role of dialogue in the virtual group activity

In this study, dialogue and interactions are used interchangeably, and are defined as conversations between two or more individuals (Smith, 2001). This conversation, according to Smith (2001), is a dialogic structure of coming to a common understanding, which concurs to dialogue as argued by Moore (1993). Jung & Latchem (2011) and Anderson (2010) ascertain that in a conversation, knowledge is not fixed or waiting to be discovered. Rather, it is an aspect of a process of dialogues that will lead to a shared understanding, resulting in the construction of shared knowledge. This observation is comparable to Moore's (1993) TD theory that deductively argues that an increase in dialogue reduces TD. According to Torres (1993), Paul Freire, who is acknowledged as one of the most powerful voices in learning theories and practice, referred to dialogue as a type of pedagogy that allows students and teachers to learn from one another in an environment characterised by respect and equality. Moore's (1993) theory of TD also emphasises the notion of the importance of dialogue in learning by arguing that it be appraised based on the quality of the dialogue, on the value placed on each member's contributions to the conversation.

As argued by both Freire and Moore, dialogue is not judgmental or that which weighs others down, but rather an understanding of the self and others (Moore 1993). Both theorists oppose the traditional learning method, which Freire termed 'banking education'. Instead they both argue that learning is about engaging in dialogue to come up with explanations and understanding. According to Gregory (2006), knowledge sharing is the ability to logically explore new or existing ideas through agreement and argument dialogues. Anderson (2004) notes to John Dewey's (1916) referred to interaction as the defining component of the learning process. According to Bates (1991), interactivity should be the primary criterion for selecting technology for learning. A large body of research (Naumann & Hurtienne, 2010; Smyth, 2011; So, 2010; Tunjera, Mukabeta, & Zivanai, 2013; Zurita, Baloian, & Baytelman, 2008) that recognises the critical role of interaction in supporting, and even defining learning. Anderson (2004:43) defined interaction as "reciprocal events that require at least two objects and two actions. Interactions occur when these objects and events mutually influence each other". This implies that virtual group members will exchange ideas as they work together to accomplish the assigned group activity thereby having potential to reduce TD.

Student(s)–student(s) interactions, according to Anderson (2003), allow student control, and provide student-based adaption, thereby supporting knowledge construction. This inherently implies, according to Moore (1993), that learner autonomy is enhanced when students work together, although this also depends on the structure of the activity. In their study Balaji and Chakrabarti (2010) put emphasis on the need for students' mutual exchange of information. In addition, research by Rimor et al. (2010) showed that by interacting with their peers, students exchange ideas and get feedback, thereby supporting each other. Rimor et al. (2010) put forward the idea that interactions amongst peers bring students to a deeper sense of understanding, and increased their intellectual accomplishments. The presence of a group of students working together is essential (Anderson 2003), especially at the point when constructed knowledge is applied to their environments. The goal of this study is to enhance dialogue by using WhatsApp in environments where participants are separated from each other by geographical distance.

2.7. Mobile-Mediated Social Network

It is a pedagogically sound practice, based on cognitive social learning theories, to design and engage in dialogue in the process of learning. In their report, Rios-Aguilar et al. (2013:3) established that social networks “links people together in ways that resemble traditional feelings of connection, belonging, loosely defined memberships, exchange of feelings and ideas, and the reporting of experiences and actions”. This means that as participants are engaged in a mobile-mediated group activity, there is a feeling of belonging that reduces the feeling of being isolated. Markel (2001) put emphasis on deepest learning as happening in the “writing and talking” about the contents of the course within a group of learners.

Several scholars, (Davis, Deli-Amen, Rios-Aguilar, & Gonzalez-Canche, 2012; Moran, Seaman, & Tinti-kane, 2011; Rios-Aguilar et al., 2013; Rutsito, 2014; Thomas, 2012) have argued that social networks are measurable, economical, relevant, interactive, and timely, and ultimately lead to new heights of knowledge sharing. Bearing this in mind, it means that people easily adapt its use as a tool for socialisation. Rutsito (2014) mentioned that, due to the low cost of data for data-enabled mobile devices, people easily adapted the mobile-mediated social networks (MMSN) for socialisation.

2.8. WhatsApp group

It is important to note that, as mentioned earlier, WhatsApp is an application that can be downloaded either on a desktop computer or on a mobile device.

In this study, the participants were to use their mobile devices to interact within the WhatsApp group platform created by their tutor. The value of WhatsApp is that it is an across-platform device application. The participants accessed MMSN WhatsApp, hence the focus on mobile. The term MMSN WhatsApp is used to mean WhatsApp that runs on a mobile device. MMSN WhatsApp offers the creation of social and participatory virtual groups of up to fifty members, thereby offering new ways of communication and collaboration. Although MMSNs are not yet being fully exploited in formal learning setups, this platform, if observed from the social interactions that take place, promotes

group communicating, peer critiquing, and collective user-generated knowledge, (Ngaleka & Uys 2013; Church & de Oliveira 2013). Mobile-mediated synchronous and asynchronous communication are important features in distance-learning as both students and teachers are separated by space and time. Mobile-mediated communications are interactive, flexible, promote and active engagement and social interaction, thereby providing new opportunities for virtual group working (Roshan & Mohammad 2007:120). According to Roshan and Mohammad (2007:120) mobile-mediated learning provides opportunities for an educational transaction, allowing for immediate feedback and interaction between teacher–student(s) and student(s)–student(s). Young adults’ use of MMSN is seen as negotiated social dialogues that allow active participations of the so-called ‘friends’ within a social network.

The benefits of mobile interaction platforms like WhatsApp are when users can create small social focus groups to discuss issues as they arise. Not only this, Church and de Oliveira (2013) also argue that they can access each other, anywhere and anytime, for either synchronous or asynchronous discussions. Church and de Oliveira (2013) and Ngaleka and Uys (2013) agree that WhatsApp is an application that encourages self-motivated interactions via mobile discussion within closed virtual small-groups. (Dhawan, Mukhopadhyay & Urrutia-Valdés, 2013) acknowledge that besides the usual text, WhatsApp also allows participants to share videos taken on the spot, share their geo-locations with one another, and share audio recordings and images. Further to the above, WhatsApp can be used on multiplatform devices like iPhone, BlackBerry, Android, Windows phones (Ngaleka & Uys, 2013). Furthermore, it also allows group chats and one can use it to broadcast a message to all contacts on their contact list at once (“WhatsApp Home,” 2014). The cost of MMSN WhatsApp is negligible and uses the same Internet data plan that one uses for email and web-browsing to send text, video, images, audio across all platforms and mobile network providers (Wani, Rabah, Alfadil, Dewanjee & Najmi, 2013). As noted earlier, the use of WhatsApp in Zimbabwe has been higher than other forms of social media, possibly because it has similar features as those of the Short Messaging Service (SMS). The increased use of WhatsApp in Zimbabwe can be attributed to free data bundles given as bonuses by network providers as one recharges their airtime. In the context of this study, the MMSN

WhatsApp activity allowed one to push short chunks of texts, audio, and video in the course of the social learning activity to people separated in space and time. The MMSN WhatsApp consequently affords virtual group members opportunities for frequently shared learning experiences across a much wider range of activities.

2.9. Enhancing dialogue in learning using MMSN WhatsApp

Research has shown that notably improved access to mobile communication offers opportunities to create activities that enhance mobile-mediated dialogues (Ng'ambi & Campbell, 2012; Ngaleka & Uys, 2013). I agree with Ally & Prieto-Blázquez (2014) that the ubiquity of mobile-mediated learning is growing, thereby increasing learning opportunities for distance-learning programmes in developing nations. However, El-hussein & Cronje (2010) call for mobile learning designers to understand the learning contexts and the significance of mobile-mediated learning. Rambe (2009) observed in his study that there is growing opportunities of innovative tools such as social media that provide mobile-mediated learning. Anderson & Dron (2011) and Ngaleka & Uys (2013) assert that mobile-mediated social media, for instance WhatsApp has the potential to enhance dialogue as participates in exchange information.

Although various researchers (Hodgkinson-Williams & Ng'ambi, 2009; Musungwini et al., 2014; Rambe & Bere, 2013) agree that mobile-mediated, learning can enhance dialogue. (Rachel, Cobcroft, Towers, Smith, & Bruns, 2006) highlight lack of participation and economic challenges that should be anticipated in making use of such technology-mediated learning environments. While it could be true that MMSN may have some challenges, it does not necessarily follow that all platforms carry these risks as with the use of WhatsApp, which is a free and open-source application.

Rutsito (2014) reports that the low cost of mobile phones as well as the reasonable cost of data bundles have increased use in the social networks in certain parts of Zimbabwe. Anderson (1982) and Moore (2002) suggests that in order to note the increased dialogue in a virtual group, participants should be encouraged to create, document and assess their own learning as they take part in the WhatsApp-mediated group activity. In other words, virtual group members' use of WhatsApp is aimed at enhancing dialogue.

As mentioned earlier, equally important is the remarkable rise in mobile learning studies being carried out to assess the usability and applicability of mobile-mediated learning to help realise an increase in interactions in the processes of learning (Ng'ambi, 2013; Petrova & Li, 2011; Yang et al., 2013)

The ubiquitous nature of mobile phones makes them not just calling devices but also multimedia devices. A study by Gikas and Grant (2013) has shown that mobile devices support social learning because of their 'anytime anywhere' accessibility. Similarly, Ng'ambi & Campbell (2012) point out that the uses of mobile devices are pedagogically grounded in collaborative and social learning. Mobile devices have changed how people communicate and do things, particularly with reference to the benefits gained in the healthcare, banking, education, and other social activities Tunjera et al. (2014). (Ng'ambi & Campbell, 2012) put emphasis on the fundamental advantages of mobile phones being the 'always connectedness' they provide and their portability. Ng'ambi & Campbell (2012) argue that this connectedness provides a user with freedom to choose when, where and how to use the device. Given the affordances of mobile devices, learning theorists are proposing different approaches of incorporating mobile learning (m-learning). In their research, Pachler et al. (2010) place emphasis on 'appropriation' as the key to successful implementation of mobile-mediated learning intervention. Mobile phones were 'appropriate', given the reason that it is always connected and alerts users of incoming messages or calls throughout the day. It can also take photos, and record audio and video. A mobile phone can be used either sitting, or standing, or whilst walking, or in prone or supine positions. However, Chaney et al., (2010) and Hammond (2009) point to the destructive nature of m-learning in that the m-learning activity spans are generally short bursts. In this study it is these small chunks of information exchange that encourage students to exchange more information, consequently promoting communication, which Moore (1993) posits reduces TD. With this in mind, it is therefore important to create learning activities that allow students to work and learn with these devices anytime and anyway.

Conversely, behavioural theorists place emphasis on instructional design that is objective-based and is most effective when learners are rewarded as they progress

incrementally towards demanding learning goals. The model of instructional design by behaviourists is directed instruction broken down into tasks, which are worked from the bottom up or programmed with content broken down into units. It was assumed that it allows different levels of learners to be accommodated by branching developed instructional programmes, permitting fast learners to skip ahead and directing struggling students to remedial learning. This individualised approach is not the focus of this study, which has investigated a group knowledge-construction activities to establish, whether learners socially construct their knowledge.

Although the views of social academics differ (Herzog, Boyle, Cohen, Durham, Rajan and Sastry, 2000) note that there is a consensus that interaction is an essential attribute for social learning.

Anderson (2004) points out that online education is not just about access to online content, but the interaction that it affords. Koole (2009) observes that m-learning provides enhanced interactions among learners, access to information, and a deeper contextualisation of learning. (Siemens & Tittenberger, 2009) argue that m-learning theorists need to think more on the pedagogy and content linkage. Anderson (2010) insists that social learning experiences enhance student engagement in online learning and promote a sense of a learning community where students share common values or ideas and also actively participate in their learning. Jung & Latchem (2011) and Anderson (2010) also indicate that the increase in students' interactions enhances students' satisfaction through technology-enhanced learning. According to Park (2011) this increase in dialogue amongst students increases student autonomy as they have the freedom to choose when and where they engage in learning activities. Brown (2005) says, "We learn through our interactions with others and the world, and there's no more perfect medium for enabling this than an increasingly open and organised 'mobile' learning environment". Anderson and Elloumi (2008) concluded that deep and meaningful formal learning is supported as long as one of the three forms of interaction (student–student; student–teacher; student–content) operates at a high level. They also insist that the other two (student–teacher and student–content) may be offered at minimal levels, or even eliminated, without degrading the educational experience. This

observation agrees with Moore's (1993) TD theory where he deduced that increasing dialogue has a potential of reducing TD.

A number of current research studies have been carried out and recommendations made on how mobile devices could help enhance students' interactions for instance (Czerniewicz & Brown, n.d.; Herrington & Parker, 2013; Jung & Latchem, 2011; Kuo, 2010; Rowe, Bozalek, & Frantz, 2013; Tunjera, Mukabeta, Ramirez, & Zinyeka, 2014). Not many educators are using the mobile-mediated social network, WhatsApp applications in the context of resource-constrained developing countries, such as Zimbabwe. Even though WhatsApp offers the opportunity for multiple media forms to be used (Church & de Oliveira, 2013; Richter, 2014), known to this author, no empirical study has been done in the learning contexts as was in this study. Sultan (2014) points out that there is concern that m-learning may cause social and personality problems, for example, people becoming addicted to these mobile devices and so losing out on personal relations. Nevertheless, Yang et al., (2013) show that mobile-mediated social networks afford distance students the opportunity to interact in virtual spaces, thus enhancing the learning experience. In any case, the availability of digital devices, networks, and Internet technologies enable synchronous and asynchronous ubiquitous access to virtual learning spaces anytime and anywhere (Brown, 2005). Mobile learning encourages digital 'self-expression', as it allows one to revisit archived interactions, (Choo & Petrick, 2014; Jensen, 2013). Subsequently, WhatsApp's ability to send text, videos, and audio has the potential to increase dialogue, thereby with a possibility of reducing TD (Moore, 1993).

2.10. Interaction Analyses Model (IAM)

Gunawardena, Lowe, & Anderson (1997) developed indicators of assessing knowledge construction in interaction activities. The authors developed phases to examine meaning negotiation and co-construction of knowledge. Gunawardena et al. (1997) argues that interaction amongst participants in a constructivist social learning environment has the potential to reach a higher level of critical thinking through different

phases of interactions with peers. When students reach this high level of critical thinking, Moore (1993) suggests a reduction of TD.

Table 2-1: Interaction Analysis Model (IAM) Source (Gunawardena et al., 1997)

Phase	Categories	Indicators
1st	Sharing & Comparing	Statement of observation or opinion Statement of agreement Corroborating examples Asking and answering questions to clarify details of statements Definition, description, or identification of a problem
2nd	Dissonance	Identifying and stating areas of disagreement Asking and answering questions to clarify the source and extent of disagreement Restating the participant's position, and possibly advancing arguments or considerations in its support by references to the participant's experience, literature, formal data collected or proposal of relevant metaphor or analogy to illustrate point of view
3rd	Negotiation & Co-construction Knowledge	Negotiation or clarification of the meaning of terms Negotiation of the relative weight to be assigned to arguments Identification of areas of agreement or overlap among conflicting concepts Proposal and negotiation of new statements embodying compromise, co-construction Proposals integrating or accommodating metaphors or analogies
4th	Testing & Tentative knowledge constructions	Testing the proposed synthesis against 'received fact' as shared by the participants and/or their culture Testing against personal experience Testing against formal data collected Testing against contradictory testimony in the literature Testing against existing cognitive schema
5th	Statement & Application of Newly Constructed Knowledge	Summarization of agreement(s) Applications of new knowledge Metacognitive statements by the participants illustrating their (cognitive schema) has changed as a result of the interaction

2.11. Online Instructional Design Model

Unlike face-to-face interactions, on-line learning involves building activities that not only motivate participants to learn but that are also straightforward for both instructor and learner (Lee, Choi, & Kim, 2013). Instructional design is the systematic development of

instructional specifications using learning theories and instructional theory to ensure quality learning experience for the learners (Clinton & Hokanson, 2011; Herrington & Oliver, 2000). Any instructional model should aim to develop strategies that meet the learners' needs and goals (Wertsch & Cole, 2001). There are several models being used, such as ADDIE (Clinton & Hokanson, 2011), ASSURE Lesson Plan Model (Hassan, 2014), 5-stage Model (Salmon, 2000), to name just a few. Salmon's 5-stage Model was the design model chosen for this study.

5-stage Model

Salmon (2000) developed a 5-stage model for social interaction and building online presence activities for learning.

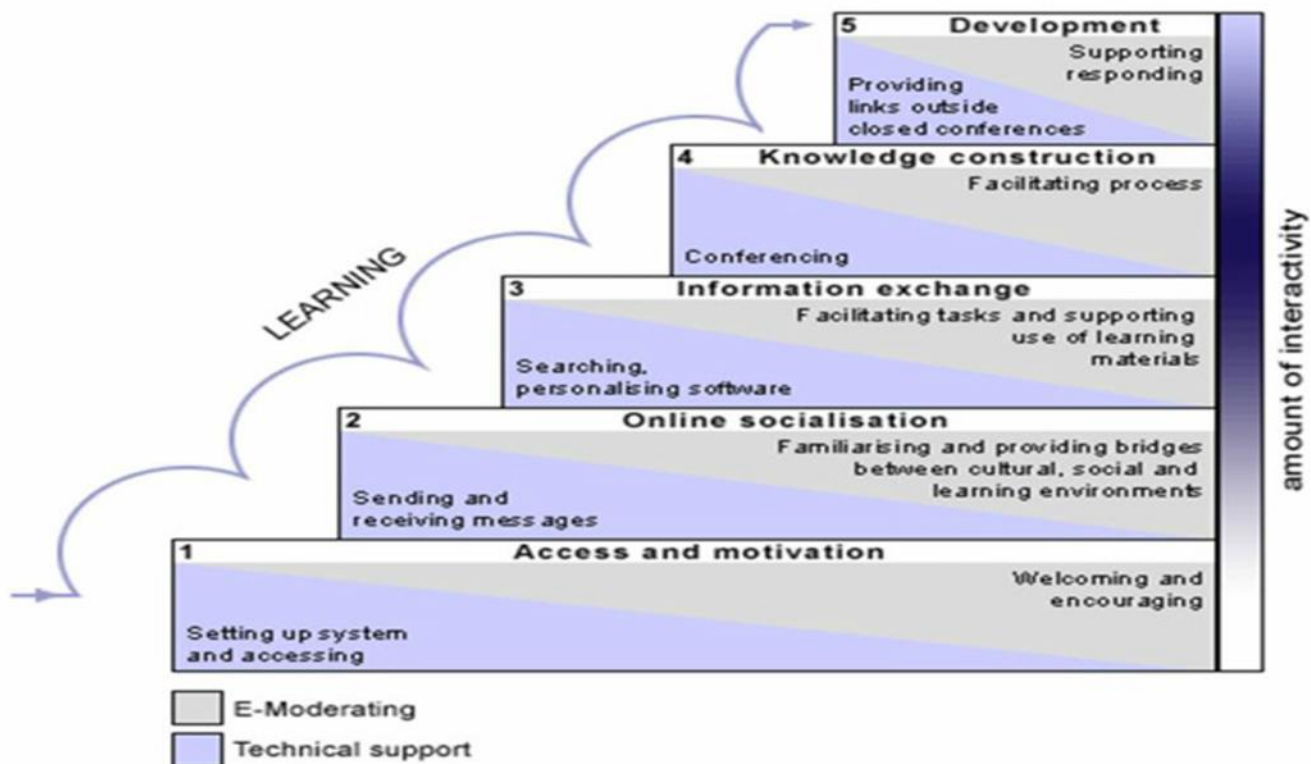


Figure 2-3: Salmon's 5-stage Model www.gillysalmon.com

The model guided the setting up of the online mediated activity. Figure 2.3 shows a basic view of the model, with the first stage 'Access and Motivation', as the initial level of the process. At each stage of the model, the learner develops different skills, building upon their skills and experience as they progress; the e-moderator or coordinator

supports learners through this journey by using different learner-centred e-moderating skills. The 5-stage Model is discussed in detail below.

Stage 1: Access and motivation

According to Salmon et al, (2010:173) “gaining access is an essential precondition for learning in any online environment”. Therefore, a tutor or intervention administrator is encouraged to make sure that participants have access to the online environment. In their study, these authors divided this initial stage into two phases in order to familiarise the participants, firstly into individual access and secondly into group skill level. At this stage, Salmon (2000) argues that tutors could demonstrate the technical aspects of using the platform as individuals and then accessing techniques as a group. At the access and motivation stage, the activity coordinator sets up the system allows participants to access the system. At this stage participants are guided on the technical aspects of the system.

Stage 2: Online socialisation

According to Salmon ((2000:174), this stage “involves participants establishing their online identities, finding others with whom to interact online, understanding the nature of the online environment and how it is used for learning, and developing trust and mutual respect to work together at common tasks.” Salmon further explains that at this stage the participants bring their own ‘baggage’ of anxieties, hopes, and experiences into the group. In other words, this is when participants start to send and receive introduction messages from each other. This stage allows participants to familiarise with each other. The activity guidelines are given, and if there are any rules members need to observe are stated.

Stage 3: Information exchange

Salmon (2010) highlighted the fact that dialogue in online discussions is characterised by questions and responses occurring in rapid successions. The dialogue pattern occurs in a more rapid form as the participants discuss what they already know about the subject under discussion. This concurs with what Moore’s (1993) TD theory suggests: that as participants share and exchange ideas, communication barriers may

possibly be overcome. By this stage participants are engaged in the group activity, if any specific roles and responsibilities are assigned. At this stage, there might be some encouragement from the group leader. As the discussions progress, the participants could possibly extend into the knowledge construction stage.

Stage 4: Knowledge Construction

According to Salmon (2000), each member of the group is valued for his/her key role in the group and has become an integral member in the knowledge construction community. Here, the group leader integrates the different construction elements and helps in heading participants toward the completion of the group task. The participants could engage and start opening activities, asking questions and encouraging reflection. The participants are very active at this stage.

Stage 5: Development

At this stage, Salmon (2010:179) observed that participants “reflected on their experience of Second Life (SL) and the similarities and differences towards the end of a teaching session”. According to Salmon (2010), at this stage participants are able to achieve individual goals as they attempt to integrate their learning experience from the activity into other forms of learning in their contexts. This stage allows participants to apply and test their gained knowledge in their own environment (Gunawardena et al., 1997; Moore, 1993). A group member deploys his/her new knowledge to demonstrate achievements in their final assessment. Finally participants reflect on the activity and learning process and become more critical of the results of the activity and try to link it to their own contexts.

2.12. Chapter Summary

In this chapter, the literature was reviewed focusing on the aim of this study. The study's key concepts, i.e. TD theory, social constructivist learning theory, specifically MMSN and MMSN WhatsApp, were discussed. TD theory of learning, harmonising the key principles in the educational transaction, in particular, highlights the importance of dialogue in the social distance-learning process. On the other hand, special focus was placed on usability of MMSN, in group social learning activities, more importantly, with

the desire to increase dialogue henceforth-reducing TD. Constructivist theories argued that knowledge is constructed as learners socialise with each other in their environments. In addition, there was evidence that young learners socially interact with peers using social media in their informal contexts. Currently there is evidence of an increase of studies in this area as researchers respond to the influx of mobile-mediated social networks in social activities, though there has not been much integration in the formal learning discourses. Even though there are some fears that other researchers raise, I feel that it is always the case with innovations that some form of insecurity occurs, but this is eventually eased with more exposure and experience which will eradicate these fears. The 5-stage Model was discussed as a potential instructional design model for implementing the mobile-mediated learning in this study. Again the IAM was discussed as a model that could complement the 5-stage Model in evaluating the enhancing of dialogue, whether TD was reduced.

2.13. Chapter Conclusion

Reviewed literature shows that enhancing dialogue amongst learners has the potential of reducing TD. The literature recognises that mobile-mediated social networks also have the potential to help learners learn as they enable 'anytime anywhere' dialogues. Furthermore, it shows the importance of appropriating learning activities in relation to the context of the learners and their learning environments. This chapter also reviewed current studies that investigated the use of mobile-mediated social networks. Notably, empirical studies have shown that learners are capable of using mobile devices in their informal social activities. Interaction is an essential component in the process of learning. Known to this author, there are not many empirical studies done on the use of WhatsApp social media in learning contexts in developing nations, in particular in Southern Africa. Salmon's (2000) 5-stage Model was reviewed as one of the models for designing the WhatsApp activity. The gap that this study wants to fill is to ascertain whether using a mobile-mediated WhatsApp, a social application, has the potential to reduce TD in a virtual group activity. In other words, enhancing interaction is known to help in learner learning; it is also known that there is high usage of social media in the informal set-up.

CHAPTER 3 METHODOLOGY

3.1. Introduction

This chapter outlines the methodology used in this study, including the strategies and techniques followed. This study focuses on the enhancement of dialogue using MMSN WhatsApp to reduce Transactional Distance (TD). This chapter begins with an overview of the study's methodology and the research design. To achieve both pedagogical and research outcomes, a qualitative study approach was guided by Salmon's ((2000) 5-stage Model to implement an instructional approach that enhances dialogue with the potential of reducing TD.

3.2. Qualitative Research Paradigm

Maxwell (2008) defines a qualitative study as an inquiry process of understanding a social or human problem. The results analysed from data collection instruments used were formed with words, reporting detailed views of informants, usually conducted in the participants' natural setting (Czerniewicz & Brown, 2013; Maxwell, 2008). According to Maxwell (2008), a qualitative research approach supports the exploration of issues that allows an in-depth understanding of dialogues. According to Maxwell (2013), dialogues cannot be prescribed or quantified – rather they are reflected on qualitatively. This is necessary, as the method utilised is an analysis of dialogues; in other words, it is the interpretation of words, or verbal text with the hope of understanding whether enhancing dialogue could help reduce TD (Maxwell, 2013).

Because human conduct is not predictable, as in a scientific setting where results can be predictable, qualitative studies have the potential of generating new theories and allow casual explanations on outcomes (Maxwell, 2008). The strength of a qualitative study was derived from its focus on human actors as they respond to their circumstances (Maxwell, 2013; Sargeant, 2012). In this study, the outcomes were given by way of casual explanations as well as interpreting human conduct based on other empirical studies. A qualitative approach was used to explain or interpret the outcome of the group activity. Maxwell (2013) points out that the qualitative paradigm emphasises

words rather than numbers. Maxwell identified the following three goals as the determination of qualitative researches:

“Generating results and ideas that are comprehensible and logically credible”.

“Piloting constructive evaluations which could improve an existing process.”

“Engaging in collaborative research with research practitioners” (Maxwell, 2013: 29).

According to Woods and Pratt (2006) the difficulty that exists in qualitative studies, is that it eliminates the human element, and therefore there is a possibility of bias that emanates from the side of the researcher that could possibly alter data. For this study, this has not affected the outcome. The researcher was a passive participant in the MMSN WhatsApp intervention. In addition, qualitative research focuses on text: it is about interpreting the meaning, but the chances are that everyone can interpret a text differently. This challenge was reduced by keeping within the context of the study questions and objectives, as well as coding the data through the Interaction Analysis Model (IAM).

3.3. The study's Research Orientation

This research is an interpretative case study; according to Biggam (2011), interpretative researchers believe that there could be a variety of “interpretations of reality” depending on the time and context of making these interpretations. The case study method has been defined by Creswell (2003) as an inquiry of an empirical nature that investigates a phenomenon which is contemporary within its real-life context. In this study, the case study method was found suitable because it helped to enhance understanding of contexts (Hamilton & Corbett-Whittier, 2013) and positions the research within a particular boundary and contexts (Herzog et al., 2000). The contexts of this study are the pre-service teachers enrolled in a blended programme, but in this study they are working on a group activity virtually from their distributed remote locations. The use of case study research method in science education research has had some criticism. Yin (2014) criticises the fact that a small number of participants cannot offer sufficient grounds for establishing the reliability or generality of findings. Although there are some criticisms regarding the use of case study methods in research, there are many

advantages, for instance, its usefulness in providing a rich and detailed account of real-life contexts, as reasoned by Soy (2006). The validity and soundness of Soy's (2006) argument for the continued use of case study methods is derived from the reason that it has been successfully used in carefully planned practical studies of real-life scenarios (Bodner & Orgill, 2007). Notably, this study is not aiming for generalisability but an in-depth understanding of mobile-mediated dialogue in a virtual group activity.

In this interpretative study there were no predefined dependent or independent variables, the focus being on the complexity of human sense-making as the situation emerges. In other words, the understanding of social action was understood in its social context. Biggam (2011) argues that fundamental to the interpretative researcher is "human participation and observation" (Biggam, 2011:138). The focus on human actions understanding brands in an interpretative study is to be identified with a qualitative paradigm. The interpretative methodology is appropriate for this study, as its focal point is on the researcher's understanding or deducing the meaning-making practices as illustrated by the group members' contributions in the MMSN WhatsApp artefacts from the dialogue. This researcher also took cognisance of the participants' context and as well as their experience. The interpretive design was aimed at understanding how people construct the meaning of their world and their experience, i.e. "How do people construct knowledge?" (Maxwell, 2008).

3.4. Participants of the study

The participants were pursuing a Diploma in Science Education (majoring in Computer Science: Dip.SciEd.CS). After successfully completing this qualification, the participants were deployed to teach science in secondary schools. The distance students were geographically scattered (see Figure 1.1.) and were either in full or part-time employment, which created an obstacle to the success of learning with the potential of increasing TD. The participants were already engaging in MMSN WhatsApp interactions, which made it possible to easily integrate MMSN into their learning activities (Anderson, 2004; Koole, Mcquilkiln, & Ally, 2010; Mpofu et al., 2012).

In this study, the participants were selected by their tutor with four specific criteria for selection:

1. They owned data-enabled mobile devices.
2. They were willing to participate in the study using their devices.
3. They were in the third-year distance-learning class of thirty Dip.SciEd.CS pre-service teachers at the St Alberts BUSE'S VODL centre.
4. They were using WhatsApp for social interactions.

The study focused on the third-year distance-learning pre-service teachers' class, who were remotely located.

Initially, the number of participants for the study was not set. Out of a class of thirty-five, six participants volunteered to participate in the study. These six participants constituted what I refer to in this study as the virtual group. All six participants were geographically spaced and located in diverse remote areas (Figure 1.1). Five of the participants were from rural areas and one was in a peri-urban setting. Each of the six participants owned a data-capable mobile device. They showed commitment to participating by registering their mobile numbers with their tutor. Each signed a consent form (see Appendix A), agreeing to engage with other virtual group members to accomplish the group activity.

These geographically and remotely distributed participants in this study constituted what Nevogt (2012) termed a 'virtual team', meaning a group of people who are geographically spaced and worked together on tasks using communication devices. In this study, the term 'virtual group' means the same as 'virtual team'. The virtual group members worked together using a MMSN WhatsApp intervention as a primary medium of interaction to complete group activity virtually. The virtual group members were expected to place the group at the very centre of their group work activity. Virtual group members worked towards a shared meaning in order to engage in rewarding dialogues.

Salmon's ((2000) 5-stage Model guided the implementation of the mobile-mediated WhatsApp activity. WhatsApp dialogue artefacts were produced as Salmon's 5-stage Model outcomes. The Interaction Analysis Model (IAM) developed by Gunawardena,

Lowe, & Anderson (1997) helped in the analysis of the WhatsApp dialogue artefacts, so as to assess the potential reduction of TD. The semi-structured FGD and the semi-structured open-ended one-on-one interviews were transcribed and analysed using IAM and Salmon's 5-stage Model to help implement the WhatsApp-mediated interactions. As argued earlier, reduction of TD is a mental process that is difficult to observe, hence the need for an interaction model. Lastly, the participants completed a post-evaluation questionnaire that answered the study's question on the usability and applicability of the MMSN WhatsApp as a learning tool to increase dialogue.

As a passive participant, I observed the development of the student activity's dialogues from the initial introductions to the conclusion of the activity. This was in relation with Salmon's ((2000) 5-stage Model that follows a sequence of events.

3.5. Salmon's 5-stage Model

Salmon's (2000) 5-stage Model was used to identify the typical sequence of activities involved at different stages of the students' learning processes. This model helped to implement the online group activity with the purpose of creating greater interaction and participation between participants in a group activity. Salmon (2000) believes and has experienced that online-mediated learning success is determined by supporting through a structured developmental process. The 5-stage Model helped identify processes in the WhatsApp group activity implementation.

3.5.1. Stage 1: Access and motivation

The tutor initially created the WhatsApp group and enrolled the group members. He asked students to respond to establish the presence of the intended members. This also meant the tutor was assessing the individual as well as group techniques. Technically, they were able to verify that correct devices were used and to ensure that they engaged as envisaged. This allowed participants to resolve any technical challenges before the activity started. It also motivated them as seen by one member during this stage showed that he was ready to go (Appendix D048).

3.5.2. Stage 2: Online socialisation

The tutor encouraged participants to greet and welcome other group members as a way of socialising. According to Moore (1993), increased learner autonomy in an activity has potential to reduce TD. Therefore, during this socialisation stage students were encouraged to start some dialogue therefore breaking the isolation state of mind. This prepared the students' readiness to interact as they got to know each other virtually.

3.5.3. Stage 3: Information exchange

The dialogue pattern occurred in a more rapid form as the participants discussed what they already knew about the subject under discussion. Every participant had something to contribute to the discussion. This concurs with what Moore's (1993) TD theory suggests, that as participants share and exchange ideas, communication barriers may possibly be overcome.

3.5.4. Stage 4: Knowledge Construction

There were some evidence of participants acknowledging each other's posts. Hence the group member valued others' roles in the group and so became an integral member in the knowledge construction community. Here, the group leader integrated the different construction elements and helped in coordinating participants toward the completion of the group task. In agreement with Salmon's rationale, Moore (1993) predicted that enhancing interaction that is the process of exchanging and sharing ideas, has the potential of reducing TD. In this study, participants worked together exchanging and sharing ideas to accomplish a common goal. Park (2011) asserts that by enhancing mobile-mediated interactions, participants are able to motivate each other, and responding to each other's posts is important at this stage.

3.5.5. Stage 5: Development

This stage allowed participants to apply and test their gained knowledge in their own environment (Gunawardena et al., 1997; Moore, 1993). One group member reflects on his/her new knowledge to apply in the local contexts.

3.6. Study Procedures

It must be noted that Salmon's (2000) 5-stage Model guided the WhatsApp activity from the initial activity until the conclusion of the activity. The tutor created a WhatsApp group platform and enrolled participants onto the platform. After the initial testing of the access and motivation, she posted the group activity task to the WhatsApp group. A timeline was given to this group's participants, for the accomplishment of the activity, although in some contexts, this could be seen as possibly infringing learner autonomy. In actual fact, the timeline was meant to guide as well as encourage participants to accomplish their activity as per course outlines. Learner autonomy was increased as the participants chose when to do the activity, as observed in the WhatsApp artefacts (see section 4.6). The group leader was chosen to help coordinate the group activity.

The study's participants worked together interchanging a series of statements, which included questions, responses, or elaborations, as a result undertaking an educational transaction (Moore, 1993). In this study, each member was respectful to others' contributions, was an active listener and contributed to the learning activity's common goal, as well as improved their knowledge base (Moore, 1993; Moore, 2002). The activity's design was largely a function of the teaching organisation and communications media employed as it met with group members' interaction needs (Garrison, Anderson, & Archer, 2000). Though the structure was, linked to the formal curriculum, Pachler et al. (2010) emphasised the importance of the appropriateness of the media used according to the users' social background. In other words, the activity structure was measured in the context of the background of the users, not comparing them with other users in other environments. The participants interacted through negotiation of meaning, in a loosely structured group activity where a team leader coordinated the group activity. The learner autonomy variable emphasised the learner-centredness approach where the learners had the responsibility to achieve a common set goal. At the end, they come up with a group report to present to their workmates and classmates. Students worked together, interacting to accomplish group work despite the physical distance barrier.

3.6.1. WhatsApp group activity

El-hussein and Cronje (2010) mention that there is much to consider when designing a learning task for mobile learning. They further elaborated that this included the need to consider the environment in which the mobile learning is to be used and the context in which it is being used (Cook, 2006; El-hussein & Cronje, 2010). Pachler et al. (2010) put emphasis on the importance of appropriating the learning activity in the context of the learners. With this in mind, careful consideration was given to the context of the group activity observing the characteristics of the intended student audience as well as their environments. In this study, the participants were from rural and remotely isolated locations and had used a mobile-mediated WhatsApp to interact with friends and family members. They have experience of using a mobile phone to access social networking platforms, in particular WhatsApp and Facebook, (Kabweza, 2014; Mukabeta, Tunjera, Magomelo, & Ndumiyana, 2014). Park (2011) argues that individualised and socialised activities are mediated by mobile communication devices like mobile phones. The WhatsApp intervention helped distance students work together on a loosely structured group activity towards building a group work presentation. A loosely structured activity is an open task that has no set rules on what and how to do it. Below is a description of the structure of the activity:

“Apply your understanding of computer application in communities. Identify and discuss areas in which computer systems are being used in your communities. Use the created WhatsApp group to share your observations.”

These participants were not restricted to what to and what not to discuss. This loosely structured activity allowed “more free dialogic negotiations” (Park, 2011: 89).

A WhatsApp virtual group platform enabled participants to work together using asynchronous and synchronous dialogues, as they exchanged ideas on the assigned group activity. The participants worked together to come up with a group artefact of the assigned group activity. Participants accessed messages sent by their peers either synchronously or asynchronously, thereby allowing ‘anytime anywhere’ accessibility. A

four-week schedule was set for the group activity. At the end of the activity, the group leader compiled a group activity report to share with the rest of the class.

3.6.2. Observation of WhatsApp dialogue artefacts

Although virtual interactions mediated by mobile devices are difficult to observe. At the end of the group activity, real time, and holistic analysis observation were accomplished. I observed the virtual groups' WhatsApp dialogue artefacts to help identify the patterns and emerging themes on the quality of the dialogues exchanged rather than quantity (Moore, 1993).

WhatsApp dialogues artefacts were analysed wholly at the end and were categorised using the Interaction Analysis Model (IAM). Analysing the quality of the WhatsApp artefact interactions were meant to help me (the researcher) to evaluate the value placed on virtual group members' contributions. My observations were aimed at identifying IAM indicators of knowledge construction, as argued by Gunawardena et al. (1997) in the WhatsApp group discussion. According to the IAM, on the onset of group interaction activities, group members will be sharing and comparing facts as they interact. The IAM identifies indicators such as statements of observations or opinions, agreeing on clarification of statements. Secondly, as the discussion continues to grow, groups could move on to dissonance indicators such as agreement and disagreement statements, and then they move on to negotiating on co-constructing knowledge. In the fourth phase the discussion moves up to testing the validity of the knowledge in their own context and finally application of new knowledge in their own contexts (see Appendix D line D0158).

3.6.3. Focus Group Discussion (FGD)

Although the reduction of TD is a mental activity that cannot be directly observed; therefore, to evaluate the reduction of TD a FGD was done. In this study, an increase in dialogue was analysed, not on the quantity but on the quality of the dialogues and feedback value placed on others' posts that reflect knowledge generation, i.e. statements of agreements or disagreements, negotiations of meaning, mentioning post by others, etc. To assess whether participants acquired knowledge, F2F interviews and

the FGD were used. Interviews and FGD helped in understanding through detailed and rich narratives of the WhatsApp group activity. Interviews and FGD allowed observation of verbal and non-verbal communication, like participants' facial expressions, tone of voice as well as body language, (Bates, Droste, Cuba, & Swingle, 2008). In addition, justification of the usability and applicability of the WhatsApp application in the activity, FGD, and interviews are ideal instruments used to collect such data.

The one-on-one face-to-face (F2F) interviews conducted first, followed by FGD helped to reduce bias brought into being in FGD and also as a way of triangulating. As argued earlier in this study, it is difficult to observe reduction of TD, because as this is a mental construct, there is a need to have F2F interviews with the participants. Although Moore (1993) stated that an increase in dialogue consequently reduces TD, he argued further that it is the quality of the dialogue that really matters. In this study, reduction of TD was not measured on the quantity or number of posts in the MMSN WhatsApp activity. The dialogues were measured based on the quality of information exchange that was directed toward discovery and new understanding, which would improve the knowledge, insight, or sensitivity of the group participants. The IAM and 5-stage Model indicators were used to measure the quality of dialogues in the participants' posts. I also observed and noted the qualities of dialogues, feedbacks, and value placed on group members' contributions in the endeavour to evaluate the qualities of the conversations.

FGD feedback from the participants on the learning activity helped to ascertain whether TD was reduced or not as I asked the participants to elaborate further. As argued above, TD is a cognitive or mental construct that one cannot observe; increasing dialogue to reduce TD is focused on the construction of knowledge and meaning, where participants build upon a mental schema during the interchange, as dialogue unfolds within a context of mutual respect (Moore, 1993). The IAM and Salmon's 5-stage Model phase indicators guided the qualities of dialogue. This helped in the evaluation of the level of knowledge construction as generated by participants in the virtual group learning activity.

3.6.3.1. Focus Group Discussion guide

FGD was carried out to assess the participants' WhatsApp experiences and to evaluate Salmon's (2000) Stage 3, 'Knowledge Construction', whether it was achieved through use of WhatsApp group discussion experiences. According to Salmon (2000), Stage 3 is where social construction of knowledge is generated; this is comparable with IAM's Phase Three of Gunawardena et al., (1997); negotiation and co-construction knowledge. The FGD was important as it allowed the researcher to make follow-up and get feedback from the participants to assess the extent to which WhatsApp has potential of reducing TD in a virtual group activity.

All the six participants were invited through the WhatsApp group platform to consensually decide on a day and venue for the FGD. The F2F FGD provided the researcher with useful insight gestures and stimulated activities other than the WhatsApp artefacts. One out of the six participants agreed to meet on a Saturday, at a central place which the researcher identified as a private home. Weekdays were not possible as all the participants would be at work. Participant ST001MM excused herself because it was a Sabbath day. Therefore, five participants confirmed their participation.

As mentioned above, the purpose of FGD interviews was to evaluate whether the WhatsApp-mediated group activity realised a reduction of TD, as well as to consider the applicability of the MMSN WhatsApp,

3.6.4. One-on-one Interviews

To reduce bias associated with FGD, one-on-one interviews were done before the FGD, as well as for triangulation purposes. Conducting the one-on-one interviews eliminated the potential influence of participants on other members. Three out of the six individual participants' invitations requesting their participation in a one-on-one interview were sent. These participants were purposely selected, based on the level of their interactions on the WhatsApp group activity. One was the very active participant who contributed more posts, then the group leader and lastly the one who contributed the least due to technical difficulties beyond his control, as was discussed. This was done in order to gain understanding of these participants. The interviews were scheduled at

times convenient for the participants; one participant invited me (the researcher) to his school for the one-on-one interview. The other two decided to avail themselves on a weekend. All the interviews were conducted in conducive and quiet environments with no disruptions.

3.6.5. Post-Questionnaire Evaluations

The evaluation of the MMSN WhatsApp intervention helped analyse the usability and the applicability to the activity. I used the participants' evaluations paper questionnaire to get feedback on usability and applicability of the intervention. I could have worked online, but connectivity problems faced by participants made paper-based questionnaire a better option. The questionnaire aimed at evaluating the entire process; as a result it was conducted after completion of Salmon's 5-stage Model-guided activity.

The questionnaire comprised three sections and presented data generated as follows:

- Demographic data such as sex, age, location, and the type of mobile device used in the study: Although this was not part of the purpose of the study, this set of data helped to describe demographic variables of the participants and to assess if it had any influence on the research findings.
- The second part had the scaled questions: five (5) (strongly agree) to one (1) (strongly disagree), intended to evaluate the usability and accessibility of the MMSN WhatsApp intervention. Questions on applicability of the MMSN WhatsApp group interaction were raised. The issue on group members supporting and replying to others' posts was raised to measure how members valued others in the group. A question on new knowledge gained through the MMSN WhatsApp group interaction was also posed to help realise if TD was reduced. Finally, costs and connectivity challenges that literature has notably highlighted were also asked.
- The last section was an open-ended space, intended to allow respondents to add any open-ended comments on the study.

3.7. Data Analysis and Interpretation

The WhatsApp dialogue artefacts data analysis was drawn from IAM Gunawardena et al. (1997). I used IAM indicators to evaluate the knowledge construction. The WhatsApp dialogue artefacts were related to the IAM phase's indicators (see Table 2-1).

There is a possibility of linking IAM phases to Salmon's 5-stage knowledge construction and development stages as they both endeavour to help enhance dialogues. Park's (2011) PFML model adapted Moore's TD by highlighting four Quadrants as possible ways in which mobile-mediated activities could be realised (Figure 2.2). The activity of this study falls under socialised group activity, to determine whether a low or high TD will be discussed in the Findings chapter. This implied that students worked in groups with loosely structured or unguided activity. To substantiate whether this transpired will be discussed in the findings. The IAM was used to evaluate whether knowledge constructed through WhatsApp dialogue and also to test whether TD was reduced as participants created new personal knowledge that resulted from the virtual group members' dialogues (Gunawardena et al., 1997). Gunawardena et al. (1997) came up with an IAM model that showed indicators at different phases in any learning activity. This was used to interpret the meaning to what participants say and contribute to the virtual group's WhatsApp discussions (see Table 2-1).

In summary, analysis of the collected data through:

1. Observing the trails of MMSN WhatsApp interaction artefacts
2. The purposive and constructive nature of contributions by members.
3. The value placed on every member's contribution.
4. Forms of feedback from group members
5. Student evaluations on the learning activity and MMSN WhatsApp platform.
6. FGD and interview to check knowledge created
7. One-on-one interview was carried out before the FGD to analyse whether TD was reduced. FGD to triangulate and members check validity and reliability of students' responses and activities.

3.8. Ethical Statement

The validity and dependability difficulties inherent in qualitative study were alleviated by the use of well-established ethical principles (Maxwell, 2008); hence, this study specifically adhered to the code of ethics of academic study. I sought ethical clearance from UCT, the Ministry of Higher and Tertiary Education and Bindura University's Ethics Committee. Participation in the study was voluntary. Participants were informed of their right to withdraw at any stage of the study and assured them that no further information would be gathered about their activities and would not affect their progress in the course nor any assessment of their work. A completed and signed informed consent form from participant's honoured autonomy-respect, consent meant that participants were free to exercise their rights as autonomous persons, voluntarily accepting or refusing to participate in the study. Pseudonyms or codes were used to preserve students' identity. Participants' data presented in this study remains confidential.

3.9. Validity and Reliability

Maxwell (2008) referred to the standards of rigor in qualitative study (dependability, credibility, transferability, and conformability), thereby ensuring credibility, and trustworthiness. Maxwell (2008) also noted researcher bias and reactivity as two specific threats to the validity of qualitative study. However, as an interested party in an intervention, I reported all responses, and discussed them in my findings to safeguard my integrity as a researcher. Raw data from the discussions artefacts analysis and observation are provided for viewing and verification. Study findings presented are to establish trustworthiness of the study. Triangulations of data collection tools helped to establish the dependability of the study's findings. Triangulation was used to secure completeness and to confirm validity and reliability of the sources. Again, to ensure that the process of the study and data collection and analysis was credible and trustworthy, the participants signed the consent forms. The raw data were discussed with participants for member checking to ensure that it represented what they had said. I provided the study's detailed context to enable readers to make judgments of similarities and differences from the case under study. Conformability refers to bias-free

procedures and interpretation of results (Maxwell, 2008). Triangulation was applied to confirm the findings of the study. Participants verified the veracity of observation notes as well as FGD transcriptions.

3.10. Chapter Summary

This chapter presented the methodology of the study, and further discussed and justified the qualitative case study. Salmon's 5-stage Model was presented to clarify how it was used in guiding the initialisation and implementation of the WhatsApp group activity (Park, 2011; Salmon, 2000). WhatsApp-mediated group activity is foreseen as one of the possible ways of enhancing dialogue in distance learning. Finally, the study's approach used was made explicit. The data-gathering instruments used were explained and justified.

CHAPTER 4 DATA PRESENTATION AND ANALYSIS

4.1. Introduction

The purpose of this chapter is to analyse data as presented from the data collection instruments discussed in the previous methodology chapter. Salmon's (2000) 5-stage Model guided the implementation of the mobile-mediated WhatsApp activity. The WhatsApp dialogue artefacts are presented under the 5-stage Model's stages. Moore's (1993) knowledge construction level could be linked to Gunawardena et al.'s (1997) Interaction Analysis Model (IAM) indicators to evaluate knowledge construction.

FGD and one-on-one interviews assessed the reduction of TD for the reason that TD is a mental activity that cannot be observed. Reduced TD is inferred to mean that communication and psychological barriers have been reduced. The FGD and one-on-one interviews were also used to triangulate and member check on dependability of participants' responses. The post-questionnaire data are presented in a tabular format in line with the scale of respondents per question. The findings obtained were used to answer the research questions and to establish the success of the mobile-mediated WhatsApp group activity, such as the extent it increased dialogue.

Table 4-1: Relationship between research questions, data source and study's foci for analysis

Research Question	Data source	Foci of analysis
In what ways could social media like WhatsApp help to enhance dialogue?	Questionnaire Interview/FGD Observations of MMSN interaction artefacts	Quality of exchange of ideas Shared knowledge generation
How does the use of WhatsApp reduce TD for students who work in groups	Questionnaires Interview/FGD	Usability and Applicability of the group WhatsApp
	Questionnaires Observations of MMSN interaction artefacts	Reduction of TD Shared knowledge generation Quality of exchange of ideas

The data are presented using data collection instrument based on the research question it was intended to answer.

4.2. Salmon's 5-stage Model and WhatsApp interaction

4.2.1. Stage 1: Access and motivation

Salmon's (2000) Access and Motivation stage is when the tutor who was the group coordinator, sets up the online environment preparing for easy access to participants. Notably, the tutor created the MMSN WhatsApp group platform and added the group participants into the Online Design in Distance-learning (LD in DL) as the WhatsApp group name. The tutor coordinated the virtual group participants and assigned the group's learning activity. To motivate the group the tutor asked the group members to send test messages acknowledging their participation. To help in coordinating the group activity, a group leader acted as the activity coordinator of the group's activities. This stage was essential for setting and starting the WhatsApp group activity. The tutor created a WhatsApp group, subscribed the participants, and sent a test message to the group members who were encouraged to confirm if they were able to receive the test message. Group members were to show their presence by sending a 'hallo' message to the group. They were asked if they were able to see other group members, they were also encouraged to use the group platform for the group task. Then the tutor explained how the WhatsApp group platform would work.

The tutor discussed no technical aspects of the WhatsApp intervention. Appendix D shows that four group participants acknowledged their presence almost at the same times (see Appendix D. lines D014:D018).

At Stage 1, the tutor ensured that the MMSN WhatsApp group was set up and welcomed all participants. The tutor also made sure that the participants knew how to access the on-line group. Participants were encouraged to post a greeting to show their presence to other group members.

The use of emoticons such as ☺ in the above-mentioned narration shows the hidden emotions that a user portrayed their emotional feeling without having to type a wordy sentence. Notably, (see appendix D line D018) the participant used the smiling face emoticon at the same time as using the '@' to point the communication directly to an individual in the group.

4.2.2. Stage 2: Online socialisation

At this stage participants were expected to understand the nature of the MMSN WhatsApp environment and how it could be used for the group activity. Also participants were meant to develop trust and mutual respect as they worked together in the group activity (Salmon, 2000). Despite the fact that they knew each other in person, the virtual group participants were assigned unique codes, to help ensure their confidentiality in the study. In this part of the activity the virtual group members introduced themselves to

```
D001. 19:03, 24 Apr - TUTOR: You changed the subject to "LD for DL in DC"
D002. 19:03, 24 Apr - TUTOR: ST005MT joined
D003. 19:03, 24 Apr - TUTOR: ST004JJ joined
D004. 19:45, 24 Apr - TUTOR: NT001 joined
D005. 15:53, 25 Apr - TUTOR: KK001 joined
D006. 15:54, 25 Apr - KK001: Hi everyone
D007. 16:01, 25 Apr - TUTOR: Hi ██████, sorry not everyone is in yet. Waitng fr their
      numbers
D008. 16:02, 25 Apr - TUTOR: ST004JJ was removed
D009. 19:51, 25 Apr - TUTOR: ST003CW joined
D010. 19:51, 25 Apr - TUTOR: ST007MM joined
D011. 19:51, 25 Apr - TUTOR: ST002NM joined
D012. 19:52, 25 Apr - TUTOR: ST001MM joined
D013. 19:52, 25 Apr - TUTOR: Hallo, please acknowledge if you receive this message.
D014. 19:54, 25 Apr - ST002NM: hi
D015. 19:55, 25 Apr - NT001: I am in, acknowledged
D016. 20:54, 25 Apr - ST001MM: ☺
D017. 20:55, 25 Apr - ST001MM: Hallo evry1
D018. 20:58, 25 Apr - ST003CW: Ndeipi maface ☺ @ ██████ uri bhoo here/
```

Figure 4-1: Tutor's initial set-up of WhatsApp group platform

the group and were encouraged to acknowledge each other and send “hallo & welcome to the group” messages to other members. In her study, Salmon (2010) noted that online socialisation brought understanding of how being online dialogues contribute to learning in the group activity outcome. The group discussion was started by the tutor calling for introduction as she introduced herself as an observer joining the group. The

tutor asked every member of the group to introduce themselves. No learning goals were set for the activity. No rules were given, that is to say that students were to decide how they were going to accomplish the group activity, virtually.

D019. 19:59, 26 Apr - TUTOR: Hie, can we have a self introduction session, Kanyi, these are my pre-service computer science teachers, who will participating in my thesis project. They are on full time employment, and they are following a blended learning as they hv a 3weeks f2f sessions. Ladies and gents meet KK001 a fellow teacher and post graduate fellow.

Figure 4-2: Tutor introducing an observer to group

Note the dialogues (see Appendix D lines D001 to D071) happened during the two week period that was set aside for accessing the MMSN WhatsApp group platform and do some online interaction. During this stage some informal discussion happened and participants could be seen exchanging personal emotions by using a friendly, casual and relaxed tone, such as the 'kkk' (laughter) and 'kul' (cool). Notably most of these interactions were exchanged in the participants' vernacular language.

D071. 13:35, 14 May - ST001MM: I'm kul basa kupressa Im scheming
D072. 13:40, 14 May - TUTOR: Ndipo panoti teacher ipapo
D073. 16:52, 14 May - ST002NM: Taurai henyu, teacher anoto schema.
D074. 17:06, 14 May - ST001MM: Kkkk im a science teacher by mistake but a good wife material

Figure 4-3: Dialogues amongst participants showing relaxed social interaction

In this stream of two participants and their tutor, one participant, ST001MM was responding to a greeting from a previous post, but also mentioned that he/she was busy 'scheming', meaning to say they were preparing or planning teaching activities for their classes. To this, the tutor responded that this is what makes a teacher a professional. ST002NM and three hours later he posted his agreement to the last post. To this participant ST001MM jokingly stated that she was a 'science teacher' by mistake but instead she is a good wife material. To this ST002NM laughed and invited ST001MM to marry him. The above discussion showed the friendly and relaxed atmosphere the participants felt within the MMSN WhatsApp group. This form of discussion as illustrated shows that the group members were open to each other. Therefore, this could suggest

that starting an academic discussion could be easier as compared to unfamiliar person in an online group discussion.

4.2.3. Stage 3: Information Exchange

In this study, the virtual group members were assigned a group activity in which they collaborated in the MMSN WhatsApp platform, Figure 4-

Course: Introduction to Computer Systems
Topic: Application of Computer Systems in the communities
Objective: Discuss computer systems in the community
Expected Outcome: Students need to identify computer systems in their local communities
Assumption: Students to relate knowledge of a computer systems from their introductory unit to the course and appropriate that knowledge to their contexts as they relates to the diversity of computer systems in their communities.
Group Task:
Apply your understanding of computer application in communities. Identify and discuss areas in which computer system are being used in your communities. Use the created WhatsApp group to share your observations.

Figure 4-4: Structure of the activity as submitted by the tutor

The group leader started the group activity with an introduction to the virtual group's activity highlighting key expectation of the activity's task and initiated the dialogue. Virtual group members shared information relevant to the group's assigned task, teamwork occurred as group members shared and supported each other working towards their virtual group's task goal. The participants shared with each other how ICTs were being used in their communities. These tasks covered part of the Introduction to the computer system (CS020) course. The students were expected to identify and explain areas where computers are being used in their communities.

The group discussion activity started in the form of statements of observation, opinion and corroboration of various community settings as a means of justifying non-use of computer systems within some communities.

D079. 10:07, 16 May – ST001MM: This is a two weeks activity, I am your grp leader, who will coordinate the activity.
Discussion topic: Apply your understanding of computer application in communities. Identify and discuss areas in which computer system are being used in your communities. Use the created WhatsApp group to share your observations.

Figure 4-5: Group Task Activity

Figure 4-5 is an extract of two students' contribution to the discussion and questions seeking elaboration.

D084. 02:15, 20 May - ST003CW: Not so many computers are being used in my community. Despite the advancement of computer technologies, people are still comfortable with doing their work manually. The aged are the most people who do not need the computer aid, but they are supporting the youth by providing and paying their fees for computer education. The most commonly used computer system is the desktop and is available as an organisational resource than being owned by individuals.

D085. 02:29, 20 May - ST002NM: Its is also the same scinario that has been mentioned by [REDACTED] in my community too. Although the parrents tend to support their children in the use of ICT in education, but they don't support them financially this now hampers the use of ICT in the community. So the use of computer is so minimum at my community.

D086. 05:13, 20 May - ST003CW: [REDACTED], how about the infrastructure supporting the use of computer systems there?

Figure 4-6: Extract of a streamed dialogue of two students

Admittedly, Phase 1 (*Sharing & Comparing*) and 2 (*Dissonance*) indicators (see table 2.1) of the IAM were the most prevalent throughout the interactions thread. Very few IAM indicators from Phase 3 (Negotiation and Co-construction Knowledge) and phase 4 (Testing and Tentative knowledge constructions) were evident during the WhatsApp discussion. There was little evidence of Phase 5's construction of new knowledge, critical analysis of other members' ideas or instances of negotiation. Instead, there were more indications that the majority of interactions were on elaboration of existing understandings and knowledge. Participants exchanged their own understanding of concepts and exchanged these views with others. Only one participant was able to go on further to share with others how he/she was applying the learnt course knowledge at

his/her school. This promoted others to revisit Phases 2 and 3 where they sought clarification and expressed some personal feeling about the facts presented.

4.2.4. Stage 4: Knowledge construction

Although from the above observation, this learning activity added little to the knowledge base itself; it nevertheless offered an insight into students' articulation of their existing knowledge. The dialogues did not seem to foster testing and revision project ideas and negotiation of meaning, which are fundamental processes of higher-order thinking, (Gunawardena et al., 1997).

- D090. 09:52, 20 May - ST001MM: My community is doing wonders in terms of promoting ICT firstly the school has employed 2 additional teachers for the computer science department to cater for all students staff and workers. Computer lessons are now compulsory for all. The only problem is that of Wi-Fi it is limited to staff and workers
- D091. 09:53, 20 May - ST003CW: Same applies in my community. It is only the A' Level students who are privileged to bring laptops to school. The rest are to rely on teacher instruction and use of textbooks in the library. The fear of technology and pessimism about its use is aggravated by school policies that do not support the use. And again some headmasters in the surrounding schools do not want to see even a teacher seated behind a computer or laptop citing teacher mischief and that they may fail attending lessons whilst doing something else.

Figure 4-7: Two participants' knowledge construction streamed interaction

ST003CW was able to reflect on a post as indicated in IAM indicators, which according to Moore (1993) suggest a reduction on TD. This participant's post henceforth made others revisit Phase 2, where they elaborated, and added their own context, thus discussion posted were fluctuating on Phase 2 and 3 (see Table 2 1). Researchers (Lang, 2010; Sing & Khine, 2006) observed similar patterns in a similar study. This would necessitate further studies to investigate why participants did not demonstrate critical thinking in the loosely structured group activity. Although structure and learner autonomy in the activity were not the focus of this current study, there is a need to investigate the activity structure on the learning activity.

D0145. 18:08, 23 May - ST006MA: M teaching IGCSE and As/A2 ICT Cambridge and we are using the computers online 4 both theory and Practical aspects of the subject

D0146. 18:10, 23 May - TUTOR: Beside tching wht do othr comminity mmbrs do with ICTs in general

D0147. 18:38, 23 May - ST001MM: Hey guys my xcol is discouraging the use of Wi-Fi to the pupils. What can I do?

Figure 4-8: Tutor probes indirectly encouraging participants to contribute to discussion

The extract Figure 4.8 shows the tutor encouraging the participants to widen their scope of ICT use in the activity, and then one group member, 28 minutes later responded to the group members' ignoring what the teacher had encouraged. Note that in Figure 4-7, the students had started to link ICTs in their community. Here the tutor's interjection looked misplaced. This is discussed more in the next chapter.

4.2.5. Stage 5: Development

At this level, according Salmon's 5-stage Model and IAM, this is the highest peak of the amount of interactivity whereby participants demonstrated the applicability of their constructed knowledge to their own local contexts.

D0145. 16:29, 23 May - ST006MA: Currently am seing them being used within the institution where i teach...i.e. In education

D0146. 17:05, 23 May - TUTOR: Hw ar thy used, teach, share with us

D0147. 18:08, 23 May - ST006MA: M teaching IGCSE and As/A2 ICT Cambridge and we are using the computers online 4 both theory and Practical aspects of the subject

D0148. 18:10, 23 May - TUTOR: Beside tching wht do othr comminity mmbrs do with ICTs in general

D0149. 18:38, 23 May - ST001MM: Hey guys my xcol is discouraging the use of Wi-Fi to the pupils. What can I do?

D0150. 18:53, 23 May - ST003CW: I have a group that i wish to create so that my students can always discuss with me even on holidays. There is a need to communicate well my intention with the headmaster and the parents if i am allowed.

D0151. 20:52, 23 May - ST002NM: My xul disable the WiFi, accusing the department for the misuse of the facility. That u have overdown loaded non academic things, the discourage much the use of you tube so the use of video from that faciliate is not tolerated. Not regardin its pros towards student learnng especialy in science.

D0152. 14:10, 25 May - TUTOR: @ST003CW, interactions is key to learning, opening a grp open sharing & promotes togetherness. But you need the concert of authorities (parents, head & stds thmslvs). Myb hv an obsrver in the grp

Figure 4-9: Participants linking knowledge to their own contexts

Figure 4-9 shows three participants testing their tentative knowledge construction to their own context. ST003CW mentions that the headmaster needs to be consulted for permission (see Appendix D. line D0148). Then ST002NM reiterates by mentioning a concern raised at his place of work (see Appendix D. line D0149). This aroused the earlier discussion after a series of discussions a day later. The tutor agrees with ST003CW, key concepts of constructivist learning and further advised on policy matters (see Appendix D line D0150). This implies that although the tutor was not an active member of the group, her interjecting shows that the tutor was following up the discussion activity. This interjection on hand might inhibit learner autonomy, but from the observation the participants did not show any form of being distracted as the discussion continued in the same tone. In other words participants maintained their learner autonomy as they carried on in control of their activity.

Members sought further clarification as to come up with a Computer teachers' society, to have one voice in their approaches to their challenges. At this stage there is reflection i.e. evaluating the technology and students' learning experiences. Furthermore, at this stage students contributed at odd times, specifically very late at night. This illustrates the flexibility of the online environment to accommodate participants' busy schedules. In this instance, it implies that TD is reduced as participants were able to access or seek assistance from others instantaneously.

4.3. MMSN WhatsApp Interaction Artefacts

Group Task:

Apply your understanding of computer application in communities. Identify and discuss areas in which computer systems are being used in your communities. Use the created WhatsApp group to share your observations.

4.3.1. The purpose of the WhatsApp group activity

This study was a post-hoc analysis of the MMSN WhatsApp Interaction Artefacts produced by a group of six participants. The mobile-mediated WhatsApp group activity was guided by Salmon's 5-stage Model. The WhatsApp discussion artefacts were

analysed using Salmon (2000) 5-stage Model as well as the IAM (Gunawardena et al., 1997). The IAM categorises five progressive phases in the process of co-construction knowledge within an interaction exchange between and amongst a group of learners. The WhatsApp activity was also evaluated to check for conformity with Park's (2011) PFML Quadrants. Park (2011) entails that mobile-mediated enhanced interaction activities are either an individualised or socialised activity; also both can be exposed to high or low TD, thereby showed four Quadrants of mobile-mediated activities.

Observations made

The researcher observed that participants posted messages that were statements of opinion, as well as identifying a problem. According to Moore, this enhanced dialogue is an enabler in the reduction of TD. Salmon (2000) agrees by noting that at this stage knowledge is being constructed. Still in the same stage of Salmon's knowledge construction, students started to compare information, then dissonance arose in most instances, and this meant that they started negotiation of meaning or co-construction of knowledge. Immediately, they started to test and modify of proposed synthesis and they finally reached an agreement and applied the newly constructed meaning in their varied contexts. In each phase there were a number of operations such as stating an observation or asking questions, and elaborations on contributions (Gunawardena et al., 1997). From the WhatsApp artefacts, the IAM phases were evident but in some instances were not as sequential as presented in the model. At some instances, one went back to restate their argument whilst others were contributing Phase 3 type of statements.

The WhatsApp artefacts observations were intended to help understand and to answer the following study question:

How can the use of WhatsApp help reduce TD for students who work in groups?

To evaluate how students learnt in terms of the knowledge constructed socially through the MMSN WhatsApp group interaction activity, the researcher considered how they actually communicated in terms of articulation of ideas, thoughts, and feelings in accomplishing their group activity. Phase 1 and 2 of the IAM, (Gunawardena et al.,

1997) referred to these first two phases as representing 'lower mental functions' whilst Phases 3-5 represented 'higher mental functions'. The IAM phases fitted well as from knowledge construction and development stages of Salmon's 5-stage Model in this study, thus further aimed at the reduction of TD.

Although the tutor was not vital in this study, it was observed that she played a major role of setting up the WhatsApp group and the group activity. In an informal conversation on her evaluation of the activity, she mentioned that her role was only to initialise the group activity. But she sometimes had to probe the participants to guide them not to lose track of the activity. She was quick to point out that the WhatsApp removed the social barriers that are evident in classroom-based group discussions. The tutor also highlighted that the WhatsApp helped her to get to know the students better. I also observed that the WhatsApp created a sense of belonging and reduced the isolation feeling associated with distance learning. She also said that she observed that learning did happen as students were able to try using mobile in their teaching as well.

4.4. One-on-one interviews (Appendix B-D)

Three participants were invited for the one-on-one interview based on the level of their interactions on the MMSN WhatsApp group activity. One very active participant who contributed more posts was identified, then the group leader and lastly the one who contributed the least. This was done in order to gain understanding of these participants' conception of the group activity. The one-on-one interview was standardised and open-ended, that is to say the same open-ended questions were asked of each interviewee. This approach was chosen because it facilitates more efficient analysis of qualitative data. The interview questions were similar to the FGD questions guide, though were restructured to simplify the questioning process.

The interview guide was constructed in such a way that the study's foci of the analysis guided the types of question to be asked.

Question 1 assessed the personal WhatsApp experience of each participant. Questions 2 and 3 were meant to triangulate the questionnaire findings on the usability and

applicability of the MMSN WhatsApp. Questions 4 to 7 solicited the knowledge generation by gauging personal perspectives as well as the valuing of the others and getting feedback on their individual posts. Finally, Question 8 was a personal reflection of their experiences in the discussions.

The interviews were conducted in a quiet place with minimal distractions. The purpose of the interviews was to help source the answers on the reduction of TD. The interviews used to help reduce bias of the participants; hence this was conducted prior to FGD, as participants were not exposed to other participants' influence in a FGD. The one-on-one interviews were conducted to understand whether knowledge was generated and to evaluate the reduction of TD during the activities. The one-on-one interviews also helped to triangulate the FGD WhatsApp conversations. Observing mental construct is difficult or almost impossible without conducting F2F discussions with the participants. The semi-structured interview questions were similar to the FGD, and these enabled me to seek elaborations, clarifications as well as rephrase the questions. The three interviews took an average of 12 minutes to conduct. Depending on the situation the questions were rephrased without losing context, during the interviews. Again, some questions would not be asked if the interviewee failed to reach the level that was being explored.

4.4.1. One-On-One Interview Analysis

One-on-one interviews were intended to help answer the research question: 'How does the use of WhatsApp reduce TD for students who work in groups?'

4.4.1.1. One-on-one interview with ST001MM (Transcription Appendix F)

The participant teaches at a rural boarding school. The school is a mission school, implying that a religious organisation runs it. The school is nearly 100km from Bindura University. I explained the purpose of the interview as well as a brief background of the study. My request to record the interview was granted. The interviewee was active throughout the WhatsApp group discussion. ST001MM spoke confidently and in a very articulated manner. Her answers showed evidence of depth and insight. She demonstrated her understanding of using WhatsApp possibly through her ICT technical

expertise as demonstrated by her use of technical terminology. ST001MM was very reserved on the use of mobile devices for school-going students, though no direct mention of the question required her to react (see appendix F line F010). ST001MM mentioned her hesitance at first and later realised that it really was used for the activity, (see appendix F line F012). She mentioned that the challenge of using the WhatsApp group was mainly because of response turnaround as the participants had tight teaching schedules. She also indicated that WhatsApp use on communicating social things. ST001MM was straight to the point in that she was not aware of anyone using WhatsApp in teaching or learning. She pointed out the disruptive nature of social media as a hindrance for its use in teaching and learning. ST001MM expressed that she was impressed and inspired by a group member who was intending to use WhatsApp with his class. She altered her argument to mention that there is a need for educating the schools' stakeholders. She jokingly said that ICTs should be made a human right, like food and education. When asked whether her fellow workmates or colleague had access to mobile devices she quickly remarked that they had but were not willing to use in class. When asked whether there was some misunderstanding that could have hampered discussion during WhatsApp group activity, she indicated that there was no misunderstanding that she picked out from the discussion.

4.4.1.2. Interview with ST003CW report (Transcription Appendix E).

The participant teaches at a peri-urban day/boarding government school. The school is 950m from Bindura University. The purpose of the interview as well as brief background of the study was explained to the interviewee. Permission was sought for the interviewer to record the discussion, it was granted. The interviewee actively participated throughout the WhatsApp group discussion. He invited the researcher to his school for the interview. ST003CW claimed that he was among the early WhatsApp users in 2012. He also indicated that he used WhatsApp for social communications, (see appendix E lines E015-E016). ST003 mentioned that the activity and use of WhatsApp was very exciting” previously they were using SMSs to communicate. He also mentioned that the discussion happened almost as if they were in one place. ST003CW applauded the fact that they saved money and time on travelling. He also added that he communicated whenever he was not teaching. He pointed to the fact that WhatsApp group ability made

sending messages faster at the click of a button. When asked what he learned from the WhatsApp group activity, he was quick to point out that the ability to share experience was something that fascinated him. Also the fact that he was working virtually, brought to life the 'virtual' on VODL. It made him feel not lonely and isolated. This interviewee showed a lot of enthusiasm for the study and mentioned that he wanted to do a similar activity with his 'O' level class.

4.4.1.3. Interview with MR001 (Transcription Appendix G)

MR001 teaches at rural government school. The school is 242km from Bindura University. I explained the purpose of the interview as well as a brief background of the study to the interviewee. The interviewee requested not to be recorded; therefore, the interview was captured manually.

This participant was open though he used his mother tongue in most of the conversation. He was very positive on the importance of technology, even though he had challenges accessing a reliable communication network and electricity. His responses to most questions demonstrated his interest in IT use of for teaching and learning. MR001; although shy, he understood and illustrated the uses of WhatsApp in social activities. He highlighted that despite not being able to participate actively he learnt something from reading through the group post when he downloaded them. He mentioned his disappointment about his model of mobile phone and continuously referred to it as 'zhingzhang'. He failed to see pictures posted by other group members. The interviewee used his discussion, though it highlighted challenges, it to air his personal feeling of working in the remotest areas (see Appendix G line G019).

4.5. Focus Group Discussion (FGD) (Appendix H)

The FGD were used to answer the research question; 'In what ways could social media like WhatsApp help to enhance dialogue?'

4.5.1. The purpose of the FGD

The purpose of the FGD was to help me understand and evaluate group knowledge construction that was created throughout the MMSN WhatsApp group intervention

discussion. FGD also helped me to gather feedback on the participants' understanding and perception of a MMSN WhatsApp intervention. The FGD provided participants' knowledge construction insights that would not have been accessible by passive observation without interaction with the participants.

All participants were invited through the group MMSN WhatsApp discussion to a F2F FGD meeting. The participants deliberated on the times and venue as they preferred. The researcher only suggested the period of FGD meeting, and the participants decided on the day and time. Five out of six agreed on a Saturday meeting and one opted for a Sunday because of religious commitments. It was agreed that the Saturday be adopted. Out of the six participants five turned up for the FGD and one sent an apology on the group MMSN WhatsApp, citing religious commitment.

The meeting was scheduled to start at 10am but was rescheduled because of transportation challenges. Participants used the MMSN WhatsApp group to communicate their whereabouts. The researcher was to pick up all the participants at a central place close to the venue of the FGD and the group leader was to alert the researcher when to pick them up. The researcher finally picked up three participants and two found their way to the venue at 13h00 and the discussion started at 13h30. All the participants were welcomed and thanked for their voluntary participation in the study. The researcher introduced herself and the project to the group. She further explained the objectives of the FGD and distributed the FGD guide. In turn, every participant introduced himself or herself. The participants were asked to feel relaxed, and to enjoy sharing their ideas and perceptions of their MMSN WhatsApp group experience. The focus of the FGD was gathering feedback on the MMSN WhatsApp group activities (see Appendix C2). The researcher requested permission to record the discussion and assured the participants that the recording will be used for the purpose of this study only and the granted permission. The same codes used for MMSN WhatsApp interactions were used in the FGD.

4.5.2. Analysis of Focus Group Discussion (appendix H)

The researcher offered to reimburse the travelling expenses that were incurred by each participant to the FGD venue. Lunch was also provided. The interviewer restated the objectives of the FGD. Each participant was given an opportunity to share their experience of using MMSN WhatsApp group during their group activity. Questions on usability and applicability of the WhatsApp in each ones' context were presented. Finally, the participants were asked to evaluate the MMSN WhatsApp interaction activity and to assess whether they gained knowledge in other words whether communication and psychological barrier were reduced from the WhatsApp discussions or not. Each participant was given a copy of the focus group discussion questions guide to refer to during the discussion.

ST005EM started the discussion, by introducing himself. He revealed that he felt very honoured and was happy to be part of a WhatsApp project. To this everyone nodded in agreement. He also mentioned that he has been using WhatsApp for more than a year, but he never thought that it would work in the learning contexts. "When our tutor called volunteers for this WhatsApp project, I volunteered but had a lot of doubts whether it would work. I encouraged myself, because of the previous experience on the SMS project we did with NT001..." He went on to explain how convenient it was as travelling time and costs were saved. He mentioned that he enjoyed the activity very much, because he was motivated to be part of the group and wanted to share with others. NT001 asked ST005EM to elaborate on what he had learned from the WhatsApp group, elaborating that he needed to give highlights of what happened in the WhatsApp group activity. To this, he pointed to integrating social media with his students as well. NT001 again sought clarification of what he had learned from the actual group activity. ST003EM said he developed some insights of what he could do with technology in his own context. He pointed to ST003CW's plan to approach the head to seek permission to have an out-of-school mobile engagement with his students. "This really challenged me: where I am currently working there is greater opportunity for doing it as my head is very supportive of ICTs innovations". MR001 exclaimed how lucky ST003EM was. The whole group nodded in agreement.

ST003CW was next and he spoke about his understanding of mobile learning as to mean learning using mobile devices. He said it was all book knowledge but had not really experienced it. He mentioned that he was going to seek permission to use this mobile WhatsApp with his 'A' level class to start with, then he would move to bigger 'O' level classes.

ST006MA mentioned that on m-learning his understanding was similar to ST003CW, as he only read about this in books and had not really used it in the teaching and learning context. Though he used it a lot with friends to pass social messages, he had not really used it to help him do a task. From the WhatsApp activity, I realised that logically it could be used in a higher education context, though he doubted that it was applicable to secondary school pupils.

MR001 said his knowledge of mobile learning was same as ST003CW and ST006MA because they had studied about it, but putting it into practice was the challenge. He argued that his case was different from everyone (see Appendix E line E020).

To this, everyone nodded in agreement, and ST005NM mentioned that they understood his situation and made an analogy that it was as good as anyone not having bus fare to come for an F2F discussion. He went further to mention that despite all the challenges that he faced he delighted in the contribution of the WhatsApp discussion, that he had access to WhatsApp or any mobile communications once a week. He also mentioned that because of his type of model of phone, 'Zhing Zhang' (name given to imitation models) he had challenges of media files. He said this made him lose track of the discussion as most comments that followed were about the posted media. MR001 also mentioned that he appreciated the sharing that took place during the discussion and learned that some of the theories we learn at school have different uses in various contexts.

ST005EM said that he agreed with much that had been said, though he needed to highlight one possible challenge that was not really critical in the study's case but felt could be treated as one. "The use of those little pictures (emoticons) one finds in WhatsApp could be misinterpreted to mean a completely different thing from what it was

intended to mean. The ones used in this group task were easier to comprehend because we could get the meaning from the context, but imagine in a school setup, what would happen. Our communication skills lecturer said when this happens no communication has taken place. It really needs practice to get to know these things.” Others acknowledged this.

4.6. Post-Questionnaire (Appendix B)

The post-questionnaire was used to elicit the participants’ experiences, perceptions, or attitudes around using the WhatsApp group activity. Although the participants’ experiences could have discussed using FGD and one-on-one interviews, the researcher found a questionnaire a very concise tool to yield specific pre-planned set of questions. The questionnaire was designed to meet the usability aspects of the WhatsApp group activity. The same set of standardised questions each respondent received were phrased in exactly the same way. For that reason the questionnaire yield data more comparable than information obtained through FGD and one-on-one interview (Mount, 2004). Six questionnaires were distributed amongst the participants. All six participants completed and returned the post questionnaire. The questionnaire comprised three sections and data generated were presented as follows:

4.6.1. Questionnaire response analysis

The post-questionnaire was conducted to help answer the following study’s questions:

1. In what ways could social media like WhatsApp help to enhance dialogue?
2. How does the use of WhatsApp reduce TD for students who work in virtual groups?

4.6.1.1. Demographic Data

Demographic data such as sex, age, location, and the type of mobile device were used as an ancillary to show the study’s participants combination. Although this was not part of the purpose of the study, this set of data was intended to describe demographic variables of the participants and to assess for any influence on the research findings.

The demographic data from the responses showed that there were four males and two females, and their ages ranged between eighteen years and thirty years. Nokia and Samsung were the two models of mobile devices used during the study. Five were mobile phones and one had a Samsung Tablet 2. One participant was located in a peri-urban school and the other five were in rural schools, one of which was a boarding school.

4.6.1.2. Usability and applicability of MMSN WhatsApp in the group activity context

The second part of the questionnaire used the Likert scale questions, 5. (Strongly agree) to 1. (Strongly disagree) this was intended to evaluate the usability and accessibility of the MMSN WhatsApp intervention.

Table 4-2: Summary of participants' questionnaire responses

Question	Scoring scale				
	Strongly Agree			Strongly Disagree	
	5	4	3	2	1
1.i	4	2	0	0	0
1.ii	5	1	0	0	0
1.iii	6	0	0	0	0
1.iv	0	5	1	0	0
1.v	6	0	0	0	0
1.vi	5	1	0	0	0
1.vii	0	5	1	0	0
1.viii	4	1	1	0	0
2	4	2	0	0	0
3	5	1	0	0	0
4	1	0	0	1	4
5	0	0	0	1	5

From the above questionnaire responses, five out six of the participants agreed on the usability and applicability of the MMSN WhatsApp group discussion activity, while one participant was not very sure whether to agree or not. Notably, this participant later commented during the FGD that he had challenges as his mobile phone was an

imitation phone and it was not working properly in most instances (see Appendix H line H11).

4.6.1.3. Open-ended comment on the MMSN WhatsApp activity section

The last section was an open-ended commenting space; this was intended to allow the participants to add open-ended comments on the study.

On the open-ended comment space, three participants further commented on the overall MMSN WhatsApp activity. One participant raised the concern on the low-cost imitation mobile phones that were MMSN WhatsApp enabled but with limited size on audio/video downloads. Another participant highlighted the need to increase storage as video and audio hold storage space. One participant expressed that he learnt a lot from the MMSN WhatsApp interactions.

4.7. Chapter Summary

This chapter presented narrative findings and an analysis of the data collected from the observations made on the MMSN WhatsApp group discussion, as well as the post-questionnaire and interviews done. The data was discussed in relation to the data collection instruments taking into account the research questions it was intended to address.

CHAPTER 5 CONCLUSION AND RECOMMENDATIONS

5.1. Introduction

The purpose of this chapter is to review the research as it was conducted. The findings are discussed with the intention to provide a logical reflection of the study's outcome. The findings are also linked to the trends and developments from the literature review. Reference is made to the research methodology that was used, as well as a summary of the study results, conclusions, and discussion. Recommendations for further research and possible studies conclude this chapter.

5.2. Review of Research Questions

The purpose of this study was to investigate the extent to which the use of mobile-mediated WhatsApp in a group activity increased dialogue and how such dialogue could reduce TD as elaborated by Moore (1993) and Park (2011). One of the advantages that are being attributed to mobile-mediated learning is its affordance to the increase interaction. MMSN has been seen as a way of permitting the extension of the time and workspace normally used in F2F learning contexts, therefore increasing the potential of greater opportunities for learning. However, it should be noted, that MMSN WhatsApp is not interactive in itself. Rather, its interactivity depends on the activity structure, which must explicitly describe the nature of interactions that have to be performed within the platform. There were at least three main issues under study here, first increase of dialogue through MMSN WhatsApp interactions, secondly the reduction of TD in this study context was based on the quality of contributions and feedback given to other members. Lastly, the usability and applicability of the device was also important for this study. Fundamental to the study's concepts was that one could not reduce or minimise TD by the frequency of messages. In this study, even though participants gave a general expression in knowledge constructed. It was noted that they all acknowledged the desire to use a social network with his class after school (ST003CW Appendix D). The participants appreciated the connectedness that was afforded by mobile-mediated WhatsApp group and they considered this as memorable. Observation and interviews

with the participants revealed that they had experience of using MMSN WhatsApp in social context to socialise rather than a social learning interaction tool; these findings were similar to the findings reported by (Rios-Aguilar et al., 2013). In the next section, I will review the research questions the study set out to answer.

1. How can the use of WhatsApp help reduce TD for students who work on a group task?
2. In what ways could social media like WhatsApp help to enhance dialogue?

To help answer the study's research question(s), Salmon's 5-stage model largely helped evaluate the activity. Park's (2011) Pedagogical Framework for Mobile Learning (PFML) informed whether group activity helped reduce TD. IAM indicators were used to help evaluate knowledge construction from the WhatsApp interactions artefacts (Gunawardena et al., 1997). Despite the fact that the participants' lack of infrastructure, they demonstrated that the use of mobile-mediated WhatsApp dialogues actually reduce TD (Moore, 2002) by allowing participants more frequent and meaningful interactions. Observation made in this study showed that participants posted in the WhatsApp, even though they started slowly with irregular dialogue posts as, this later improved in terms of frequency and quality (Gunawardena et al., 1997). Salmon's stages 3 and 4 of her 5-stage Model agrees with Gunawardena et al., (1997) IAM 3rd and 4th phases in that at all these levels participants identify areas of disagreements, negotiate meanings and co-construct knowledge as are reflected on the WhatsApp interactions. Notably at the information exchange, that is 3rd stage, participants gave and received relevant and useful information about the activity, and undertook activity-related ideas. In the same way, as argued in the IAM, participants had different opinions of ICTs uses in their communities, and as they were actively involved on coming up with statements embodying agreements and disagreements (Gunawardena et al., 1997; Salmon, Nie, & Edirisingha, 2010). As the WhatsApp interaction becomes more collaborative, the participants were seen making connections between the discussion and work-based learning experiences, as elaborated by Salmon's stage 4, in section 2.10. The participants' posts to the WhatsApp group activity included sharing of their personal observations of how ICTs are being used in their various contexts. This was

followed by the formulation and responses regarding questions, critical opinions, and inclusion of disagreement or inconsistency between ideas. Consequently, this started a string of exchanges as each one recognised the other group members' contributions, as illustrated by Gunawardena et al. (1997) in section 2.10. They also highlighted the benefit of an alternate viewpoint, and the motivation to complete the group activity using MMSN WhatsApp, which they all agreed is a cheap and accessible mode of enhancing dialogues, as also observed by Ng'ambi (2013), and Ngaleka and Uys (2013). Although they all appreciated the value of using MMSN WhatsApp as a tool that could possibly help bridge the misunderstanding that arises during the process of learning, there is need to further studies to investigate structure and learner autonomy in similar contexts.

The researcher also observed that although Park's PFML (see Figure 2.2), distinctly indicated four Quadrants, he expanded from Moore's TD theory. Each Quadrant was classified as whether high or low TD and either individualised or socialised learning activity. Salmon's Stage 5 deduces that an individual learning may occur through consideration of knowledge gained during the group activity (see Appendices E line E25; F line F24; and H line H16). In other words, she argued that learning happens more in socialised than in individualised contexts. Park's TD suggests that the more structured a learning activity is, the higher the degree of TD (Park, 2011). Observations made in this study showed that the MMSN WhatsApp group interactions were not confined to one Quadrant as argued by Park (2011), as anticipated earlier in the study, (see section 2.4).

Even though the activity was meant to inhibit low TD, it was observed from the WhatsApp activity that during the initial stages of the WhatsApp discussion, it was the tutor who created the WhatsApp group platform (see Appendix D lines D001-D012). The tutor was the group administrator and she joined all the group members. Notably, in the initial discussion, she was also the one who was facilitating the discussion, calling for members to acknowledge their presence. Therefore, in this study the tutor's role suggested that in an activity that sought low TD, the tutor would take on a facilitative role. According to Power (2013), some activities would exhibit a high degree of transactional distance if no guidance were provided to students in a learning activity. He

further argued that activity needs to be relevant to the students' context and their learning capacities. The participants' WhatsApp discussions showed that mobile-mediated WhatsApp-enhanced dialogues have the potential of enabling connection amongst group members, thereby generating knowledge socially according to the participants' contexts. Its asynchronous nature allowed the MR001 (see Appendix H lines H023; H033) to follow up on discussions that transpired in his absence.

5.3. How mobile-mediated WhatsApp dialogues reduce TD

The context of MR001 (see Appendix G line G10) inhibited him from interacting both synchronously and asynchronously over greater physical distances, thereby trailing behind the contexts of the MMSN WhatsApp group activity. The participants in this study reported that they enjoyed the MMSN WhatsApp group learning activity, not just the knowledge generated but the connectedness (see appendices G014; F022; E015) and sharing that happened (see Appendix E line E025). This corresponds with what Rios-Aguilar et al. (2013) reported in their study, that there was a notably higher use of social media in the college-going (19-29) age group. As argued in Chapter 1, this young generation of digital consumers is more connected and this trend is expected to remain that way in all aspects of their lives (Prensky, 2005). Notably from the WhatsApp discussions, participants were able to express their personal opinions freely and even went further to express these using the texting, phonics, emoticons (see appendices D0167; G08; D016; D018; D035), and also vernacular languages.

In this study, as initially pointed out, the frequency of posts is not necessarily interpreted as positively reducing TD. Dialogue has been defined as the conversation between two or more people exchanging ideas or opinions on a particular issue. It is most agreeable that dialogue in a F2F group activity allows one to observe non-verbal body language throughout the conversation, i.e. nodding, smiling, expression on emotional reactions such as change of voice tone, etc. This observation therefore calls for a new definition of dialogues in the online virtual contexts. Although in the MMSN WhatsApp application there is room to convey human emotions using emoticons, their meaning will vary from one person to the next.

The participants in this study used some emoticons; one participant, ST001MM (see Appendix D lines D016; D018), expressed her knowledge on the use of emoticons. She further explained that she guessed them correctly, but at first failed to comprehend the message (see Appendix F line F033).

Gunawardena et al. (1997)'s Interaction Analysis Model (IAM) indicators and Salmon's 5-stage model were used to analyse the WhatsApp interactions artefacts.

Phase 1 and 2 indicators (see Table 2.1) were visible as the participants actively contributed to the discussion and were acknowledged by others. The introductions were not comprehensively done, maybe because the students knew each other very well. I have observed and agree with Huang & Liaw (2004)'s observation that what counts as knowledge is subject to one's context and technology in this study, MMSN WhatsApp's role was to afford knowledge discovery, creation and retrieval during the group discussions. With this in mind, the use of vernacular language (Shona) that was observed during the discussion as well as during the interview discussion, could be seen as a way of expressing one's context using a language that they feel they can be heard better (see section 5.7 below).

By focussing on the ease of use, affordability and freedom to interact within the group possibly made MMSN WhatsApp application appropriate in this study's context as revealed by the post-questionnaire feedback (see section 4.6.1.). This study's findings on suitability and applicability are consistent with previous studies that observed that students tend to "experience and benefit from integrative experiences that have a social element yet revolve around their academic pursuits", (Rios-Aguilar et al., 2013:21). Although MR001 (see appendix G line G10) had challenges of downloading media files and limited network connectivity, he later argued that he felt that WhatsApp had enabled him to learn asynchronously despite the challenges (see appendix H lines H016; H023). The WhatsApp activity worked well with participants sharing knowledge about ICTs in their communities. It was clear that the use social media WhatsApp enabled participants to stay connected and kept up-to-date as one can read through the discussions even when offline (see Appendices F line F016; H line H033).

5.4. Limitations to the study

Qualitative research quality is heavily dependent on the individual skills of the researcher and more easily influenced by the researcher's personal biases. According to Reis (2009), context-dependent knowledge is more valuable in social sciences research. In this study, I reduced bias by being a passive participant and using more data collection methods. The study cannot be generalised due to the number of participants, although retained as allowing an in-depth analysis of a distinctiveness of a case under study. Although there are some critics like Yin (2003) regarding the use of case study methods in research. Yin (2003) argues that a small number of cases cannot offer sufficient grounds for establishing reliability or generality of findings. In fact, there are many advantages of using small numbers, for instance, its usefulness in providing a rich and detailed account of concrete existential experiences of people and a real-life context as argued by Soy (2006), especially considering that environments of the participants are unique and varied. Notably the findings of this study might not be applicable to other VODL centres, or other distance-learning programmes in Zimbabwe or other developing nations because of the unique setting.

5.5. Implications of mobile-mediated learning

The findings and analysis of this study brought forth interesting observations to the role of mobile-mediated learning, especially in distance-learning. The study revealed that mobile-mediated WhatsApp has potential to enhance dialogue to reduce TD. The deduced results hint at further investigation by researchers, scholars, and educational practitioners in developing nations' contexts to start thinking more broadly about incorporating mobile-mediated social networks' dynamics. This could possibly help with the comprehension of social relationships within our societies, communities, and institutions (Rios-Aguilar et al., 2013). The findings imply that enhanced mobile-mediated pedagogy has potential to overcome limitations faced by distance learners' learning activities with other learners and tutors.

On the other hand, the challenges reflected suggest considering mobile-mediated learning as a one of the complementary methods in distance-learning. The findings

indicate that although there was progress towards an enhanced interaction using WhatsApp shown by the FGD feedback from the participants. Nevertheless, there is need for practising it more with the students. Koole (2009, p.38) concluded by saying that mobile learning “provides an enhanced cognitive environment in which distance learners can interact with their instructors, their course materials, their physical and the virtual environment”.

5.6. Researcher’s reflection on the research

Although language was not the focus of this study, I observed that the participants were using their vernacular language during the MMSN WhatsApp discussion, and even during the data collection sessions. Researchers (Adedoja, Adelore, Egbokhare, & Oluleye, 2013; Clinton & Hokanson, 2011; Tunjera, Mukabeta, Ramirez, & Zinyeka, 2014; Veletsianos, 2010; Wen, Cuzzola, & Brown, 2012) have noted that the language one prefers to speak is the main factor determining one's language use on social media; this was attributed because students always consider the use of social media as informal. Furthermore, participants’ use of phonetic writing, appendix D065, typically the use of dialect and abbreviations like ‘skul, u’ that are specific to social media. It was also observed that most participants used more than one language and code switched during the interactions. Also observed was the use of emoticons that are embedded in WhatsApp. One participant raised concerns about the use of emoticons in case one did not interpret it properly, he stressed that no communication would have taken place, appendix E. According to McWhorter (2013), the language of texting applies to social media, too, as the abbreviations, emoticons, phonic and idioms are ‘code switching’ which is “the practice of alternating between two or more languages or varieties of language in conversation” as the new social media language. Mobile device manufacturers’ makes vary in their specifications. Even though a device could be data-enabled, this study found out that there are some models that have limited functionalities. Although this was later elaborated during the FGD, MR001 argued that some models, like his ‘Make’, which he called ‘Zhing Zhang’, had challenges in downloading pictures (see Appendix H038). ST003CW refuted this claim stating that he thinks it was not really the problem of a device but the downloading speed of the

network and possibly the size of the media (see Appendix H line H035). It was agreed to send a media file to the group platform. It was noted that the phone had limitations to download the file even though the network was fast, whilst others were quick to receive and download the file.

5.7. Recommendations

The findings and conclusion in this report suggest the following recommendations.

5.7.1. Educators in Distance-learning programmes

Reducing TD should be the aim of any conventional learning activity, given the affordances of mobile-mediated social media; increasingly connected educators should be encouraged to consider such applications in their teaching to reach students through the channels they are already using. Educators can further explore WhatsApp in different contexts as a mediator of enhancing interaction to reduce TD.

5.7.2. Academics and researchers

The use of a TD theoretical framework in a diverse mobile-mediated learning in distance programme needs further studies. In spite of the great potential that mobile learning has and the innovative development of mobile technologies there is a lack of such pedagogical frameworks. There is also a need to further link TD to develop pedagogical methods of instructional technology in distance-learning. Also further studies can show a relationship between other components of TD in mobile-mediated distance-learning. Teacher educators are also encouraged to incorporate a technology-enhanced medium in the pre-service teachers' curriculum.

5.7.3. Students in DL programmes

Social media like WhatsApp groups have the potential to help reach out for help synchronously or asynchronously, giving them have a sense of belonging and also increase deeper acquaintance with peers. This creates a pleasant student-student learning atmosphere.

5.8. Conclusions

In conclusion, the use of WhatsApp affords enhanced dialogue, in other words, it reduces communication and psychological barriers that distance learners face when in isolation. It is this enhanced dialogue and reduced communication and psychological barriers that cause high TD as elaborated by some studies (Moore, 1993; Park, 2011). The accessibility affordance of the WhatsApp tool augments the 'anytime anywhere' feature of mobile phones (Bouhnik, Deshen, & Gan, 2014). The structure of the activity also has an effect on the reduction of TD, Other than reduction of TD, results also showed that there was a reduction on expenses associated with F2F meetings, such as for travelling and subsistence. The time constraint faced by group F2F meetings was also reduced by the WhatsApp intervention. The WhatsApp's social nature has proved to be an enabler of keeping people connected despite the physical distance separating them, henceforth bridging the knowledge gaps. in other words, it bridges the communication and psychological barriers (Moore, 1993). It is this socialisation affordance of WhatsApp that was useful in this study's endeavour to reduce TD. Increasing interaction is one possible way that helps reduce TD (Moore, 1993). The ability to access information and support on a regular basis despite the physical presence potentially reduces TD.

Nevertheless there are also challenges, such as the technical compatibility of devices and also informal language use on mobile-mediated learning activities. Although WhatsApp offers audio and video facilities, none was used in this study, which could imply that students. Despite having experience in the use of WhatsApp, are not fully utilising the features. These findings open further gaps that need investigation. Further studies are needed to explore WhatsApp in different or similar contexts as a medium of enhancing and consequently to reduce TD, as well as relating the structure and learner autonomy in a WhatsApp-mediated activity.

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APPENDICES

Appendix A: Consent Form



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Consent Form

My name is Nyarai Tunjera. I am a Masters ICTS in Education student at the University of Cape Town (UCT). I am requesting for your voluntary, anonymous and confidential participation in my thesis research. My thesis title is **Enhancing dialogue to reduce Transactional Distance: A case of using Mobile-Mediated Social Media in a virtual group activity.**

Purpose: I am conducting this study on evaluate whether enhancing dialogue through using MMSN, WhatsApp could reduce Transactional Distance, that is misunderstanding that happen during the process of learning.

Procedures: Having consented to participate in the group activity, I am also requesting that you participate in a Focus Group Discussion and complete an online questionnaire. I value your feedback as it is important in this study.

Protections of Confidentiality: Your contributions to the research will not be shared with the public. Pseudonyms or codenames will be used in the final writing up the thesis.

Benefits: There are no direct benefits to you for participating in this study. However, the information I receive will be used to develop programs which could help improve distance education learners in Zimbabwe.

Compensation: No compensation will be provided for participating to the study.

Voluntary: Participation in the study is voluntary. You are free to participate in this study, or to stop at any time. Withdrawal will not result in any negative consequences.

Do you agree to participate in this study? Yes No

If the answer is Yes, please complete the tear off slip below and sign
Your contribution is GREATLY APPRECIATED.

Thank you in advance for your valuable contribution.
Kind Regards
Nyarai Tunjera (tnjnya001)

I _____ have voluntarily accepted to participate in the research. I have read and understood what is expected from me as a participant of this research.

Signed _____

Date: _____

Appendix B: Post Questionnaire

Participant's Post-questionnaire

This questionnaire is seeking to get feedback on your use of the MMSN WhatsApp Application, its usability in your learning environment and how effective is it to your learning process.

Your honest response would help the author of this paper, analyse the tool for further improvements in order to improve your learning activities.

Age: under 18years between 18 – 30 years above 30 years

Sex: Male Female

Location: Urban Peri-urban Rural

Model of your mobile device _____

Type Mobile phone Tablet

Tick the appropriate box using the ratings to answer questions in the table below.

5- Strongly Agree 4- Agree 3- Not Sure 2- Disagree 1- Strongly Disagree

	5	4	3	2	1
Using WhatsApp					
was handy for the group learning activity					
enabled immediate group support and feedback					
allowed me to share my knowledge with others					
was a good forum for group collaborating					
more flexible as I could communicate anytime and anywhere					
was a convenient platform to access group collaborative discussions					
convenient for communication with other distance students					
I learned new knowledge from my group members					
Navigation through WhatsApp was easy because I always use WhatsApp to chat with my friends and family					
I would recommend using WhatsApp for off-campus discussions to other teachers					
Challenges faced of the use of MMSN, WhatsApp on enhancing dialogue amongst group members					
Poor network connectivity					
High costs of connecting					

Any comments:

Appendix C: Online observation, FGD and Interview Guides

C1. Online observations Guide

Interaction Analysis Model for examining social constructing of knowledge. Source (Gunawardena et al., 1997) and Salmon's 5-stage model, page 34 Figure 3.2, was used to analyse the WhatsApp group discussion artefacts. Notably, I used the indicators to analyse the social knowledge construction. Also

Phase	Categories	Indicators
1st	Sharing & Comparing	Statement of observation or opinion Statement of agreement Corroborating examples Asking and answering questions to clarify details of statements Definition, description, or identification of a problem
2nd	Dissonance	Identifying and stating areas of disagreement Asking and answering questions to clarify the source and extent of disagreement Restating the participant's position, and possibly advancing arguments or considerations in its support by references to the participant's experience, literature, formal data collected or proposal of relevant metaphor or analogy to illustrate point of view
3rd	Negotiation & Co-construction knowledge	Negotiation or clarification of the meaning of terms Negotiation of the relative weight to be assigned to arguments Identification of areas of agreement or overlap among conflicting concepts Proposal and negotiation of new statements embodying compromise, co-construction Proposals integrating or accommodating metaphors or analogies
4th	Testing & Tentative knowledge constructions	Testing the proposed synthesis against 'received fact' as shared by the participants and/or their culture Testing against personal experience Testing against formal data collected Testing against contradictory testimony in the literature Testing against existing cognitive schema
5th	Statement & Application of Newly Constructed Knowledge	Summarization of agreement(s) Applications of new knowledge Metacognitive statements by the participants illustrating their (cognitive schema) has changed as a result of the interaction

C2. Focus Group Discussion (FGD) guide

The FGD will be audio-recorded. The questions will be distributed to participants to respond and follow these activities with discussion and the researcher will just facilitate the discussion as the participants discuss the raised issues.

Notes: A group of 6-8 participants who are distance- pre-service teachers will be selected for a discussion based on the questions below after using the WhatsApp.

Discussion Topic	Key Concepts to be Explored	Guide Questions
Knowledge and Exposure of MMSN	Students' knowledge about MMSN WhatsApp Explain the applicability and usability of the MMSN WhatsApp.	What do you understand by the WhatsApp? In your opinion, was MMSN WhatsApp applicable in the context of your study Is it usable and applicable in your learning context?
Perceptions	Explore students' attitudes and perceptions of using MMSN WhatsApp	What did you benefit from the MMSN WhatsApp group platform? Give examples of your experience in this study. What challenges did you face during this group activity? What do you suggest can be done to improve the above-mentioned challenges?
Accessibility to the MMSN	Accessibility of MMSN WhatsApp	Is the use of MMSN WhatsApp supported in your community/institution? What more can be done to improve accessibility to mobile application in institutions?
Knowledge generation / reduction of TD	Possible knowledge gained from MMSN dialogue	Was there new knowledge generated through the MMSN dialogues. Highlight new knowledge created. Were there some instances that you misunderstood something and your colleagues helped you through MMSN dialogues?

C3. One-on-one Interview Guide

One-on-one interviews were meant to eliminate the potential influence of participants on other members. It was also meant to triangulate the data collection process.

Research Question	Foci of analysis
What WhatsApp experience did you have prior to this study? How do you normally use MMSN WhatsApp? Was MMSN WhatsApp a usable and applicable for the virtual group activity?	Usability and Applicability of MMSN WhatsApp application
What did you like most on the MMSN WhatsApp group interaction activity? What knowledge did you gain during the MMSN WhatsApp interactions? Did you share your own ideas to the group activity? Did the group value other participants' contributions? Was there evidence of feedback during the interaction activity?	Reduction of TD Quality of exchange of ideas Shared knowledge generation Value placed on members contributions

Appendix D: WhatsApp Group Interaction artefacts

- D001. 19:03, 24 Apr - TUTOR: You changed the subject to “LD for DL in DC”
- D002. 19:03, 24 Apr - TUTOR: ST005MT joined
- D003. 19:03, 24 Apr - TUTOR: ST004JJ joined
- D004. 19:45, 24 Apr – TUTOR: NT001 joined
- D005. 15:53, 25 Apr - TUTOR: KK001 joined
- D006. 15:54, 25 Apr - KK001: Hi everyone
- D007. 16:01, 25 Apr - TUTOR: Hi [REDACTED], sorry not everyone is in yet. Waitng fr their numbers
- D008. 16:02, 25 Apr - TUTOR: ST004JJ was removed
- D009. 19:51, 25 Apr - TUTOR: ST003CW joined
- D010. 19:51, 25 Apr - TUTOR: ST007MM joined
- D011. 19:51, 25 Apr - TUTOR: ST002NM joined
- D012. 19:52, 25 Apr - TUTOR: ST001MM joined
- D013. 19:52, 25 Apr - TUTOR: Hallo, please acknowledge if you receive this message.
- D014. 19:54, 25 Apr - ST002NM: hi
- D015. 19:55, 25 Apr – NT001: I am in, acknowledged
- D016. 20:54, 25 Apr - ST001MM: 😊
- D017. 20:55, 25 Apr - ST001MM: Hallo evry1
- D018. 20:58, 25 Apr - ST003CW: Ndeipi maface 😊 @ [REDACTED] uri bhoo here/
- D019. 19:59, 26 Apr - TUTOR: Hie, can we have a self-introduction session, [REDACTED], these are my pre-service computer science teachers, who will participate in this research project. They are on full time employment, and they are following a blended learning as they hv a 3weeks f2f sessions. Ladies and gents meet KK001 a fellow teacher and post graduate fellow.
- D020. 20:05, 26 Apr - KK001: I'm KK001 from East London, South Africa. I'm hoping to be graduating with a Masters in ICTs in Educ in June. My research area is social networks in Education.
- D021. 20:06, 26 Apr - ST002NM: Hie memo
- D022. 20:10, 26 Apr - ST002NM: Ok that great
- D023. 20:10, 26 Apr – NT001: Hie I am NT001, I am Masters student at University of Cape town. I will be graduating in December. My interests are on emerging technologies in education and I enjoy working with young generations. You are all welcome.
- D024. 20:10, 26 Apr - TUTOR: Hi team, I hope you know [REDACTED], shw is doing her research with us using this WhatsApp software. She is not active in the discussion but is there to see how we can use WhatsApp in group work. More introd frm [REDACTED] please.
- D025. 20:11, 26 Apr - TUTOR: ZD001 joined
- D026. 20:11, 26 Apr - TUTOR: MR001 joined
- D027. 20:15, 26 Apr - ST002NM: How a u doin, hope u a fine. Me im cool
- D028. 20:22, 26 Apr - ZD001: Hi TUTOR: Is this th comp science grp?
- D029. 20:23, 26 Apr - TUTOR: Yes amai
- D030. 20:24, 26 Apr - TUTOR: Gd nyt, am off to an allnight prayer.

- D031. 20:28, 26 Apr - ZD001: Nyt
- D032. 20:29, 26 Apr - ST001MM: Hi mame long time. You jus left us eeeish maone
- D033. 20:32, 26 Apr - ST001MM: Welcome kk001
- D034. 20:33, 26 Apr – NT001: Kkkk
- D035. 20:35, 26 Apr – NT001: WI c u in August
- D036. 20:53, 26 Apr - ST001MM: Hanty tirikupedza on the seventh of may
- D037. 23:31, 26 Apr - ST003CW: Ko zama riri papi akomana
- D038. 06:33, 27 Apr - ST002NM: Eish inga zvako ndanda.....
- D039. 07:18, 27 Apr - ZD001: Nhai NT001 what do th abbs in th name of th grp stand
4
- D040. 10:02, 27 Apr – NT001: online Learning design in dist distance-learning
- D041. 10:19, 27 Apr - ZD001: K
- D042. 12:43, 27 Apr - TUTOR: ST007MM was removed
- D043. 10:47, 27 Apr - ST002MM: ST002NM is back on app again, so u can
reconsider him again in the group.
- D044. 22:02, 28 Apr - MR001: Hi hi. Back fr the trip.
- D045. 09:18, 29 Apr - TUTOR: Welcme bacj
- D046. 09:23, 29 Apr - MR001: Thank madam. I hope u r well
- D047. 18:17, 29 Apr - KK001: NT001. How is it going on G- docs? Any activity there?
- D048. 18:18, 29 Apr - TUTOR: Nd to get to forum, added activity 2
- D049. 14:00, 30 Apr - ST003CW: Were are the learning activities?
- D050. 14:01, 30 Apr - TUTOR: Kkk, I thot we were still introducing ourselves
- D051. 19:13, 30 Apr - ST003CW: So wen will everything kick start.
- D052. 20:46, 30 Apr - TUTOR: Your tutor is preparing an activity tht u wl wrk on.
- D053. 12:45, 1 May - ST002NM: Its ok.
- D054. 12:48, 1 May - MR001: U seem to have a vibrant group NT001
- D055. 12:49, 1 May - TUTOR: Lv them, am msgng thm trly
- D056. 12:50, 1 May - MR001: Kkkk
- D057. 21:59, 1 May - ZD001: Tutor varikutovharwa big tym havasi kuziva kuti chii
chinofanirwa kuitwa
- D058. 00:10, 2 May - ST002NM: On
- D059. 14:46, 6 May - TUTOR: Hi guys
- D060. 14:47, 6 May - ST002NM: How a u memo howz skulin.
- D061. 14:48, 6 May - ZD001: Hi
- D062. 14:51, 6 May - TUTOR: Skul is good
- D063. 16:59, 6 May - ST002NM: Here we a ok just preparing for MIS & VB on wed,
thurs.
- D064. 17:04, 6 May - TUTOR: Ar u all around, is there an way we could hangout
togethr.
- D065. 17:05, 6 May - ST002NM: May be tomorow after exam
- D066. 17:06, 6 May - TUTOR: K jst tel me tyme evry one gt to be there
- D067. 17:07, 6 May - ST002NM: I think 1130 will be ok
- D068. 17:07, 6 May - TUTOR: Noted
- D069. 13:31, 14 May - ST001MM: Hi NT001
- D070. 13:34, 14 May - TUTOR: Hesi [REDACTED]
- D071. 13:35, 14 May - ST001MM: I'm kul basa kupressa Im scheming

- D072. 13:40, 14 May - TUTOR: Ndipo panoti teacher ipapo
- D073. 16:52, 14 May - ST002NM: Taurai henyu, teacher anoto schema.
- D074. 17:06, 14 May - ST001MM: Kkkk im a science teacher by mistake but a good wife material
- D075. 17:08, 14 May - ST002NM: Ita mushe wanzwa uyandikuroore kkk.
- D076. 17:54, 14 May - TUTOR: KK001 left
- D077. 08:41, 15 May - ST001MM: Morning gud pipo
- D078. 09:50, 16 May - TUTOR: Sori, wrong que if it got to you.
- D079. 10:07, 16 May – ST001MM: This is a two weeks activity, I am your grp leader, who will coordinate the activity.
- D080. Discussion topic: Apply your understanding of computer application in communities. Identify and discuss areas in which computer system are being used in your communities. Use the created WhatsApp group to share your observations.
- D081. 10:09, 16 May - TUTOR: ST001MM you are the team coordinator, we value everyone's contribution. This activity is two weeks long.
- D082. 23:09, 19 May - MR001: Vans imi k o chii
- D083. 02:05, 20 May - ST003CW: Mari yanga yashupa kuno, regai tiite
- D084. 02:15, 20 May - ST003CW: Not so many computers are being used in my community. Despite the advancement of computer technologies, people are still comfortable with doing their work manually. The aged are the most people who do not need the computer aid, but they are supporting the youth by providing and paying their fees for computer education. The most commobly used computer system is the desktop and is available as an organisational resource than being owned by individuals.
- D085. 02:29, 20 May - ST002NM: Its is also the same scinario that has been mentioned by [REDACTED] in my community too. Although the parents tend to support their children in the use of ICT in education, but they don't support them financially this now hampers the use of ICT in the community. So the use of computer is so minimum at my community.
- D086. 05:13, 20 May - ST003CW: [REDACTED], how about the infrastructure supporting the use of computer systems there?
- D087. 05:25, 20 May - ST002NM: The situation is pathetic, there are some few desktop computers shared among the learners. Only a few owns theirs, the parents here haven't see the value of ICT in learning. Even the paying of computer lessons for their pupils is a great challenge indeed.
- D088. 09:23, 20 May - TUTOR: Where are the others, What of mobile devices? mobile phones especially usage by younger fenerations.
- D089. 09:47, 20 May - ST002NM: Only a fraction have the mobile phone that support internet. Most parents do not value the use of ICT in education, citing various reasons eg (abuse of these device by use of non acadademic issues), this problem is not only with the parents and some of my colleagues doiscourages pupils to bring phones at school. I remeber one day the head promises to confisticate all phones found in possesion of a student until he/she finishes his/her upper six. So there is greater task to educate the parents and some collegues who are not ICT competent to accept the technological

- advancement so that they will support the idea themselves first.
- D090. 09:52, 20 May - ST001MM: My community is doing wonders in terms of promoting ICT firstly the school has employed 2 additional teachers for the computer science department to cater for all students .staff and workers. Computer lessons are now compulsory for all. The only problem is that of Wi-Fi it is limited to staff and workers
- D091. 09:53, 20 May - ST003CW: Same applies in my community. It is only the A' Level students who are privileged to bring laptops to school. The rest are to rely on teacher instruction and use of textbooks in the library. The fear of technology and pessimism about its use is aggravated by school policies that do not support the use. And again some headmasters in the surrounding schools do not want to see even a teacher seated behind a computer or laptop citing teacher mischief and that they may fail attending lessons whilst doing something else.
- D092. 09:55, 20 May - TUTOR: Wow
- D093. 10:03, 20 May - ST001MM: In my case as a department we appealed to the responsible authorities to allow students to bring their own laptops since the we are relying on 50 computers that we rent and also to have big computer lab to promote ICT
- D094. 10:03, 20 May - TUTOR: Cool
- D095. 10:04, 20 May - TUTOR: Is it possible to share photos and/or videos
- D096. 10:11, 20 May - ST002NM: Even here we make that request but still the response is negative with colleagues from other departments citing negative behaviour from the pupil. Although the computer lab is under construction the purchasing of computer is very low. Last time former minister Kasukuwere donated ten laptops all were given to head of departments who are under utilises them as most of them are used for typing termly reports and nothing else when the pupils are clustered on a single machine during the lesson.
- D097. 10:15, 20 May - ST003CW: You really have a challenge Emmanuel, is it not possible to hold some awareness campaigns or negotiate with the teachers to use only one machine and commit the other part of your laptops to child education as they are the future that will help our nation. It helps by making them locally capable and even can compete on global markets.
- D098. 10:21, 20 May - ST002NM: Ha its a great challenge because the staff it self needs to be aware of the usefulness of ICT, then to the community.
- D099. 17:46, 20 May - ST001MM: Why can't you educate your staff first. Then take those machines from those departments to benefit the child
- D0100. 17:48, 20 May - ST001MM: The government should also assist the schools in the building of the computer labs for the schools to take this issue serious
- D0101. 17:49, 20 May - TUTOR: Is this feasible Martha,
- D0102. 17:57, 20 May - ST002NM: Its a noble idea but its a great task indeed. Because they are enjoying it so even to lend you will be a challenge though we are trying as a department. The great is on the administration they don't value the ICT usage. Coz here we try to transform from computer appreciation to an examinable subject but all the efforts hit the brick wall.
- D0103. 17:58, 20 May - ST001MM: It is because the government managed to donate

computers in schools so they can assist schools in building computer labs. Or maybe some donors to assist them

D0104. 18:02, 20 May - ST003CW: Shame but you can have a small cohort from your studenta who are ICT abled and teach then an examinable syllabus. Such that they can be examined and will come back to the community with a proof of certificates. They may lead the rest in liking and change of attitude towards computing.

D0105. 18:11, 20 May - ST002NM: We discuss about that last term as a department. But the group that we had targted to start with was overloaded with other subject so we now had achallenge of having adequate number of lessons per week (we had allocated 3 lessons per week instead of the required 6, so the school curriculum is not considering our motive) thats the greatest challenge my dear. We will not rest until we win the battle but we had a long way to go.

D0106. 21:20, 20 May ST006MA: IMG-20140728-WA0002.jpg (file attached)



D0107. 21:25, - 20 May ST001MM: Nyc lab umm.

Ende vakachena, hei, suit yateacher kkkkkk

D0108. 14:12, 21 May – ST006MA: My new lab mem

D0109. 14:13, 21 May – ST006MA: IMG-20140728-WA0001.jpg (file attached)



D0110. 14:14, 21 May - TUTOR: Wow nyc, picture. Your computer labs a beautiful hey, and looks better equiped

D0111. 14:15, 21 May – ST001MM: I agree mammo

D0112. 14:25, 21 May – ST002EMI: Nyc one

D0113. 16:14, 21 May - TUTOR: What are your proposals on winning this game.

D0114. 16:16, 21 May - ST002NM: The issue is about educating the responsible authority so that they will see the significance of ICT.

D0115. 16:18, 21 May - TUTOR: Are u saying that these people are not exposed to technologies???

D0116. 16:20, 21 May - TUTOR: Are they illiterate?????

D0117. 16:30, 21 May - ST002NM: To a great extend I can say YES. Cause at one point they remove COMPUTER LESSONS to A level class and the best O level class with the pontential to advance with they education.

D0118. 17:16, 21 May - TUTOR: ST006MA joined

D0119. 17:17, 21 May - TUTOR: Cs020 Lady joined

D0120. 17:18, 21 May - TUTOR: Two new members hv joined please keep the fire burning, fr the change to happen it needs you.

D0121. 17:24, 21 May - TUTOR: new member, This is a two weeks activity,

D0122. Discussion topic

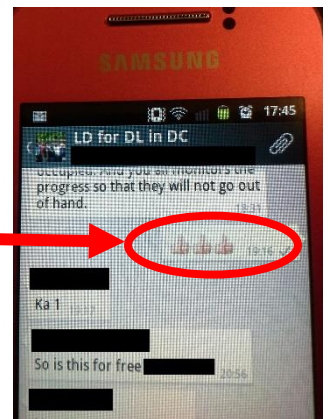
As computer educators, lets share computer system in your communities. You can use pictures, video or text to share knowledge, people, members can ask questions, as well as comment on others posts as u share your experiences, knowledge.

D0123. 17:51, 21 May - ST006MA: Ats quite inspiring.....

- D0124. 20:42, 21 May - ST001MM: I felt happy when I was going through the zimasset
- D0125. 10:47, 22 May - TUTOR: Wht is it saying
- D0126. 13:42, 22 May - ST001MM: They wanna improve the standards of education thru e-learning programme and improve school infrastructure as to have computer literate pupils. Teachers and community. Also to innovate school ggraduates producef in the market
- D0127. 13:46, 22 May - ST001MM: This is according to section 3 Information communication technology
- D0128. 13:47, 22 May - TUTOR: Wow, so where do u c it placing u
- D0129. 13:48, 22 May - TUTOR: As cptr educters
- D0130. 13:52, 22 May - ST001MM: At least thesr ppl hv got a vision where this animal callrd technology is taking us to. It's only the matter of finance that is hplding us back.
- D0131. 13:53, 22 May - TUTOR: Why not approproate the ones tht u already have
- D0132. 18:00, 22 May - ST002NM: Haaa they had vision but the implementation of those polices huuuu.
- D0133. 18:27, 22 May - TUTOR: Cs020 Lady left
- D0134. 12:00, 23 May - TUTOR: Its a great day, more voices on the discussion. Alson awaiting your input
- D0135. 12:04, 23 May - ST002NM: Ok
- D0136. 12:54, 23 May - ST006MA: Hello gud pple.i greet u all
- D0137. 12:58, 23 May - ST001MM: Hi
- D0138. 13:05, 23 May - ST006MA: M gd , hope i fynd all well.
- D0139. 13:07, 23 May - ST001MM: Im well .
- D0140. 13:09, 23 May - ST002NM: Strong and movin
- D0141. 13:09, 23 May - ST006MA: Ats gd
- D0142. 16:24, 23 May - TUTOR: Alson, how are u guy using ICTs in your communities.
- D0143. 16:29, 23 May - ST006MA: Currently am seing them being used within the institution where i teach....i.e. In education
- D0144. 17:05, 23 May - TUTOR: Hw ar thy used, teach, share with us
- D0145. 18:08, 23 May - ST006MA: M teaching IGCSE and As/A2 ICT Cambridge and we are using the computers online 4 both theory and Practical aspects of the subject
- D0146. 18:10, 23 May - TUTOR: Beside tching wht do othr comminity mmbhrs do with ICTs in general
- D0147. 18:38, 23 May - ST001MM: Hey guys my xcol is discouraging the use of Wi-Fi to the pupils. What can I do?
- D0148. 18:53, 23 May - ST003CW: I have a group that i wish to create so that my students can always discuss with me even on holidays. There is a need to communicate well my intention with the headmaster and the parents if i am allowed.
- D0149. 20:52, 23 May - ST002NM: My xul disable the WiFi, accusing the department for the misuse of the facility. That u have overdown loaded non academic things, the discourage much the use of you tube so the use of video from that facillite is not tolarated. Not regardin its pros towards student learnng especialy

in science.

- D0150. 14:10, 25 May - TUTOR: @ST003CW, interactions is key to learning, opening a grp open sharing & promotes togetherness. But you need the concert of authorities (parents, head & stds thmslvs). Myb hv an obsrver in the grp
- D0151. 15:00, 25 May- MR001: sorry guys I am completely lost. Need time to catch up, my network is letting me down, usual ZESA challenges
- D0152. 15:08, 25 May- MR001: nevertheless am enjoying your post, munya wesadza ndiko kudya manonoko, down the valley in Dande kkkk.
- D0153. 15:20, 25 May - ST003CW: its fyn bro, keep reading the posts will help you catch up when we meet.
- D0154. 15:22, 25 May - ST003CW: If all goes well i trust the head will b the observer and will also have the adminstrative rights on the group
- D0155. 15:25, 25 May - ST006MA: @ MR001 lol, true shaaz, its tough we do understand.
- D0156. 15:26, 25 May - ST006MA: Thats exciting!
- D0157. 15:27, 25 May - TUTOR: Wow, wid lyk to hear more whn it strts
- D0158. 18:31, 25 May - ST002NM: I support ST003CW's idea coz with the banned of extra lessons. That idea will all keep your students occupied. And you all monitors the progress so that they will not go out of hand.
- D0159. 19:16, 25 May - TUTOR: □□□
- D0160. Figure 1. (the tutor expressed her agreement to the previous statement)
- D0161. 19:17, 25 May - ST002NM: Ka 1
- D0162. 20:56, 25 May - ST001MM: So is this for free ST003CW
- D0163. 21:18, 25 May - MR001: Not me so dubious
- D0164. 22:09, 25 May - ST003CW: This will be absolutely free. One has to cater for his or her own bill. The main motive for this is to foster learning off the school environment. Youths especially teenagers are the modal class of whatsapp use. Hence thiss will b learningg on a platform they really appreciate hence, better means of improving the quality of marks students can score.
- D0165. 08:01, 26 May - ST001MM: Will it be on or off the school campus
- D0166. 08:06, 26 May - ST003CW: Off the school campus
- D0167. 08:07, 26 May - ST001MM: Shanda hama shanda
- D0168. 10:58, 26 May - ST002NM: Is it a 24/7 service or has tym restiction.
- D0169. 16:10, 27 May - TUTOR: MR001 was removed
- D0170. 16:10, 27 May - TUTOR: MR001 joined
- D0171. 12:26, 5 Jun – NT001: Thank you for this discussion. I was blessed to have you all take part. Now, I will be in Zim end of 24 June - 4th of July, propose a day and place where we can meet, send me your 2 way travelling cost. , God bless u.
- D0172. 14:02, 5 Jun - ST001MM: Dont mention. I propose
- D0173. 17:47, 5 Jun - ST002NM: K
- D0174. 17:49, 5 Jun – NT001: Reach a consensus, to gv ampletym to plan my trip
- D0175. 17:50, 5 Jun – NT001: meanwhile can u create videos and take pic on ICTs in



use in your communities

D0176. 18:19, 5 Jun - ST006MA: Ok will gladly do so

D0177. 18:19, 5 Jun - ST006MA: Hw are u

D0178. 16:10, 6 Jun - TUTOR: ST005MT was removed

D0179. 17:56, 6 Jun - TUTOR: As I was going thr discussion, no self introduction, myb
u dd read all messages hey, I assume

D0180. 18:06, 6 Jun - TUTOR: ST005MT joined

D0181. 18:06, 6 Jun - TUTOR: sorry ST005MT deleted you accidentally

D0182. 18:07, 6 Jun - TUTOR: As I was going thr discussion, no self introduction, myb
u were nt reading all messages hey, I assume

D0183. 06:19, 15 Jun –ST002EM: IMG-20140727-WA0000.jpg (file attached)

Appendix E: One-on-one Interview with ST003CW

The interview took place at his school, Chipindura High School. Bindura

- E01. TT001: Hi ST003CW, thank you for allowing me to come and conduct this interview you.
- E02. ST003CW: Welcome mam, but before we start can I introduce you to my HOD, he is in the office opposite. Let me invite him in so that you can meet him.
- E03. TT001: Wow, fine with me.
- E04. Met with the HOD, and thanked him for allowing this interview to take place.
- E05. ST003CW: I think I am ready now.
- E06. TT001: Once again thank you for permitting me to come for this discussion, I am aware that you have a tight invigilation schedule, again thank you for accommodating me in your busy schedule. This meeting is a follow-up of your participation to my study, I believe you agreed to participate in this project and you signed a participant consent form to this effect for this study. You still hold your rights as a participant, to continue or to withdraw your participation to this study.
- E07. ST003CW: You are welcome
- E08. TT001: Just to guarantee you of your rights as a participant. You have a right as a participant not to participate or to withdraw at any time during the session, if you feel your rights are violated. For this interview your code names will be used throughout the interview, if it happens in any way that a name is mentioned it will be hidden on the transcriptions. Your identity in this study remains confidential throughout all the activities. I understand you agreed to participate into this study and you signed a consent to be interviewed. Am I right to say this?
- E09. ST003CW: Do you mean the consent forms we agreed to participate in the project that we got from [REDACTED]?
- E10. TT001: Yes, but as I have mentioned earlier you have a right to choose to discontinue participating.
- E11. ST003CW: I would love to continue.
- E12. TT001: I understand that you had experience of using WhatsApp for social activities, am I right.
- E13. ST003CW: Yes mam, I think I was among the early disciples of WhatsApp. At first it was very difficult because not many people were using it. So I went into a user's invitation drive. It was cool though.
- E14. TT001: Wow that was cool, when was that? Tell me then how is WhatsApp being

- used in your community?
- E015. ST003CW: Communication. Sending messages to each other, like me I use it to get the latest gossip and Whatsapp with my buddies. Ya I think this is what I can say how we are using this whatsapp.
- E016. TT001: I see, are you saying you are using Whatsapp for socialising.
- E017. ST003CW: In short, Yes
- E018. TT001: That's great, OK, the use of Whatsapp during the group task, can you share your experience with me. Both the positives and negatives, uuummm successes and challenges.
- E019. ST003CW: It was quite exciting to use Whatsapp in the activity, before we would use smses, or meet with F2F for discussion, amazing Whatsapp made us share in such a way that it happened as if we were at one place. Then we had to bear cost of travelling and inconveniences of time wasting travelling. But with Whatsapp I would communicate whilst seated in class during breaks or at home. Econet Whatsapp bundles made as good as free. With people in urban the challenges are minimal, as technologies are accessible. In my case here I had no challenges of ZESA (electricity) Manu I understand he was not able to respond to our group work because he had challenges of ZESA and network. Shame, it's a pity that we are paying rural electrification but no ZESA is getting to the intended people. Yaa, that's a challenge to the group members and to him in particular as he will not benefit much from what is going on.
- E020. TT001: I see. Is there something that you can single out to say, hey, I gained this from the Whatsapp interactions. New knowledge gained or really something that you will definitely encourage you to continue using Whatsapp in your learning.
- E021. ST003CW: I would encourage other to use Whatsapp especially for group sharing. I did not have to copy paste message, because I would send one message to the whole group at once, but the only challenge I will not be able to see who has read it, unless they reply. Unlike when I am sending to one person I would see two ticks to know that they have received and read it. So you know, some people do not just reply to messages and it makes you wonder if they got the message or they are ignoring u or maybe they agree or disagree.
- E022. TT001: Did such cases happened in this group task?
- E023. ST003CW: Haa, when we started people would not respond, but mam was encouraging us to used Whatsapp for the task, and each members is expected to be active. This improved a lot.
- E024. TT001: Ok, what knowledge did you gain from the Whatsapp group interaction

such as something that new or something that brought a wow effect to you.

E025. ST003CW: Wow, we were sharing our experiences with ICTs in our communities, sometimes we take things for granted some things like shared experiences. I learned that we can learn and encourage each other on learning activities and stay focused to complete the task as a group. I also learned that using this Whatsapp helped me not to feel lonely especially, you know us VODL we are not really like other students who meet every day. But with Whatsapp we were like talking F2F.

E026. TT001: Is there anything that you would like to share with me.

E027. ST003CW: No, but thank you and we miss you, Mam, when are you coming back?

E028. TT001: I am the one to thank you for your time, I am so grateful for your participation into the study. I will come to share with you the end product of the study. If I need further clarification I would request another appointment. Thank you.

Meeting ended. 1215hrs

Appendix F: One-on-one Interview with ST001MM

This participant teaches at █████ SDA School, a boarding school, 140km from Bindura town. When I requested her for an interview, she suggested I visit her at her school. The visit was scheduled on a Thursday 31st July 2014.

- F01. TT001: My name is Nyarai Tunjera; I am a Masters student at UCT. Before we start the interview, I want to make you aware of your rights as a participant. You have a right not to participate or to withdraw if you feel your rights are violated. For this interview your code names will be used throughout the interview, if it happens in any way that a name is mentioned it will be hidden on the transcriptions. Your identity in this study remains confidential throughout all the activities. I understand you agreed to participate into this study and you signed a consent form to be interviewed. Am I right to say this?
- F02. ST001MM: Yes, I signed the consent form.
- F03. TT001: Thank you, then we may start the interview now. I am requesting to record this interview, again you have a right to decline or accept being recorded.
- F04. ST001MM: Its OK, Mam
- F05. TT001: What do you understand by the WhatsApp Application?
- F06. ST001MM: WhatsApp is an example of MMS, this is software that allows a user to send and receive text, audio and videos. MMS stands for Multimedia Messaging services.
- F07. TT001: Wow, that a bit technical jargon Can you explain how this works – do they work on computers, laptops or mobile devices?
- F08. ST001MM: They normally work on mobile devices like mobile phones, and they use a data connection, for which most mobile providers are dishing out free data bundles.
- F09. TT001: In your opinion, was WhatsApp applicable in the context of your group activity in this study?
- F10. ST001: It is for higher education, but not for high school learning.
- F11. TT001: What did you benefit from the WhatsApp group platform? Give examples of your experience in this study.
- F12. ST001MM: Because I have not used it in learning, it was somehow funny at first, but later own I realised that we had to work together for the group activity.
- F13. TT001: What challenges did you face during this group activity please elaborate more on this study's activity context.

- F014. ST001MM: Waal, umm I think the biggest issue is not time, someone can send a message and expects someone to respond, and because we sometimes will be teaching this delayed the need of urgency on the part of the sender. Hence I had to respond late but I feel that I can improve next time.
- F015. TT001: What did you do to help ease some the challenges that you encountered?
- F016. ST001MM: I read all the conversation that happened during my absent, and normally would chip in with current posts.
- F017. TT001: How is WhatsApp being used in your community?
- F018. ST001MM: Most people who are using Whatsapp are to share jokes, short videos, music, inspirational talks etc. e.g. in my case I have a family, friends, youth and church group.
- F019. TT001: What of in learning activities, for example if some teachers or schools use WhatsApp?
- F020. ST001MM: Not that I have heard of, people were surprised when I talked to them about this learning group. It is weird to use social networks to learn without being distracted,
- F021. TT001: from this activity was there any new knowledge you gained from the group discussion, please point at instances when someone mentions something that you appreciated as new knowledge.
- F022. ST001MM: I was inspiration by [REDACTED]'s to help his students using these social media. But because teachers are very passionate to the work, I though using social network is proper and ideas in our current scenario.
- F023. TT001: EVEN when someone mentioned something you always took for granted in your community's use of technology.
- F024. ST001MM: I am against the use of social network use by students, Whatmore really surprised me and the way he talked about it made me relook at my teaching principle, I would like to start a pilot project with maybe FB using the school computers, I teach at a boarding school where students are not allowed to bring any electronic gadgets. [REDACTED] is at an almost urban school.
- F025. Mam the only challenge that I foresee is my school policy on IT at the school, the internet is very limited and the
- F026. TT001: wow, I see. What can be done to improve accessibility to mobile application in institutions?
- F027. ST001MM: teachers and admin needs to be educated, I liked the video you showed when we did computer application, but if you share with colleagues, they

- do not get it. But maybe they should a policy that make ICT a human right (laughs), just like food, education for all it could make others change.
- F028. TT001: Are you saying that there is need for education mmm or more on staff development. Do these teachers and admin use mobile phones
- F029. ST001MM: They have but they do not want them to be used in class.
- F030. TT001: Ok, I see. During the interactions were there some instances that you misunderstood something and your colleagues helped you through MMSN dialogues?
- F031. ST001MM: Not really, use of symbols was difficult to comprehend or I think somehow misleading as they can have a variety of meanings.
- F032. TT001: Emoticons use was a challenge. The double meaning of these emoticons brings to dialogues and meaning making. Please can you explain how this affected the WhatsApp discussions.
- F033. ST001MM: I had challenges at first but later managed, I am raising this for future discussions it could be a hindrance to others.
- F034. TT001: Wow I see, thank you very much for the foresight. Do you have any more questions?
- F035. ST001MM: Not now, maybe to once more that I enjoyed the activities.
- F036. TT001: I see, I appreciate to hear that you enjoyed the activity.
- F037. Thank you ST001MM: for this fruitful discussion, I really appreciate you availing yourself. Where can we have a drink?
- F038. ST001MM: You are welcome mam, we can send a child to buy from the school tuck-shop or we take a stall together, what's your choose.
- F039. TT001: Let's take a walk to stretch our backs
- F040. ST001MM: Fine with me, let's go then.

Appendix G: One-on-one Interview with MR001

This participant was not very active in the group task, he is from Dande, which is situated in a valley landscape. The interview was conducted at Bindura University. The participant requested not to be recorded, despite the assurance that only I would use it for this research, he persisted that he did not want to be recorded, because his voice was not that good when recorded. Hence this interview was hand written.

- G01. TT001: Hi MR001, I am happy to have this interview meeting you and interviewing you. As we talked on the phone, I am going to reimburse your fare to and from your school as well as give you lunch. I really appreciate that beside the challenges you revealed to me on your participation to this project you were still willing to continue in the project. Before we start let me assure you that for this interview your code names will be used throughout the interview, if it happens in any way that a name is mentioned it will be hidden on the transcriptions. Your identity in this study remains confidential throughout all the activities. I understand you agreed to participate into this study and you signed a consent to be interviewed. Am I correct to say this?
- G02. MR001: Thank you mam, I am hoping things will be changing for the better sooner. With the little I managed to do with the group, I learned something. Yes mam I signed a consent paper.
- G03. TT001: Can you tell me more on what you learned from the discussion.
- G04. MR001: that one can actually learn using Whatsapp, I use it to talk to friends whenever I can, and sometimes we get the latest gossip, and boy stuff.
- G05. TT001: kkkk what is that boy stuff, can it be shared with me?
- G06. MR001: No mam, I can't share with you, it's embarrassing. I cannot say what my friends post to me.
- G07. TT001: OK, well you made me more curious.
- G08. MR001: Hanti munoziva kuti vakadzi havadive padare (women are not allowed in men only cycles). It's the same with some of the stuff people post on WhatsApp.
- G09. TT001: Ohh I see, let's go back to our business. In our telephone conversation, you mentioned some challenges that you faced. Can you share these challenges again for the record?
- G010. MR001: Yes mam. I am teaching at the back of beyond. We do not have ZESA (electricity), to charge my phone I have to walk about 5-9kms to get to our shopping centre, there we are charged \$2 to have your phone charged. My

phones battery is old now so it does not keep moto (power). Two, the network is very poor, when I need to make a call, I have to move to a higher level, there is a hill close our school which I normally go to when I want to make and receive a call. The biggest challenge is charging the phones. It's made worse by my battery that do not last 24hours.

G011. TT001: So tell me about your experience of using the group Whatsapp facility?

G012. MR001: I tried my best to get my phone working in once a week. I would be able to have access to the discussion at least once a week. Normally I would have the messages download when the phone is on charge, but later they discouraged me from charging whilst it was on.

G013. TT001: OK, I see is that why your posts on the group were not that detailed? You were like not taking part in the discussion

G014. MR001: Haa, you see mam, I would get a lot of Whatsapp messages from friends, family and the group. I would just respond generally without going through the discussion you see. I read others post but I was afraid that when I take back the group it will mean not progress. Another thing, my phone Nokia is a Zhing zhang so some of the pictures did not come ou properly so I would then have not understood where the discussion was going.

G015. TT001: I see, so you did not even attempt to send in your personal contribution or insights on the discussion topic.

G016. MR001: Yaa, that's how it was looking like, but my group members would understand they know my problem. Mam you have been to Dande, things have not yet improved it getting worse. But I am positive it will improve one as you always told us.

G017. TT001: Yes, we must remain positive and be innovative. Is there anything more that you would want to share with us.

G018. MR001: No, but if only the government could pay us earlier and those in remotest areas to be given incentives. There we do not have any extra money you can make for teaching the whole day.

G019. TT001: We pray that things will change one day, thank you for allowing me to conduct this interview with you. I really appreciate your eagerness to take part despite the challenges you mention.

Appendix H: FGD Transcription

The FGD meeting started at 1325hrs

- H01. NT001: Please may I have your permission to record this discussion, as mentioned earlier your confidentiality assured at all times during this study.
- H02. Ummm, (agreeing from every one)
- H03. NT001: My name is [REDACTED], I am a Masters student at UCT. I welcome you, umm gents and a lady. I am making a follow to your participation in the study activities in the WhatsApp. I understand you consented to participation to the project. I really appreciate your active participation through the interactions in the WhatsApp. This FGD is just a follow up on WhatsApp discussion you did as a group. I am just going to facilitate FGD as we do the discussion together. I have got a number of issues and I have given you the papers that contain some of discussion question we are going to discuss today. I really expect your honesty is greatly appreciated. Thank you so much. My name is [REDACTED], I am a Masters student at UCT. Some of the discussion question during Let me give you a brief background of my thesis. You are aware of the objectives of my thesis titled, Enhancing dialogue to reduce Transactional Distance: A case of using Mobile-Mediated Social Media in a virtual group activity. Who will start, (silence), ok, let's have ummm [REDACTED], I mean [REDACTED] to start.
- H04. ST005EM My name is [REDACTED], I am teaching in Guruwe district. I am a father of a boy aged 4years. Saka. I am married. Well I feel honoured and am happy to participate in this WhatsApp project. (agreement from other) I have been using WhatsApp for almost 1year 5 months now. It is very convenient to send and receive messages. I have used it for social communications only. I never thought it was possible to use it in teaching and learning (laughs), so this what I understood on how the WhatsApp works for socialisation purposes, not for learning. So when [REDACTED] called volunteers for this WhatsApp project, I volunteered but had a lot of doubts whether it would work. I encouraged myself, because of the previous experience on the SMS project we did with [REDACTED] at Chiduduma centre. This kind of study would really help us as distance learners because cost on travelling will be reduced, and time also. You know what guys I really want to be part of this project, because it kind of cool to be part the story.
- H05. NT001: That sound interesting ST005EM, please share with us the knowledge gained, I mean new knowledge that you gained from participating into this project, something you never knew before this study, you can give us particular

- highlights of what happened during the discussion.
- H06. ST005EM: the 1st experience gained was the actual use of the WhatsApp for group discussion, it never crossed my mind that it was possible, considering our diverse environments and backgrounds where we are coming from. This I would really want to try with my students.
- H07. NT001: OK, I see, is there anything that happen which is motivating you to try using WhatsApp with your students.
- H08. ST005EM: I was challenged by ST003CW initiative use of the ICTs like Whatsapp with his class. I feel I am at a greater advantage because mam, to tell you the truth my school head is very supportive of technology use in the school.
- H09. MR001: inga hako (everyone agreed to this remark)
- H10. NT001: People are envious of you ST003EM, wow me also, can we have the next person, of ST003CW.
- H11. ST003CW: I wish was so lucky like ST003EM, I have read a lot on mobile learning but it's still theory to me. I understand mobile learning to mean learning using mobile devices. This is all book knowledge but I am still to experience it live. I am going to seek permission to use this mobile WhatsApp 1st with my 'A' level class because they are few to manage, then I would try with a bigger 'O' level classes. From this WhatsApp activity I have learned the sharing aspect that WhatsApp gave us, and also that social connection with my classmate encouraged me to be active.
- H12. NT001: Wow, I understand that you are saying that as you were sharing learning was taking place as well as new knowledge was created. Is there anything you want us to know from your social experience of using WhatsApp?
- H13. ST003CW: yah, I learnt that in other school, technology is not there, only the very few have is treated as a luxury to others, but in other society we take these gadgets for granted. (Laughing) this reminds me of my childhood. We grew up not really having the luxuries like wearing shoes every day. The only time that one was to put on their shoe was when one was going to church or travelling by bus. So shoes were considered our most valued assets then, I would polish them put in plastic so that no dust gets to them. (Laughing) but now I can throw them everywhere and they are no longer considered as that important be kept under lock and key. What I am saying is this, in some communities mobile phones are a sign of social class but in others they it like celebrating a birthday, where other it is really important to other the day passes like an ordinary day.
- H14. NT001: Wow, you use a analogies heyi, what I am getting from all you have said

is that mobile devices are common in other context and in another its shows one's social status. Ok so in other words what we may call knowledge in one context might not be knowledge in the other context. Who recalls the DIKW diagram in information system course (Data, Information, Knowledge and Wisdom), could we refer to this when learning new knowledge, ST003CW.

- H015. ST003CW: yes because what I may say call knowledge is data in another information system. (Laughing)
- H016. MR001: I see mam, as we relate other knowledges we can come up with new knowledge, nhai?
- H017. NT001: this is getting interesting, let's get back to our discussion before we lose track? ST003CW do you have anything more to share with us?
- H018. ST003CW: No, maybe later.
- H019. NT001: I am loving this discussion, we are left with two people, can we have you, yes boss Alson.
- H020. ST006MA: most of what I had has been discussed, let me not waste time, mobile learning is almost defined similar to online learning, but the only difference is that mobile devices are used instead of desktop computers. I use WhatsApp a lot to chat with friends and other younger family members, my dad and mum said that it was for you the young so we did not put them in this family group my brother created. I haven't used it in the actual learning activity like we have done here, I have used it to seek clarification on tasks from friend not really in a group but yaa I can say mmmm say I used it in learning not really like we did with the tutor. Like ST003CW said I also learnt that knowledge depends on one's exposure, like in my case I am teaching at a boarding school where we have a diverse of students from different backgrounds. Although I teach them computers, in must early introduction to computer some who had background of computers, the learning activities were a walk over, as some learnt computer at their primary schools, others have computers at home but other are not that privileged to either. To them the screen was a TV to them. But now they are operating from almost the same level. Although it is confirmed knowledge that the WhatsApp is being used in other countries. I feel that logically it could be used in higher education context, though he doubted that it was applicable to secondary school pupils.
- H021. MR001: My knowledge of mobile learning is same as ST003CW and ST006MA because they studied about it, but putting it into practice was the challenge. I feel my case guys is very different from you all, one, I am coming from the very back of beyond where there is no ZESA, poor communications network, remember

when we started this program, we only had one network then, thank God now all network are accessible in areas around the valley... in this activity I hope you are all aware that my involvement was minimal. Two, my community is very remote and made up of communal farmers, spread out and nomadic. This I mean when its rainy season people move to higher ground in most cases learning is partially put on hold for most students. Three, our physical setting make it difficult to have undeterred network services. The area that I come from is in the valley, it's surrounded by mountains, and mam can tell you more coz she has been there.

H022. ST005EM: I have been there, Dande musango hakwaifanira kugara vanhu asi a game reserve, (laughing). We understand muface your situation is as good as anyone not having bus fare to come for an F2F discussion. (To this everyone nodded in agreement)

H023. MR001 But guys despite all these challenges that I faced I am very delight with your contribution in the WhatsApp discussion I was asking them once a week. Though I would be lost to make a follow up, but reading through made some sense, to the activity. One more challenge was the make of my or the type of model of my phone, it not original Nokia but it's a Zhing Zhang, I had challenges downloading pictures. I was completely lost when you commented on the picture that was posted by ST006MA, I lost track completely. I was like a child from Dande left in the middle of New York City. I should also mention that I really appreciated the sharing that took place during the discussion and I also learned that some of the theories we learn at school have different use in various context. In my context SMS worked better, in the SMS project. Mam if I may ask what kind of knowledge are we looking at, because there are different types of knowledge?

H024. NT001 Anything that is new to you is knowledge, whether its logically, semantic, systematic or empirically constructed. What do other think?

H025. ST002 knowledge is anything that is new like what mam said. It is not the class or type of knowledge that matters, as long as it's new to you and [REDACTED] mentioned that if it's true and make meaning in your context, that's knowledge.

H026. ST005EM: (Laughing) now you becoming a philosopher (laughing) though it makes sense.

H027. NT001: I am also learning heyi, this is the whole objective of this study, social knowledge contruction, wow, I love this. Are you answered, MR001.

H028. MR001: yes, but I am challenged to revise a lot of my theories of learning notes. This is serious business.

- H029. NT001: Yaa, you must appreciate that all disciplines relate to each other. Our last presenter, ST002.
- H030. ST002NM: I always love to be last because I am a last born, again I like that all would have been cleared by others. I do not have new knowledge but only to say that I enjoyed the group discussion I will we could have more of these to keep some of us motivated to learn, let's say next activity to be on the actual content of the courses. I agree with much that has been said, though I must point to the fact that a possible challenge that seems not really critical in the study's case but I feel it could be treated as one. The use of those little pictures (emoticons) we find in WhatsApp. I have experience of feeling one could be misinterpreted to mean a completely different thing from what it was intended to mean. Or vice versa one uses an emoticon that do not say what they want to say. The ones used in this group task were easier to comprehend because we could get the meaning from the context, when ST001MM added the 'smiling face' I understood that the person is happy and smiling. Our communication skills lecturer said when this happens no communication has taken place. It really needs practice to get to know these things. I also understand that some words have different meanings in different context. I think I am done.
- H031. NT001: Wow this is wonderful, I am still learning a lot hey, tell me are you going to share your experience with others, back in VODL or in your schools.
- H032. ST002NM: definitely mam that how we have also learned to use WhatsApp in the first place so sharing is one way of letting other know what that is there makes teaching easier. Imagine if I can send a homework reminder to all my pupils isn't that great, and to the pupils they feel loved, like what I felt when some referred to my post. It makes me want to share more. Hey LD for DL group members.
- H033. MR001: I agree with you, ST002NM, and I also feel that even though I did not manage to get feedback to you, I was also learning, 'gaya', when ██████████ said he will use WhatsApp with his class this really made to think the different worlds we live in, within the same country. I will also try to show them the goodness of sharing using technology. I think in our context we use ruling party structures as these does sometimes bring development. Me and mu zhing zhang (*Everyone laughs*)
- H034. NT001: MR001 you make use break our bones. (Laughing) is there anyone who wants to add. (Silence), so the silence could mean you are tired or you do not have anything to add or that you now want to call it a day. (Laughing). OK let me take this opportunity to thank you once again on your valuable feedback on my

- study. I really appreciate your active participation into my study. Thank you. It's a pity ST001MM could not make it because it's her worshipping day. We will share with her all that transpired ok. I am available online, you can raise me on WhatsApp. The platform will remain open until when I have submitted the thesis.
- H035. ST003CW: mam, I am still not yet convinced why not try to send a gif, or jpeg file to the group and see if MR001 will not be able to download it.
- H036. It was agreed that the file be sent to the group to verify what was causing MR001 not to receive pictures or media files. ST002EM resent a picture to the group. Other got it but still MR001 received it but could not open it.
- H037. NT001: This calls for another research to check on types of mobile devices. We have good internet here, but MR001 failed to download the file again.
- H038. MR001: I told you guys this phone is a 'zhing zhang' it's because we want cheap things, this goes with imitations.
- H039. NT001: anyway, because of our time we will call this a day. Let's end here, but we can continue with our discussion on the WhatsApp forum. As mentioned earlier, I am available online, you can raise me on WhatsApp. The platform will remain open until when I have submitted the thesis.

Appendix I: Econet WhatsApp Bundles Flier



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ECONET WIRELESS
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WHATSAPP BUNDLES

SOME QUESTIONS AND ANSWERS TO HELP YOU GET THE BEST OUT OF YOUR WHATSAPP BUNDLES

DIAL *143# TO CONVERT YOUR AIRTIME TO WHATSAPP BUNDLES

 www.facebook.com/econetzimbabwe

What are WhatsApp Bundles?

WhatsApp bundles are time-based subscriptions for unlimited chatting via WhatsApp. When you purchase a WhatsApp bundle, you will have unlimited WhatsApp access for the period equivalent to your subscription. This service is available to prepaid subscribers only.

What is the difference between WhatsApp Bundles and the normal data Bundles?

WhatsApp bundles are time-based whilst normal data bundles are volume-based. When you use WhatsApp bundles, you are not charged for the amount of data or megabytes that you have used but you are charged from your chosen bundle that is valid over a stipulated period.

What are the WhatsApp bundles available?

You can choose between WhatsApp daily, WhatsApp weekly, and WhatsApp monthly. WhatsApp daily gives you unlimited WhatsApp access for a day. You can chat for 24 hours without limit. With this bundle, you are not limited on how many messages you can send or receive until your bundle expires. WhatsApp weekly gives you unlimited WhatsApp access for an entire 7 days. For 7 days you will be able to chat, send and receive messages until your bundle expires. WhatsApp monthly gives you WhatsApp access for 30 days whole, in which you can send and receive messages until the bundle expires.

How much do I get charged for access?

Subscription for WhatsApp daily that allows you 24 hours of unlimited WhatsApp access is US\$0.30, whilst a week of unlimited chatting via WhatsApp weekly will cost you \$0.95. A full month of unlimited WhatsApp access is US\$3.00 only!

How do I get WhatsApp bundles?

To access WhatsApp bundles you need to be activated for Econet Broadband. To activate your phone for data, simply send a blank message to 145 and follow instructions. If you are already subscribed for Econet Broadband and you need data settings, send "ALL" to 222. Once you have been activated for Broadband data, you must have sufficient airtime in your main account (dial *121*Buddie recharge pin#). You can then dial *143# and proceed to purchase the WhatsApp Bundle of your choice using your airtime balance. Restart your phone for quick activation of your WhatsApp bundles after purchasing them.

What do I do after I have purchased the WhatsApp Bundle?

After you have purchased the WhatsApp Bundle, you have to switch off your handset (reboot) so as to activate the bundle.

How do WhatsApp bundles work?

Once you have subscribed for WhatsApp Bundles, you can send and receive chat messages, pictures, voice recordings, videos, locations etc within the duration of your subscription.

Why does my main account balance or data bundle continue to deplete after my WhatsApp Subscription?

The WhatsApp bundle subscription allows unlimited access to WhatsApp usage ONLY. Therefore, any links that take you out of WhatsApp will attract the normal data charges. If you do not

have the WhatsApp application on your gadget, downloading it to your gadget attracts normal data rates. If you use a different browser to access the WhatsApp application, you will be charged at the normal data rates. It is encouraged that subscribers first download WhatsApp on their mobile device and then subscribe for the WhatsApp bundle of choice. When the data balance or airtime balance has been depleted, you can still continue to enjoy unlimited WhatsApp for the duration of the subscription. WhatsApp bundles are for WhatsApp only other applications that may be running will incur normal charges.

Can I still use my WhatsApp Bundles when I change my phone?

YES. The subscription is on the SIM card and can be used on a different phone or any other data capable device. Please note that when you change your phone, the WhatsApp bundle remains on the SIM card that you subscribed with and not on the phone.

When do the WhatsApp Bundles Expire?

WhatsApp bundles expire 24 hours from the first hour of use if the bundle is a daily bundle, seven days from the day of first use if the bundle is a weekly bundle and 30 days from the first day of use if the bundle is WhatsApp monthly. What this means is, the seven days under a weekly WhatsApp bundle only start counting down when you start using them. For example, if you subscribe for a weekly WhatsApp bundle on Monday and only start using WhatsApp on Wednesday, your 7 days will be counted from Wednesday. However, if you buy the same bundle on Monday and start using it on the day of purchase, then stop for two days, your day of first use is already recorded as Monday as you would have started using them then. If you purchase the WhatsApp bundle and do not use it, it will not expire until you start to use it.

Which handsets are compatible with WhatsApp bundles?

WhatsApp bundles should work with all data capable devices. However, some imitation devices may not work properly. You are encouraged to buy genuine handsets from any Econet Shop.

Are there any limitations to the content I can send or receive via WhatsApp once I subscribe for a bundle?

No. You can send or receive messages, images and videos within the WhatsApp size limit until your WhatsApp bundle expires. However, when you click on any links that take you out of WhatsApp, the normal data charges will apply.

What happens if I double purchase a bundle by mistake? Do I receive a double subscription?

Yes. In the event that a subscriber purchases a WhatsApp bundle twice, the second bundle will only be effective after the first bundle has been depleted. For example, if you purchase a weekly bundle twice on Monday, both your bundles will be valid for 7 days. However, you will first use one bundle valid for 7 days after which the second bundle will become effective upon completion of the first bundle for another 7 days. In total you will have 14 days from your 2 weekly WhatsApp bundles.

Appendix J: Econet's Services Support on Facebook



Econet Facebook page

Source: <https://www.facebook.com/econetzimbabwe/photos/a.265380363544517.63925.257495394333014/692079857541230/?type=1> accessed 6 September 2014.