

Minimising transactional distance in a synchronous virtual classroom environment

by

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Declaration

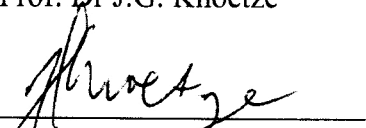
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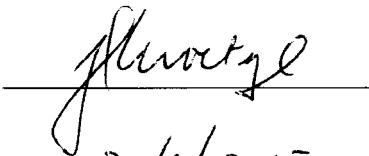
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ABSTRACT

Minimising transactional distance in a synchronous virtual classroom environment

In this research study ¹*Google+* is used as a platform for educators of English as a Foreign Language (EFL) to expose a small group of EFL students to ²*authentic* English material on ³*Youtube* thereby creating a context for online discourse and English language learning. The study explores the experiences of five EFL students of three ⁴*synchronous* virtual EFL learning sessions through qualitative data obtained from a focus group discussion, an opinionnaire and screen casts of the video recordings of these sessions. This study explores the experiences of the EFL students with the purpose of identifying possible contributory factors that affect ⁵*transactional distance* (Moore, 1993) in this synchronous learning environment, so that these factors can be minimised in similar synchronous virtual classroom environments. The study provides insight into the participants' subjective experiences of the virtual classroom, as well as a list of useful guidelines for teachers, tutors, instructors and facilitators on how to minimise transactional distance in a synchronous virtual classroom environment.

Key words: *online learning, virtual classroom, thematic analysis, Atlas.ti, synchronous, transactional distance, Google+, social media, authentic material, communicative approach*

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- 1 *Google+* is a social media platform created by Google that strives "to make connecting on the web more like connecting in real life" (New ways of sharing across all of Google, 2013).
 - 2 *Authentic material*: A criterion of communication material which presents language as it appears in everyday speech in its full complexity (Kilfoil & Van der Walt, 1997).
 - 3 *Youtube* is a video-sharing website where users can upload, view and share videos. The website displays a wide variety of user-generated video content, including movie clips, TV clips and music videos ("About Youtube", 2012).
 - 4 *Synchronous* online learning takes place in real time where both the lecturer/tutor and learners are online at the same time. Examples of these synchronous online platforms are chat rooms and web conferences (Hampel & Stickler, 2005).
 - 5 *Transactional distance* refers to the communication gaps ("psychological space") between the behaviours of instructors and those of the learners. (Moore & Kearsley, 1996. p. 200).

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RESEARCH PROBLEM AND TOPIC

1.1 Background

In this information and communication technology age where communication via technology and social media is an integral part of many people's lives, it is imperative in educational research to explore how these technologies can be applied in education. Wheeler (2009, p. 4) argues "It would be foolish to ignore the tremendous opportunities the Social Web offers to education" and educators should "continue to explore new and dynamic ways of providing excellent pedagogical opportunities, with emerging social software tools assuming greater importance".

As an English language educator my interest lies in how technology, specifically social networking, can be used in English language teaching. It is a well established notion in the literature that exposure to authentic language material is an ideal way of learning and internalising a new language, especially for English as a Foreign Language (EFL) learners (Kilfoil & Van der Walt, 1997; Marek, 2008; Shih & Yang, 2008). A modern form of such exposure is the Internet, in particular *Youtube*, which is an endless source of authentic English language scenarios that could be used in Teaching English as a Foreign Language (TEFL).

EFL learners usually have limited exposure to the target language (Kilfoil & Van der Walt, 1997). Marek (2008) refers to the difficulty EFL learners in Taiwan experience in trying to find native English speakers to communicate with. It could also be argued that because of the limited exposure to English in some rural areas in South Africa, English is almost a foreign language in these communities. This has led me to the idea of using a social network, which in this study will be referred to as "the virtual classroom" to expose learners to authentic English material. Abanomey (2013) supports this view in his study on online reading in which he argues that the Internet is a particularly useful tool for exposing foreign language learners to the authentic target language. Not being limited in terms of physical space, this language teaching could have significant consequences in TEFL in South Africa and internationally.

The social network platform used in this study is Google's own social network known as *Google+*. This is a social media platform created by Google that strives "to make connecting on the web more like connecting in real life" (New ways of sharing across all of Google, 2013). In *Google+* users assign each new member to what they call a "circle" which solves the privacy issue often experienced with other social media. *Google+* is an ideal tool to create a private study group (circle) in which *You-tube* videos, which form the platform for the learning environment, can easily be shared and watched by circle members simultaneously via a *Google+* "hangout". In this study the sample group formed part of a circle created by the instructor. The learning activities in this study therefore took place within a hangout. Communication took place via video chat similar to *Skyping* and/or via typed messages that were sent and received simultaneously by all group members, with all messages visible to everyone.

Moore's theory of Transactional Distance (Moore, 1993) is used as a theoretical framework for this study, in which the theory is applied in the context of synchronous and asynchronous online learning environments. This study examines and analyses learners' experiences of the virtual classroom sessions with the purpose of identifying any factors that could contribute to transactional distance in the synchronous virtual classroom environment, so that these factors can be minimised in similar virtual classroom environments. Moore's theory of Transactional Distance is explained in more detail in the following section.

The study also aims to identify those factors and features of the synchronous learning environment that help to minimise transactional distance which can be considered in similar virtual classroom environments. These factors and features form part of the recommendations on future synchronous learning environments. The findings and recommendations of this study may therefore be useful to EFL educators in this age of dynamic communication technology.

1.2 Theoretical framework

1.2.1 Moore's theory of Transactional Distance

This research study uses Moore's theory of Transactional Distance (Moore, 1993) as a theoretical framework. This theoretical framework and how it is integrated into this study are explained next.

6 *Skype* is a social sharing platform on which users can communicate online via text, voice and video ("About Skype", 2012).

McBrien, Jones and Cheng (2009, p. 3) point out that Moore's theory of Transactional Distance is "one of the most prominent theories discussed in distance education". According to Falloon (2011, p. 190) Moore's theory is particularly relevant to a study involving distance education because it offers "a lens through which the researcher could assess the value of using the virtual classroom in online teaching". This "lens" is particularly relevant because of the emphasis on "quality dialogue" and learner perception of "transactional distance". Jung, as mentioned in Falloon (2011, p. 190), opines that it "provides a useful conceptual framework for defining and understanding distance education in general". Falloon (2011) refers to numerous other studies confirming the use of this theory as a framework to analyse distance education.

Although traditionally developed for distance education, Moore's theory is also relevant to the exploration of transactional distance in synchronous and asynchronous online learning environments. In this study Moore's theory is used as a "lens" to explore the experiences of EFL learners in a virtual classroom, with special reference to transactional distance.

Falloon (2011, p. 189) explains that Moore's idea of transactional distance in distance learning implies the "separation between the teacher and students", which can, according to Moore and Kearsley (1996, p. 200), "lead to communication gaps, a psychological space of potential misunderstandings between the behaviours of instructors and those of the learners". Research shows that transactional distance is also experienced by learners in asynchronous learning environments (McBrien et al., 2009).

According to Moore (1993) transactional distance can be examined in terms of interaction between *learner-instructor*, *learner-learner* and *learner-content*. In a reconsideration of Moore's theory when exploring transactional distance in a web-based environment, Chen (2001) adds another dimension called *learner-interface* interaction.

These dimensions are based on the main elements of Moore's theory, namely dialogue, structure and learner autonomy (Moore, 1993). Figure 1.2, adapted from Starr-Glass (2012), illustrates the relationship of Moore's elements of dialogue, structure and learner autonomy in the context of transactional distance.

Falloon (2011, p. 189) explains how dialogue refers to more than just "two-way communication", but that it includes "all forms of interaction". As illustrated in Figure 1.2, an increase in dialogue in distance education decreases the transactional distance in distance education (Moore, 1993). McBrien et al. (2009, p. 3) point out that this is one

of the difficulties experienced in distance learning, which is common to online teaching environments. They argue that in the online learning context instructors should strive to optimise interaction (dialogue) between *learner-instructor*, *learner-learner* and *learner-content*. These elements and the evaluation of dialogue opportunities, as well as the quality of dialogue, form part of this study.

“Structure” refers to the “rigidity and flexibility of the course organization and course delivery (McBrien et al., 2009, p. 3). According to Moore (1993) the more rigid the course structure, the higher the level of transactional distance (See Figure 1.2). This aspect of Moore’s theory was carefully considered in the design of the learning activities for this study. Although the instructor started off with a structured outline of the learning activities, a serious effort was made to encourage individual responses and interaction among participants.

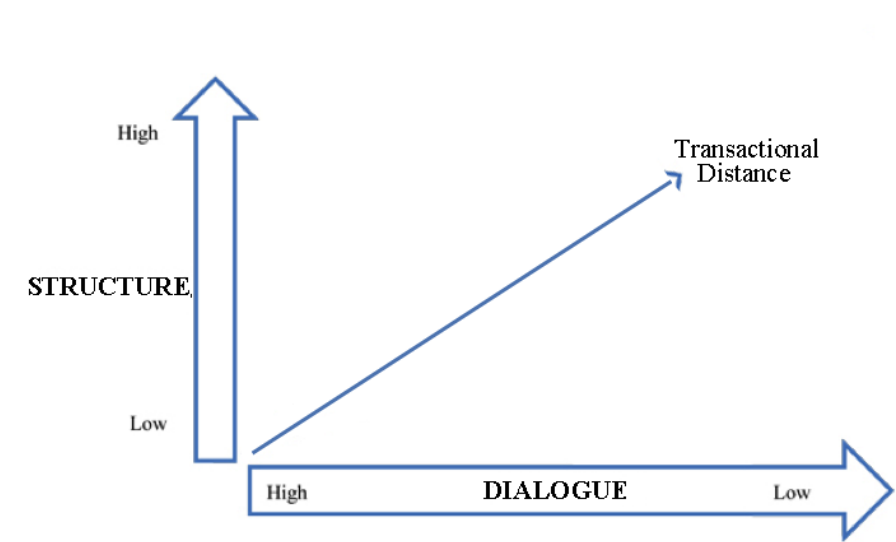


Figure 1.2: The interplay between the elements of Moore’s theory of Transactional Distance

“Learner autonomy” is particularly relevant in the virtual classroom. Beltz and Muller-Hartmann in McBrien et al. (2009, p. 3) point out that “online learning offers students the potential for more self-directed learning opportunities and flexible structures for engagement, which can increase student levels of autonomy”. According to Moore (1993) autonomy, that is a crucial characteristic of learners, reduces their experience of transactional distance. However, Moore (2013) states that a learner’s capacity for autonomy should also be taken into account.

In this study learners’ perceptions of transactional distance are examined in the context of the interaction between *learner-instructor*, *learner-learner*, *learner-content* and *learner-*

interface. These four dimensions form the basis of a focus group interview, an opinionnaire and observation of the learning activities developed for this study.

1.3 Problem statement

Traditional distance learning studies have emphasised the use of asynchronous Computer Assisted Language Learning (CALL) communication systems such as *WebCT*, *Moodle* and *Blackboard*, mainly because of technological limitations (Falloon, 2011). Learners in asynchronous learning environments have expressed the need for more interaction in more synchronous ways (McBrien et al., 2009). These learners have expressed a need for face-to-face interaction in their asynchronous online environments. This phenomenon might be a more important factor for those EFL learners who often have limited interaction with speakers of the target audience.

This need for face-to-face interaction is in line with Moore's theory of transactional distance which claims that transactional distance often occurs between the teacher and the learners in distance education (Moore, 1993). Falloon (2011, p. 189) explains that transactional distance in distance learning refers to the "separation between the teacher and students" which can, according to Moore and Kearsley (1996, p. 200) "lead to communication gaps, a psychological space of potential misunderstandings between the behaviors of instructors and those of the learners."

As synchronous teaching tools in technology are fairly new in CALL they offer a large scope for new research opportunities (McBrien et al., 2009). This study explores the assumption that synchronous online environments minimise the transactional distance that is associated with asynchronous online learning environments.

These synchronous online environments, specifically in TEFL, could form part of the solution to the dilemma of those EFL learners who have limited exposure to the target language in their communities.

Because of the rapid growth of technology and the continual increase in speed and affordability of broadband services, synchronous learning environments are offering new possibilities in Computer Assisted Language Learning (McBrien et al., 2009). This kind of research is particularly relevant since online courses are a growing phenomenon in tertiary education (Clark, 2012).

1.4 Research questions

Moore's theory of Transactional Distance (Moore, 1993) is used as a theoretical framework for this study. This theory serves as a lens through which the virtual classroom can be explored. According to Moore (1993) transactional distance can be examined in terms of interaction between *learner-instructor*, *learner-learner* and *learner-content*. In a reconsideration of Moore's theory when exploring transactional distance in a web-based environment, Chen (2001) adds another dimension namely *learner-interface* interaction. These four dimensions form the basis for the structure of the data collection tools that provide information on Moore's elements of dialogue, structure and learner autonomy (Moore, 1993). These elements have given rise to the formulation of the following research questions:

Primary research question

- How can transactional distance be minimised within a synchronous virtual classroom environment?

Secondary research questions

- What are learners' perceptions of communication in the virtual classroom? (*learner-learner*, *learner-instructor* and *learner-interface* transactional distance).
- What are learners' perceptions of knowledge development (learning English) in the virtual classroom? (*learner-content* and *learner-interface* transactional distance).

Answers to these research questions make it possible to identify contributors to transactional distance in a virtual classroom environment, and also to provide insight into the subjective experience of learners in terms of their interaction and learning that takes place within the virtual classroom context. This study will also offer recommendations for use in similar virtual classroom environments, especially when utilised for TEFL.

1.5 Purpose of the study

In this study learners' experiences of the virtual classroom sessions are explored and analysed with the purpose of identifying any factors or elements that could contribute to transactional distance in the synchronous virtual classroom environment used in this study.

In this study it is argued that Google+ serves as an effective TEFL platform for authentic

discourse in the target language, while making it possible to expose learners to authentic target language contexts on YouTube. Yet, the main purpose of this study is not to prove the efficacy of Google+ or YouTube in language teaching, but rather to explore learners' experiences of the synchronous teaching environment especially in terms of *learner-instructor*, *learner-learner*, *learner-content* and *learner-interface* interactions that have been abstracted from Moore's theory of Transactional Distance (Chen, 2001; Moore, 1993).

Not only does this study identify negative factors that could increase transactional distance, but also positive factors that could contribute to minimising transactional distance. The contributing factors of transactional distance include communication barriers experienced during the virtual classroom learning sessions.

Finally the study presents recommendations to minimise transactional distance in future CALL synchronous learning environments.

1.6 Significance of the study

With the rapid growth in technology many educators of all disciplines are constantly exploring ways in which technology can enhance learning. Falloon (2011) states that traditional CALL distance learning studies focused on asynchronous communication systems. McBrien et al. (2009) point out that as synchronous teaching tools in technology are fairly new in CALL they offer a large scope for new research opportunities. Wheeler (2009, p. 4) refer to the plethora of research opportunities presented by the Social Web in education, therefore educators should continue to explore new, dynamic ways of providing excellent pedagogical opportunities, "with emerging social software tools assuming greater importance".

According to Falloon (2011, p. 187) previous synchronous online courses were "largely limited to audio-only or text-based chat, and did not utilise relatively complex technologies, such as the virtual classroom". Some studies were conducted using specialised commercially developed platforms such as *Adobe Connect Pro*, *Elluminate Live* and *Visu* (Falloon, 2012; Guichon, 2010; McBrien et al. 2009) that offer synchronous functionality such as real-time audio, visual and text communication, as well as desktop sharing. *Google+*, which is used as the virtual classroom platform for this study, is one of the latest and most recent social media applications launched by Google in 2011 that offer most of the synchronous functionality of those commercial applications, while being available as freeware. Because *Google+* is a relatively new social network platform, limited research has been done on it

as a tool for CALL. *Google+* may be particularly useful for EFL learners who have limited contact with their target language. In the literature review of this study it is substantiated why the Communicative Approach is important in EFL learning. The Communicative Approach emphasises communication of learners in the target language. According to Abanomey (2016) the Internet is a great tool for foreign language learners because they can access authentic target language content. In this study the Internet and, in particular Youtube, have been used to expose learners to authentic English language during the *Google+* virtual classroom sessions.

In this information communication and technology age many learners use social media as part of their everyday communication armoury. Bax (2003, p. 23) refers to the concept of normalisation where “technology becomes invisible, embedded in everyday practice and hence is ‘normalised’”. Learning as part of this technological environment will be a natural evolution that should not be ignored by researchers and educators.

Based on these notions, it is evident that research in this field is not only imperative, but it also has the potential to revolutionise how, where and whom we teach in future. As Cunningham, Fagersten and Holmsten (2010, p. 174) put it: “New technologies will inspire new technological approaches” in education.

LITERATURE REVIEW

2.1 Introduction

Since early in my career as an English language educator I have realised the value of exposing learners to authentic material in the target language as a way of internalising the language. This approach is underscored by the Communicative Approach in language teaching. The underlying principles of the Communicative Approach have for many decades formed the basis of teaching EFL. This literature review begins with a description of the Communicative Approach and its relevance to this study. In this age where traditional face-to-face classes are more frequently being replaced by online learning environments, new, constantly evolving technology is “challenging and changing the very nature of teaching” (Abanomey, 2013, p. 1). An ideal source for exposing learners to the authentic target language is the Internet (Abanomey, 2013). *Youtube*, in particular, is an endless source of authentic English language scenarios that can be used in Teaching English as a Foreign Language (TEFL). Online learning and in particular social media in education fall within the realm of Computer Assisted Language Learning (CALL). Therefore an overview of CALL is presented in this literature review.

Abanomey (2013, p. 1) notes: “As the online teaching environment expands and matures, new social and instructional interactions are replacing the traditional occurrences in face-to-face classrooms”. Synchronous and asynchronous language teaching environments, which naturally form part of the modern CALL discourse, dominate the literature in on online teaching. Since the experience of EFL students of the Google+ virtual classroom environment is explored in this study, the focus of this literature review is on the Communicative Approach in language teaching, CALL in general, as well as relevant research on synchronous and asynchronous language teaching environments.

2.2 The Communicative Approach to English language teaching

The Communicative Approach is one of the most popular and recent approaches to language teaching (Kilfoil & Van der Walt, 1997). According to Savignon (2007), Communicative Language Teaching (CLT) is founded on a combination of disciplines that include for example linguistics, psychology, philosophy, sociology, and educational research. Furthermore Savignon (2007, p. 209) asserts that the essence of CLT is the engagement of learners in the target language “in order to allow them to develop their communicative competence”. She goes on to explain that CLT results in learning through participation in communicative events. Similarly Kilfoil and Van der Walt (1997, p. 13) concur that the main aim of the Communicative Approach is “to teach learners to communicate in the target language”, therefore through the exposure to the authentic target language the rules of the language are internalised, which implies that the learners apply these language rules without thinking about them. Kilfoil and Van der Walt (1997, p. 72) maintain that when “conveying meaning in an authentic communication situation, she [the learner] will subconsciously use the rules she has internalized”. To achieve this the teacher should therefore try to introduce as much authentic material into language courses as possible. This view motivated the use of Youtube videos as a source of authentic English language material during the virtual classroom sessions in this study.

According to Abanomey (2013) the Internet has become an ideal tool through which foreign language learners can access authentic target language content. Hampel and Stickler (2005) are of the opinion that the online environment is ideally suited to communicative tasks, particularly because of the availability of authentic teaching material. Canal and Swain as cited in Hampel and Stickler (2005, p. 312) contend that the online environment provides an “opportunity to take part in meaningful communicative interaction with highly competent speakers of the language”.

According to Hampel and Stickler (2005, p. 312), communicative competence is best taught online when it includes “authentic and meaningful interaction” together with “the necessary pedagogical support”. They argue that the ideal form of online language learning offers the opportunity “to participate in live synchronous written and spoken interaction with peers and tutors who provide scaffolding for learning to take place”. In this study *Google+* provided this live synchronous platform for authentic communication among learners themselves and with the instructor. *Google+* in conjunction with Youtube was used to expose learners to authentic

English language scenarios.

Since this application of the Communicative Approach takes place in an online environment, it needs to be placed in the context of the broader theory in terms of Computer Assisted Language Learning (CALL), which is well documented in the literature. In the following section the development of CALL since the 1970s is discussed and in particular the relevance of the Communicative Approach in CALL.

2.3 Computer Assisted Language Learning

According to Warschauer (1996), who is one of the most highly regarded authors in this field, CALL can be classified into three phases, namely behaviouristic CALL, communicative CALL and integrative CALL. The first phase (behaviouristic CALL) refers to the eras of the 1970s to the 1980s when computers were used mainly as a tool for drill and practice (Warschauer, 1996). Warschauer (1996) explains that drill and practice courseware can be beneficial at all the stages of CALL because computers do not get bored with presenting the same material repeatedly and they are able to give immediate, non-judgmental feedback on drill exercises.

The second phase (communicative CALL) that Warschauer (1996) identifies ranges more or less from the 1980s to the 1990s. Educators started realising that “drill and practice programs of the previous decade did not allow enough authentic communication to be of much value” (Warschauer, 1996, p. 2). Authentic communication and the internalisation of language therefore became more prominent in the sense that programs set out to “empower the learner to use or understand language” (Warschauer, 1996, p. 3).

The third phase (integrative CALL) covers the period from the 1990s to the present time. Warschauer (1996) maintains that two significant technological developments took place during this stage, namely the integration of hypermedia and the rise of the Internet. Hypermedia in CALL provides numerous advantages for language learning, such as the creation of a more authentic learning environment where reading, writing, listening and speaking can be integrated into the learning environment (Warschauer, 1996). In explaining this stage Warschauer (1996) for the first time refers to the possibility of asynchronous and synchronous learning environments while mentioning that the term *Computer Mediated Communication* (CMC) is associated with this stage.

Bax (2003) commends Warschauer on the framework he has created using the phases of CALL,

but points out a number of significant weaknesses, especially regarding the last two phases. He asserts that language teaching still generally functions within a communicative framework, while Warschauer's classification implies that Communicative CALL is no longer used. There also seems to be uncertainty surrounding the meaning of the term "communicative". According to Bax (2003) limited pedagogically useful communication takes place during Warschauer's communicative phase. He also criticises the assumption that the phase of Integrative CALL places emphasis on authentic learning environments that form part of the Integrative stage and not the Communicative CALL phase. Bax (2003) therefore argues that we are still mainly functioning from the Communicative CALL phase, which Bax renames Open CALL. In the past it was not possible to use computers for "realistic" communication, whereas nowadays "it is indeed possible to use computers for genuine communication" (Bax, 2003, p. 23). Therefore in this Open Call phase technology is starting to play a more "genuinely 'communicative'" role (Bax, 2003, p. 23).

Finally, Bax (2003) maintains that truly integrated CALL is possible only when the technology used in CALL is normalised, in other words, when the technology becomes "invisible". According to Bax (2003), this normalisation is what should be the aim of CALL. It should be kept in mind that Bax wrote his article almost ten years ago, and technology has come a long way since then. We currently live in a society where technology, especially social networking, forms an integrate part of many people's everyday lives. Yet, this assumption and the degree of normalisation of technology are relative to the technological advancement in society, as well as to access to these technologies. Therefore communicating via a *Google+* "hangout" might have reached a level of normalisation in some societies, but not in others. It can be argued that for many people communicating via Facebook, for example, has become normalised. The ideal is that this normalisation can also be reached in the technological platforms used in CALL. In this study there were signs of normalisation in terms of the written chat room interaction, but not in terms of oral face-to-face interaction.

What stands out in the writing of both authors is that authentic discourse and exposure to authentic social contexts should form an integral part of CALL. The question that remains is: How will technology make this possible? From this study it is clear that technology has come a long way in the past ten years and *Google+* now serves as a viable CALL platform for authentic discourse. In addition it is possible to expose learners to authentic language contexts on Youtube, which can be particularly useful to those learners who have limited exposure to the target language.

There is an increasing interest in computer-mediated communication in English

language teaching because of the new possibilities constantly being offered in promoting communication and interaction among learners (AbuSeileek, 2012; Beauvois, 1997; Lee, 2011). Computer-mediated communication can be synchronous, asynchronous or a combination of the two (AbuSeileek & Qatawneh, 2013). Online and distance learning have often been studied in terms of synchronous and/or asynchronous learning environments (Cunningham et al., 2010; McBrien et al., 2009; Murphy, Rodriguez-Manzanares, & Barbour, 2011). An overview of these two modes of online communication is presented next.

2.4 Synchronous and asynchronous online communication

Online courses represent a growing phenomenon in tertiary education (Clark, 2012; Falloon, 2011). A study by Allen and Seaman as cited in Clark (2012) reveals in a 2011 survey that for 65% of 2 500 colleges and universities in America online education already formed a critical component of their current and long-term strategic plans of instruction. In a study on communication and collaboration in online courses, McNeil, Robin and Miller (2000, p. 699) refer to the changing environment of tertiary education at the turn of the century. With the ever-changing technological advances, their words are just as relevant today:

“New types of interactions are emerging between faculty and students, between students and other students and between students and the educational resources they are exploring. As the online teaching and learning environment expands and matures, new social and instructional interactions are replacing the traditional occurrences in face-to-face classrooms.”

This growing trend in tertiary education explains the prevalence of discourse regarding synchronous and asynchronous online teaching environments in research. In this literature review the focus is on synchronous and asynchronous communication environments specifically in the context of EFL teaching and the implications for EFL learners, where communication and interaction amongst learners and educators are often dependant on the technology.

AbuSeileek and Qatawneh (2013) list the differences and similarities between synchronous and asynchronous e-learning environments. Asynchronous e-learning environments make it possible to share information across a network of people regardless of the constraints of time and place. AbuSeileek and Qatawneh (2013) refer to “*anytime and anywhere*” interaction.

On the other hand, for synchronous interaction (as used in this study) a specific time has to be agreed on by participants. Both synchronous and asynchronous online platforms such as e-mail and web-based conferencing have afforded educators and learners “*new flexibility*” which creates a platform on which learning can take place “*wherever and whenever it is convenient*” (McNeil et al., 2000, p. 699). Piovesan, Passerino and Medina (2012, p. 197) refer to ubiquitous learning as learning “which enables the access to the educational resources with total mobility and adaptation of the system to the students’ computational context.” An array of technologies has made it possible for the learning environment to become more ubiquitous. Chen and Li (2010, p. 342) mention the “pervasiveness of handheld mobile devices” such as tablets and smart phones, which have transformed learning modes from electronic learning to more mobile learning, thereby overcoming the limitations of time and space. Piovesan et al., (2012) also mention the recent development of Cloud Computing which makes possible a more seamless, ubiquitous access to resources and virtual learning environments using different devices. Cloud Computing enables learners to access programs and learning platforms remotely while offering a large storage capacity without having to acquire more expensive technological equipment (Piovesan et al., 2012).

It can be argued that synchronous virtual environments are limited in terms of time, since a specific meeting time needs to be arranged by participants for face-to-face virtual interaction. However, virtual classroom environments offer more flexibility than traditional face-to-face learning environments in terms of place (where the virtual platforms are accessed). This is particularly valuable for EFL learners who often have limited access to the target language. Theoretically, place should not be a constraint for learners, yet in this study it emerged that learners were dependent on the Wifi access of their school to participate in the sessions. Accessibility of technology and Internet access therefore still remain barriers in the theoretical ubiquitous possibilities offered in virtual teaching and learning environments.

Further benefits of synchronous versus asynchronous learning and teaching environments are discussed below.

Asynchronous e-learning environments are usually offered in combination with self-study, which implies a measure of autonomy, with the support of an e-learning support network (AbuSeileek & Qatawneh, 2013). In the study by AbuSeileek and Qatawneh (2013) a group using synchronous Computer Mediated Communication (CMC) was compared with a group using asynchronous CMC, for six discussion sessions.

The findings showed that learners from the asynchronous CMC “produced significantly more discourse functions related to question types and strategies” than learners from the synchronous group (AbuSeileek & Qatawneh, 2013, p. 181). Learners from the asynchronous group also tended to ask questions that needed more detailed answers with more examples and clarification. The synchronous CMC learners’ question types and strategies required short, clear and unambiguous answers (AbuSeileek & Qatawneh, 2013). AbuSeileek and Qatawneh (2013) attribute this difference in interaction to the fact that learners have more time to think, plan and do research before responding to questions, while in synchronous CMC environments communication is in real time where responses are immediate. This view is supported by the study of Sotillo (2000) in which synchronous and asynchronous writing environments were compared. She found that in the synchronous environment learners’ discourse functions reflected those found in the synchronous writing, and that “the delayed nature of asynchronous discussions” resulted in more “syntactically complex language” (Sotillo, 2000, p. 82).

Although the difference in the kind of communication in these modes is clear, the mentioned authors do not draw any conclusions regarding which mode is more effective or better than the other. Perhaps the purpose and particular learning outcomes of the CMC would determine which mode would be more effective or perhaps whether a combination of the two is ideal. If learners need time to reflect and carry out research as part of the writing process, an asynchronous environment will be more useful, while a synchronous approach will be more useful if the purpose is authentic communication in which the target language can be internalised.

Hanna and de Nooy (2003) point out that synchronous chat room interaction can assist in the learning of the culture of speakers of the target language. Warschauer (1996) reveals how chat room interaction can help with vocabulary building. Sotillo (2000) argues that synchronous interaction give students the opportunity to create meaning through collaboration. According to Beauvois (1998) the synchronous online communication process often bridges the gap between oral and written communication.

The benefits of both synchronous and asynchronous CMC systems and the combination of the two are evident in the literature. But Falloon (2011) argues that traditional CALL distance learning studies emphasised the use of asynchronous communication systems such as WebCT, Moodle and Blackboard was due to technological limitations. But asynchronous learning environments have also been criticised by many educators. McBrien et al. (2009) indicate that many learners and researchers comment on the lack of interaction often experienced

in distance learning. West and Jones as quoted by McBrien et al. (2009, p. 2) show in their research how “students have asked for more opportunities to interact with each other in synchronous ways”. A significant shift has taken place in research in computer assisted education to more synchronous teaching environments, and particularly attractive are the advantages and potential of these environments.

2.5 Contribution to the literature

The literature study shows a trend towards more online learning in teaching environments, and the emergence of more synchronous virtual environments in CALL mainly as a result of the technological possibilities. The possibilities offered by synchronous environments challenges, as Abanomey (2013, p. 1) puts it, “the very nature of teaching”. In EFL teaching and learning environments, underscored by the Communicative Approach where engagement and interaction in the target language are essential, synchronous virtual classroom environments in particular are presenting new possibilities. For the purposes of this study Google+ was identified on the assumption of being an ideal and free application that is conducive to authentic language teaching and learning.

The literature is also directly linked to the research problem presented in this study. The literature shows the emphasis placed on asynchronous CALL in the past, yet now there seems to be a shift towards more synchronous teaching and learning platforms. Learners in these asynchronous learning environments have expressed the need for more face-to-face synchronous interaction in their online environments. It could be argued that this lack of face-to-face interaction reflects Moore’s theory of transactional distance which forms the basis of this study. This study explores the assumption that synchronous online environments (Google+ in this study) could minimise the transactional distance that is associated with asynchronous online learning environments.

The study of the literature also reveals minimal formal research on Google+ as a synchronous virtual classroom platform. This study’s main contributions to the literature are first the practical guidelines that were generated through data analyses on how to minimise transactional distance using specifically Google+ as a synchronous EFL teaching and learning platform, and secondly on how the Google+ platform is conducive to authentic communication in the target language as well as exposure of EFL learners to authentic English scenarios via Youtube and additional Internet sources.

RESEARCH METHODOLOGY

3.1 Introduction

Since the purpose of the study is to explore learners' subjective experiences of the virtual classroom, this study adopted a qualitative interpretive case study methodology, utilising three data-collecting strategies, namely an opinionnaire, a focus group interview and observation of the virtual classroom screen casts. A thematic analysis of the coded screen casts and a thematic analysis of the researcher's notes made during the focus group interview, provide themes which can be separated into factors contributing to, and factors minimising transactional distance. These factors are then employed to answer the primary research question namely how to minimise transactional distance in the virtual classroom, as well as the secondary research questions regarding the learners' perceptions of communication and knowledge development in the virtual classroom environment. The descriptive statistics obtained from the opinionnaire, as well as a summary of the additional notes sections of the opinionnaire provide additional insight into the learners' experiences. The data collection and analysis strategies of this study are summarised in Figure 3.1.

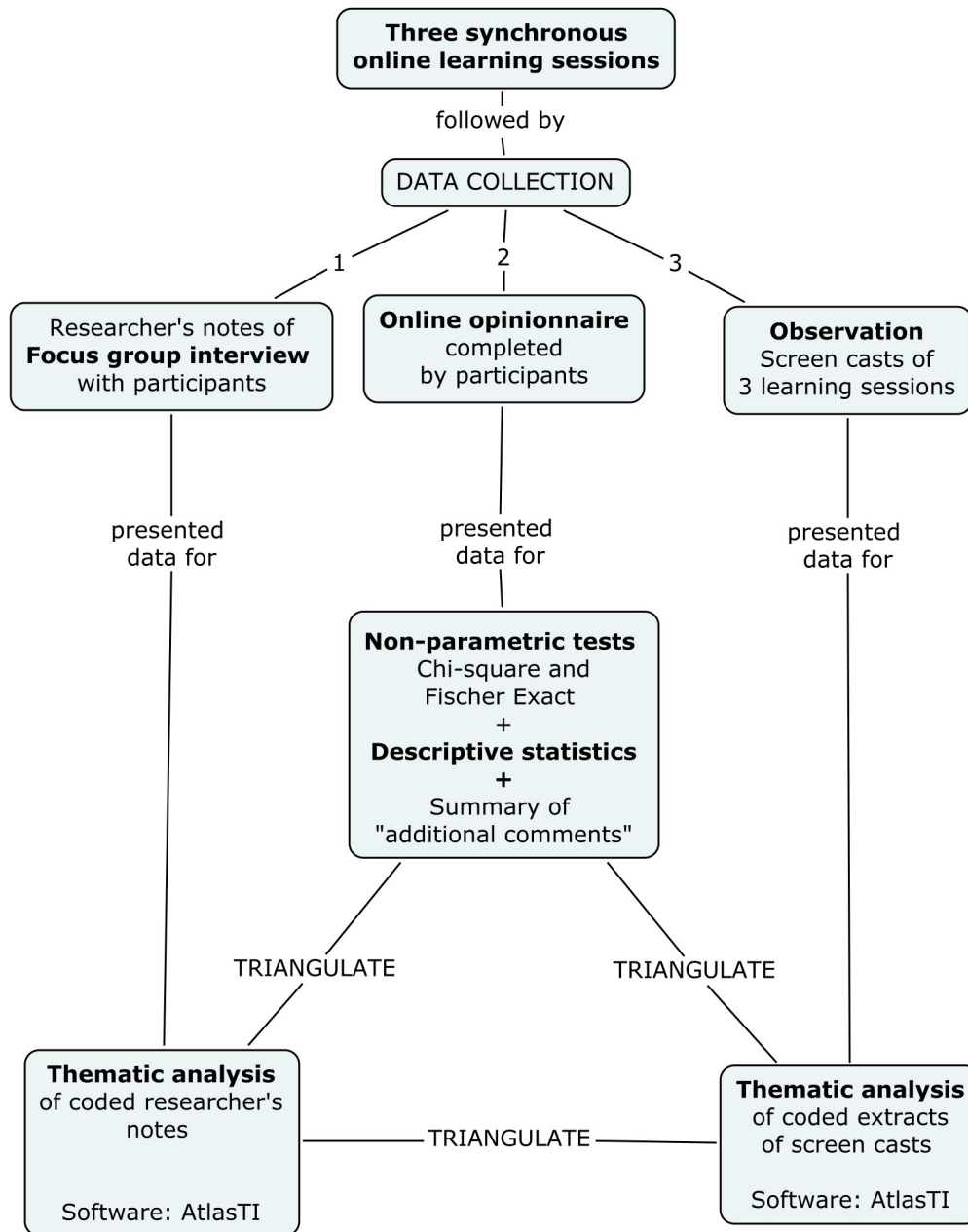


Figure 3.1: Research methodology overview

3.2 Research design

According to Baxter and Jack (2008, p. 544) a qualitative case study “provides tools for researchers to study complex phenomena within their contexts”. Erickson (1986, p. 238) explains that an interpretive case study is particularly useful in investigations into classroom environments “in that it allows for the immersion of oneself in the dynamics of a single social entity and enables the uncovering of events or processes that one might miss with more superficial methods”. According to Lather (1992) this approach enables participants to

describe their views of reality through their stories, which in turn makes it possible for the researcher to gain a better understanding of them.

Therefore an interpretive case study methodology makes it possible to explore the subjective experiences of the EFL learners of the virtual classroom. The approach of a case study is based on the constructivist paradigm, which claims that truth is relative and dependent on one's perspective (Baxter & Jack, 2008).

Owing to their subjective nature, case studies generally lack generalisability (Burns, 1997). Generalisation is not the objective of this study, because it aims to explore the experiences of learners in depth. The applicability and transferability of the findings of this research could be assessed and used by other researchers doing similar studies. Generalisability is discussed in more detail in section 3.5 of this dissertation.

The case or unit of analysis in this study is the experience of the EFL learners of the virtual classroom. According to Baxter and Jack (2008, p. 544) it is possible to “look at sub-units that are situated within a larger case” which is powerful in analysing the data within, between and across these sub-units. Yin (2003) points out that a common pitfall for novice researchers is that they analyse individual sub-units, but then fail to return to the original single case. The case study of this dissertation can be described as a case study with embedded units. The data obtained from the individual units (individual EFL learners) through the opinionnaire and focus group interview provide insight into how to minimise transactional distance in the virtual classroom, as well as the learners' perceptions of communication and knowledge development in the virtual classroom environment.

The third data collection method namely observation of the screen casts has made it possible to code what was observed and to do a thematic data analysis of the data. Braun and Clarke (2006, p. 5) argue that a thematic analysis “*provides a flexible and useful research tool, which can potentially provide a rich and detailed, yet complex account of data*” which can be valuable in reporting “*experiences, meanings and the reality of participants.*” The stages of the thematic analysis followed in this study are discussed in Chapter 4.

3.3 Participants and sampling

Since generalisability is not the main objective of this study a purposive non-probability sample was used to represent a population of EFL learners. A non-probability sample is used

when targeting a specific group and not the wider population (Cohen, Manion & Morrison, 2007). They go on to say that non-probability samples are often used in case study research. In this study the focus is specifically on EFL learners and their experiences of the virtual classroom. Three male and two female learners (adults) from a private EFL tertiary school in Pretoria voluntarily participated in this study. The selection process was done as follows:

In collaboration with the school manager and a teacher at the school, a meeting was scheduled during one of the learners' standard classes so that the researcher could briefly explain the purpose of the study and subsequently ask for volunteers. The researcher intentionally encouraged participants from a variety of nationalities to become members of the sample group to encourage diverse responses, although this was not essential to the study. This is a form of purposive sampling. Purposive sampling, sometimes referred to as "judgement sampling", occurs when researchers "handpick the cases to be included in the sample" (Guest, Namey & Mitchell, 2013). As most of the learners at the EFL language school were studying voluntarily with the main purpose of improving their English, seven learners volunteered without delay. Since a *Google+* virtual classroom can host only nine people at a time during a "hangout", it was decided that the sample group would comprise of a maximum of seven learners, which left room for the instructor as well as the researcher. Two of the seven original volunteers dropped out because they had to return to their home country at short notice, resulting in a final sample group of five participants and the instructor.

An orientation meeting was convened with the initial seven participants during which a letter of consent was discussed and signed by all of them. The letter of consent included information regarding background to the research, voluntary participation, guarantee of anonymity as well as what was expected from them. A copy of the letter of consent is included as Appendix 1.

3.4 Ethical considerations

Smit (2011) cites a number of ethical considerations that should be addressed before engaging in research. Although this study is not sensitive in nature and was conducted with adult learners in an environment where learners voluntarily had enrolled in an EFL programme, ethical considerations still needed to be addressed.

The researcher, together with the manager of the school addressed a group of learners at the EFL school based in Pretoria. During this initial meeting the researcher presented a PowerPoint slide show in which he explained that the research would form part of a Master's

degree to be conferred by the University of Pretoria, and provided a short profile of himself. He then continued to explain the purpose of the study with emphasis on the following ethical considerations:

- Voluntary consent – The researcher explained that participation was voluntary. If they opted not to participate, it would not affect the marks of learners who had enrolled for the course. Participants reserved the right to withdraw from the study at any time without penalty in any form. The participants then signed a letter of consent (See Appendix 1).
- Time and financial implications – The researcher presented to participants an overview of what was expected of them as well as an estimate of the time implications. A prerequisite was that all participants had to have computer and Internet access (including web-cam and microphone functionality) and had to be willing to participate on broadband at their own costs. Apart from one learner, all participants ended up using the free Wifi access at school. One learners used his personal mobile data.
- Anonymity – It was explained to the learners that if it was deemed necessary, pseudonyms would be used for all participants in the final publication of the thesis.
- Member checking – The final analysis of the data would be made available to them for comment as part of the data analysis. If there were any learners who were uncomfortable with any of the data that had been included, they reserved the right to request exclusion of that data from the study.

Subsequently, the researcher selected a purposive non-probability sample from the initial volunteers. The researcher met with the group to negotiate a timeline and suitable dates for the online activity sessions.

3.5 Trustworthiness, validity and reliability

Owing to their subjective nature, case studies generally lack generalisability (Burns, 1997). Generalisation is not the objective of this study; it is geared to explore the experiences of a group of learners in depth. The applicability and transferability of the findings of this research could perhaps be assessed and used by other researchers in similar studies. However, multiple strategies were utilised in this study to enhance the level of validity of the research.

In their article regarding validity in qualitative research, Leech and Onwuegbuzie (2007, p. 239) argue that although in general, qualitative research cannot be assessed for validity in terms of a dichotomous outcome of either valid or invalid, the “level or degree” of validity can be taken in consideration. In their article they cite 24 strategies that are able to enhance the validity of a study. The strategies that have been incorporated into this study to enhance validity are explained in the paragraphs that follow.

First, multiple methods of data gathering strategies were utilised in this study to “corroborate evidence” (Leech & Onwuegbuzie, 2007, p. 239). This strategy is called “triangulation”. Leech and Onwuegbuzie (2007, p. 239) refer to four types of triangulation of which “data triangulation” and “investigator triangulation” form part of this study. This study utilised data triangulation when incorporating three data-collection strategies, namely a focus group interview, an opinionnaire and observation. Investigator triangulation formed part of the data analysis of the independent field notes of two observers obtained during observation of the learning activities. The researcher and a data analyst independently analysed the notes of the two independent observers to enhance the validity of the findings.

Secondly, Leech and Onwuegbuzie (2007) put forward the strategy of weighting the evidence which implies that the researcher should indicate which strategies would carry more weight. In this study it was found that qualitative data analyses of the opinionnaire data were limited because of the small sample size, therefore preference was given to the additional comments on the opinionnaire and the focus group data to provide insight into the learners’ experiences.

A third strategy which was incorporated into this study is checking for researcher bias. According to Leech and Onwuegbuzie (2007, p. 241) “researcher bias is an extremely serious threat to validity”. Researcher bias refers to the influence of the researcher on the participants and vice versa. To avoid researcher bias in this research study, its purpose, namely the exploration of the subjective experiences of learners of the virtual classroom, was explained fully to participants before they agreed to participate. Furthermore, using an independent instructor to facilitate the learning activities further reduced researcher bias allowing the researcher to remain objective during the study.

Interaction between the researcher and the independent instructor throughout the research process served the purpose of “peer debriefing” which is another strategy explained by Leech and Onwuegbuzie (2007). They explain how peer debriefing provides an external evaluation of the research process because both the researcher and the instructor critically evaluate the

research process and its development.

Another important strategy described by Leech and Onwuegbuzie (2007, p. 245) is “confirmatory thematic analyses” which “help to provide legitimation of previous qualitative findings, interpretations, and conclusions”. In this study the main themes of the data collecting tools are based on the theoretical framework of Moore’s Transactional Distance theory (Moore, 1993), which enhances to the replicability of the study and the validity of the data gathering tools that were utilised in this study.

The final strategy of validity explained by Leech and Onwuegbuzie (2007) that was incorporated in this study is “member checking/informal feedback”. After the data analysis, especially of the focus group interview and informal observation, an opportunity was presented to the participants to give feedback on the findings. According to Leech and Onwuegbuzie (2007, p. 241) “member checking is the most effective way of eliminating the possibility of misinterpretation and misinterpretation of the ‘voice’”.

3.6 Data collection

In case study research employing a variety of data-collection strategies is generally encouraged (Erickson, 1986). This study utilised three data-collection strategies, namely a focus group interview, an online opinionnaire and screen casts of three “hangouts” (online learning activities) for the specific purpose of conducting a thematic analysis during the data analysis phase of the research. Each strategy and how it was applied in this study, is discussed below.

3.6.1 Online opinionnaire

Categorical data were collected using an online opinionnaire (See Appendix 3). The opinionnaire includes statements regarding the participants’ individual virtual classroom experiences classified according to the four dimensions of transactional distance, namely *learner-instructor*, *learner-learner*, *learner-content* and *learner-interface* interaction. A combination of a review of the literature and existing instruments used to measure transactional distance were used in the development of the opinionnaire. Instruments developed by Bischoff, Bisconer, Kooker and Woods (1996), Chen (2001), Huang (2002) and Starr-Glass (2012), in particular, formed the basis of the opinionnaire. These instruments were analysed with the purpose of identifying items relevant to transactional distance. These items

were then adapted for this study which focuses on learners' experiences of the synchronous virtual classroom environment. Although the opinionnaire was not tested for validity and reliability, some margin of content validity was applied based on the literature review. Furthermore, the inclusion of the additional comments section under each of the four sections of the opinionnaire minimised the possibility of elements not being covered in the items. Perhaps rigorous testing and development of the opinionnaire could be a subject of future studies.

The opinionnaire is divided into four sections according to the four elements of transactional distance. Each section consists of 12 statements making a total of 48 statements. The participants rate their experiences by indicating their responses to the statements as either positive, neutral or negative on a Likert scale. At the end of each section a request for additional comments is included to make provision for any content that has not covered in the opinionnaire. These additional comments are triangulated with the focus group interview findings as well as the findings obtained from the screen cast analysis in Chapter 4.

The opinionnaire was made available online on (<http://kwiksurveys.com/app/rendersurvey.asp?sid=6pg81lv0sbrcl4274368&refer=>) for completion by participants. After the completion of the three learning activities an email (see Appendix 1) was sent to participants to request their completion of the online opinionnaire.

3.6.2 Screen casts of hangouts

Three EFL virtual classroom learning activity hangouts were recorded using Apple's Quicktime Player screen recording application for the purpose of carrying out a thematic analysis of the learner-learner, learner-instructor, learner-content and learner-interface interaction. The thematic analysis of the screen casts is presented in Chapter 4 of this study.

Although the researcher was present during the virtual classroom sessions, he did not actively participate. During this participatory observation ("observer-as-participant") the researcher is part of the group being studied, but interaction is limited (Hessy-Biber & Leavy, 2011, p. 205). This observer-as-participant observation that is particularly useful for small group interaction makes it possible for the researcher to "get under the skin" of the learners' experience (Cohen et al. 2007, p. 404). The researcher was therefore able to experience what the learners were experiencing without a researcher's lens, but rather as a learner himself.

Furthermore, this approach made it possible for the researcher to have an authentic

experience of the virtual classroom environment, while at the same time having access to the three screen casts, which could then be analysed in detail at a later stage. The screen casts were recorded with the specific purpose of conducting a thematic data analysis of the recordings. The thematic analytical process as set out by Braun and Clarke (2006) was used as the basis for analysing the screen cast data. Having personally experienced the virtual classroom environment was particularly useful during the initial coding stage of the thematic data analysis. The experience gave context and insight into the events and the learners' experiences, which would have been more difficult for an objective researcher observing the learning activities for the first time.

The stages of the thematic analysis process as set out by Braun and Clarke (2006) are presented in detail in Chapter 4, as well as an analysis of the findings.

3.6.3 Focus group interview

Focus group interviews have become a popular data collection strategy in qualitative research (Ary, Jacobs & Razavieh, 2002). According to Morgan cited in Mertens (1998) focus group interviews are group discussions that rely on interaction within a group to supply valuable data. The emphasis on interaction between participants "is designed to elicit more of the participants' point of view" (Mertens, 1998, p. 174). Mertens (1998) argues that focus group interviews are particularly useful to show the participants' perspective of a problem. According to Ary et al. (2002, p. 435) focus group interviews give the researcher insight into "how the participants are thinking and why they are thinking as they do". Since the purpose of this study is to understand the subjective experiences of the participants, a focus group interview is an appropriate data collection strategy.

According to Mertens (1998) focus group interviews usually include only about five or six open-ended questions. These should elicit an authentic and honest discussion on the subjective experiences of the participants. The focus group interviews in this study included the following questions based on the four dimensions of transactional distance:

- How did you experience the interaction between you and the instructor during the virtual classroom activities?
- How did you experience the interaction among learners during the virtual classroom activities?
- How did you experience the learning material and content during the virtual

classroom activities?

- How did you experience *Google+* as a platform for the virtual classroom activities?

A pilot focus group interview was held with the learners after the initial orientation and practice session to familiarise the learners and the instructor with the *Google+* platform. The focus group interview was facilitated by the researcher, with the instructor acting as a moderator. Focus group interviews are usually facilitated by two researchers, with one acting as the moderator and the other as the note-taker. The moderator's main role is to present the questions to participants, to facilitate discussion and to encourage input from all participants (Mack, Woodsong, Macqeen, Guest & Namey, 2005). During this focus group interview the researcher acted as the facilitator (moderator) while the instructor acted as the note-taker.

Focus group interviews are usually documented using audio recordings and researchers' notes (Mack et al. 2005; Guest et al. 2013). This pilot focus group interview was audio recorded for the purpose of doing a thematic analysis of the data. Since all the participating learners spoke English as a foreign language, it became obvious that some learners had difficulty expressing themselves in English. This resulted in two more confident speakers dominating the discussion. After deliberation with the instructor, it was decided to rather make notes of learners' responses during the official focus group interview, and to elicit individual responses from all participants during the upcoming official focus group interview. The rationale for the note-taking approach was that it would minimise the possibility of learners feeling intimidated by the recording device that could inhibit the spontaneity of participants.

A focus group interview is customarily composed of approximately 6-12 participants (Guest et al. 2013). Since there were only five participants in the focus group interview and only four questions posed, it was possible to make comprehensive notes of their experiences. The instructor acting as the note-taker, made detailed notes of the discussion. Guest et al. (2013, p. 190) point out that the note-taker's role is not to capture the whole discussion verbatim, but rather to "capture key quotes and the general flow of the discussion." Guest et al. (2013) state that although the note-taker is responsible for detailed note-taking, the moderator (facilitator) could also take brief notes during the discussion which can then be expanded and combined with those of the note-taker during a debriefing session after the focus group interview. The note-taker and facilitator held a debriefing session after the focus group interview during which the notes were consolidated. This also created an opportunity for the facilitator and note-taker to corroborate key points. This process also strengthened the reliability of the data.

The consolidated list of the focus group notes can be viewed in Appendix 4. A thematic data analysis set out in Chapter 4 was conducted on these notes.

DATA ANALYSIS AND INTERPRETATION OF FINDINGS

4.1 Introduction

The purpose of this chapter is to present a descriptive overview of the data obtained with the opinionnaire. This is followed by a step-by-step description of the thematic data analysis process used for both the screen casts and the researchers' notes on the focus group interview. Furthermore, this chapter shows the links and similarities between the questionnaire findings and the data obtained during the focus group and screen cast thematic analyses. Finally, the findings of all three data collection strategies are triangulated with a specific purpose of answering the research questions in this study.

4.2 Description of data (Findings)

4.2.1 Analysis of the opinionnaire

4.2.1.1 Introduction

Both quantitative and qualitative methods were used to analyse the data from the opinionnaire. First, quantitative data analyses were used to analyse the Likert scale data from the opinionnaire. A one-way Chi-square test and a Fischer Exact non-parametric test were performed on the Likert scale data, and the distribution of responses on the Likert scale were converted to percentages. Owing to the small sample size of the study (five learners) qualitative data analyses were limited.

Secondly, the qualitative data obtained from the additional comments which followed each of the four sections of the opinionnaire were consolidated and summarised. Although additional comments were few, they provided useful insight into the learners' experiences of the virtual classroom sessions. The quantitative and qualitative data analyses are discussed separately.

4.2.1.2 Quantitative data analysis of categorical data

The ⁷*Statistical Package for the Social Sciences* (SPSS) software was utilised for the analysis of the Chi-square test and the Fischer Exact test. A one-way Chi-square test and a Fischer Exact non-parametric test were performed on the Likert scale data to establish whether there was any statistical correlation between the expected and observed frequencies of the opinionnaire.

A Chi-square test was performed separately on each of the four dimensions of transactional distance, namely *learner-instructor*, *learner-learner*, *learner-content* and *learner-interface* interaction. The Chi-square hypothesis was rejected because the frequency for all the cells was less than 0.05, consequently, a Fischer Exact test was performed on each of the four dimensions because of the small sample size. In a Fischer Exact test the p-values (and not the sample size) are indicators of statistical significance. A significance level of 0.05 was adopted for this analysis. As the p-value (point probability) for all four categories was higher than 0.05, the results show no statistical correlation between the expected and observed frequencies of the opinionnaire. The results are summarised in Table 4.1.

	LI	LL	LC	LInt	
Chi-square	.000 ^a	.000 ^a	.000 ^b	.000 ^b	Learner-Instructor (LI)
Df	1	1	2	2	Learner-Learner (LL)
Asymp. Sig.	1.000	1.000	1.000	1.000	Learner-Content (LC)
Exact Sig.	1.000	1.000	1.000	1.000	Learner-Interface (LInt)
Point probability	.500	.500	.222	.222	

Table 4.1: Fischer Exact non-parametric test data of categorical data of opinionnaire

Although no further statistical analyses could be performed on the opinionnaire's Likert scale data, the distribution of responses on the Likert scale were considered by categorising the responses into positive, neutral and negative in terms of their experiences. These responses were then converted to percentages. The process followed in generating these percentages is outlined next.

As discussed in 3.6.1, data were collected using an online opinionnaire which provided information regarding the participants' individual virtual classroom experiences of *learner-instructor*, *learner-learner*, *learner-content* and *learner-interface* interaction. For the purpose

⁷ *SPSS Statistics*: "... an integrated family of products that addresses the entire analytical process, from planning to data collection to analysis, reporting and deployment" ("*SPSS Statistics*", 2013).

of this analysis each of these dimensions was analysed separately. Each of the four sections of the opinionnaire consists of 12 statements with a total of 48 statements. Participants rated their experiences for all 48 statements on a Likert scale ranging from a negative experience (strongly disagree/disagree) to a positive experience (strongly agree/agree) or a neutral response which was neither negative or positive. The negative responses could be an indication of Transactional Distance experienced by participants.

Table 4.2 presents the Likert scale responses for the *learner-instructor* section of the opinionnaire. The Likert scale response frequencies for all four categories are presented in Appendix D. In statement 1.1 of the opinionnaire participants are required to rate their response on the Likert scale to the following statement: “*I feel that I had enough one-on-one interaction with my instructor during the sessions.*” As presented in Table 4.2 one (1) participant agreed and four (4) participants strongly agreed with this statement on the opinionnaire. Similarly each of the twelve statements has five individual responses, resulting in a total of 60 responses for each section of the opinionnaire. For the purpose of this analysis the “agree” and “strongly agree” responses were consolidated as positive responses reflecting no or minimal transactional distance, and the “disagree” and “strongly disagree” responses were consolidated as negative responses which might be indications of possible contributing factors of transactional distance.

Learner-Instructor Interaction		Indicators of Transactional Distance			No or minimal Transactional Distance	
		Statement	Strongly disagree	Disagree	Neutral	Agree
SECTION 1	1.1	-	-	-	1	4
	1.2	-	-	-	3	2
	1.3	-	-	-	4	1
	1.4	-	-	-	2	3
	1.5	-	-	-	2	3
	1.6	-	-	-	3	2
	1.7	-	-	-	2	3
	1.8	-	-	-	5	-
	1.9	-	-	-	2	3
	1.10	-	-	-	1	4
	1.11	-	-	-	2	3
	1.12	-	-	2	3	-
		0 (0%)		2 (3.3%)	58 (96.6%)	

Table 4.2: Likert scale response frequencies in Section 1 of the opinionnaire

These positive, negative or neutral responses were converted to percentages, respectively, for each of the four sections of the opinionnaire. The responses from the learners suggest an inclination towards a positive experience of the virtual classroom environment. The results are summarised in Figure 4.1.

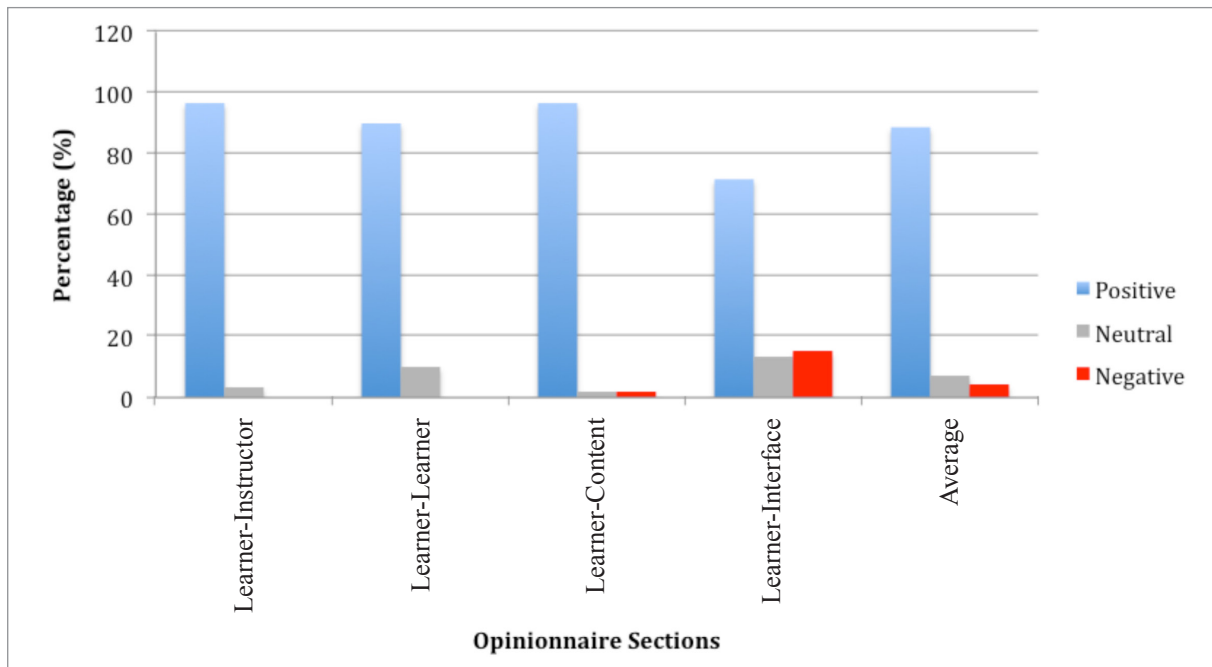


Figure 4.1: Likert scale results of opinionnaire responses

The results for each of the four sections of the opinionnaire are discussed next.

As presented in Figure 4.1, 96% (58 out of 60) of the responses in the *learner-instructor* category can be interpreted as positive. The two neutral responses relate to the learners' experiences of the instructor's body language (statement 1.12 of the opinionnaire). This might be ascribed to the fact that only the faces of participants are visible during a Google+ hangout. According to the data gathered from this opinionnaire, no overt negative responses were evident in terms of the learners' interaction with the instructor.

In terms of *learner-learner* interaction 90% (54 out of 60) of the responses can be interpreted as positive. Six responses were categorised as neutral. Three of the neutral responses relate to a general statement about whether learners communicated with one another (statement 2.1 of the opinionnaire). Two responses relate to communication among learners with the purpose of seeking explanations or clarification (statement 2.9 of the opinionnaire). These responses could be ascribed to the design of the learning activities that do not require much

spoken interaction among participants. Most of the interaction among learners took place in written format in the Google+ chat room. Another reason for these responses could be that learners direct their communication to the instructor, thus there is no need for *learner-learner* communication. This view is supported by the additional comments under *learner-learner* interaction. The one other neutral response to statement 2.4 of the opinionnaire relates to the confidence of the participant to communicate with other learners. This could be ascribed to the specific personality of the participant, or perhaps a lack of experience in the particular technology. There were no negative responses in terms of *learner-learner* interaction, therefore no evidence of transactional distance exists.

In terms of *learner-content* interaction 96% (58 out of 60) of the responses in the *learner-content* category can be interpreted as positive. One response was categorised as neutral while one response was categorised as negative. The one negative response to statement 3.5 of the opinionnaire relates to sufficient English material being provided during the sessions while one neutral response to statement 3.11 of the opinionnaire relates to the English material used during the sessions not meeting the learner's expectations. Although the data do not provide explanations for these responses they could be attributed to the fact that many learners are used to receiving hard copies of material in face-to-face classes. Perhaps by making material used during virtual classroom sessions available online for download after the sessions, would minimise transactional distance in terms of content.

In terms of *learner-interface* interaction 71.6% (43 out of 60) of the responses can be interpreted as positive, 13.3% as neutral and 15% as negative, consequently this is the only section reflecting significant negative experiences. The data show that the five negative responses to statement 4.2 of the opinionnaire relate to technical problems experienced during the sessions. However, all learners experienced technical problems at some point during the sessions. One learner agreed that technology during the sessions limited his/her learning ability during the sessions (statement 4.4 of the opinionnaire). The same learner responded with "strongly agree" to the statement referring to the experience of technical problems (statement 4.2 of the opinionnaire). This could explain the negative response in terms of limiting learning. According to the opinionnaire one learner experienced problems with Internet connectivity (statement 4.5 of the opinionnaire). This is consistent with the information obtained during the focus group interview when one learner shared that he/she had experienced difficulty in connecting to the Wifi therefore he had connected with the Internet with his personal "pay-as-you-go" data. Furthermore, two learners indicated that they

encountered issues with sound during the sessions (statement 4.9 of the opinionnaire). This was reflected in the focus group interview and also emerged as one of the main themes during analyses of the screen casts.

It is significant to note that none of the learners responded negatively to Google+ as a virtual classroom interface in itself, but were more concerned about more general technical difficulties. These technical challenges represented a source of transactional distance. Technical challenges such as Internet connectivity, Wifi access and sound issues are variables that can be controlled and minimised once they have been identified. Apart from sound problems, details of technical problems lie outside the scope of the opinionnaire data. Nevertheless, the thematic analysis of the screen casts and the focus group interview do supply more insight into these problems.

4.2.1.3 Qualitative data analysis of additional comments

The additional comments on the responses supported the Likert scale data. A verbatim compilation of the additional comments after each of the four sections of the opinionnaire is presented in Appendix E. A discussion on the additional comments follows.

Four additional notes were added to section 1 of the opinionnaire. All four responses suggested a positive experience in terms of *learner-instructor* interaction. Two responses related to the instructor's help with grammar. Both noted that the instructor was helpful in pointing out incorrect and correct use of grammar. Another learner specifically referred to physical distance ("it was like we were close") which relates to the idea of transactional distance. Similarly, one learner mentioned how he/she could understand the instructor and his instructions and was able to ask questions during the sessions. Furthermore words such as "great", "very happy", "good" and "close" were used to describe their interaction, suggest minimal transactional distance in *learner-instructor* interaction.

In *learner-learner* interaction (section 2) five additional notes were added. Two general responses implied a positive experience. These include: "...interaction was good"; "...was very great. i [I] liked it so much". Another learner related to how the interaction provided the opportunity to get to know one another. All these responses show no evidence of transactional distance. One learner alluded to the difficulty with the Internet connection during the first session which impeded successful interaction, but interaction was "clearly [clear]" and "easily [easy]" in the other sessions. This is the only negative response under additional comments

and it supports the feedback obtained during the focus group interview. Another learner perceptively pointed out that interaction among learners “was limited because the main focus was the topics and the explanation of the instructor.”

Three additional notes were added to section 3 (*learner-content* interaction) of the opinionnaire. One learner described the content as “appropriate” and another as “easy to understand”. One learner specifically mentioned how he/she developed his/ her vocabulary (“Truly I have learn [learned] new words for my vocabulary”). Another learner referred to the usefulness of the Youtube videos used during the sessions and how these furthered their knowledge of prepositions, tenses and communication barriers. These responses provide no evidence of transactional distance.

Interestingly, there were no negative additional comments on *learner-interface* interaction (section 4), which support the conclusion drawn from the Likert scale data (4.2.1) that none of the learners responded negatively to Google+ being used as a virtual classroom interface, but were rather more concerned about general technical difficulties. Five emotive responses were recorded under *learner-interface* interaction. These responses included phrases such as “very proud”, “...the technology used... was very good”, “...interesting and excellent choose [choice]”, “useful” and “great”. Two learners referred to the fact that it was their first time using Google+. The excitement in their responses is evident. One of them specifically mentioned how he/she planned to use it in his/her future studies as well. The other learner wrote that Google+ “...was something wich [which] i [I] have never seen in my life. i [I] learn[t] a lot [and I] wich [wish] to do [it] again.” Apart from the Internet connectivity issue mentioned under *learner-content* interaction, these responses provide no evidence of transactional distance.

4.2.2 Thematic analysis of screen casts (data coding)

4.2.2.1 Introduction

The thematic analysis approach, as set out by Braun and Clarke (2006), was used as the basis for the process followed when analysing the screen casts. In the article that was used as the basis for this analysis, the authors provide clear guidelines to researchers wanting to use this approach to analyse qualitative data. They argue that thematic analysis is a widely used term in research, but that there seems to be a general lack of clarity on what it is and on how to conduct the analysis. The purpose of their paper was to establish thematic analysis as a

method in its own right, and to provide clear guidelines on how such an analysis should be conducted. Apart from these guidelines a more traditional approach to Grounded Theory, as set out by Charmaz (2012), was also studied to provide additional detail on how to approach the coding process.

According to Braun and Clarke (2006, p. 6) a thematic analysis “is a method for identifying, analysing, and reporting patterns (themes) within data”. They argue that a thematic analysis is essentially a so-called light form of grounded theory where the purpose is not so much directed towards theory development, but rather on identifying patterns and themes within a particular data set, yet it basically follows the same steps as those applied in grounded theory. This approach is useful when one wants to identify themes in relation to particular research questions.

Braun and Clarke (2006) explain how a thematic analysis can be done using an inductive approach which is more data-driven, or a more deductive theoretical thematic analysis approach in which the coding is done with specific research questions in mind as is the case in this study. Even though this narrowed approach provides less rich data, it provides a more detailed analysis of aspects relating to the specific research questions.

Since Moore’s theory of Transactional Distance (1993) was used as a lens through which the virtual classroom environment was explored, there was a specific focus in the observation on the interaction between *learner-instructor*, *learner-learner*, *learner-content* and *learner-interface*. These elements based on Moore’s theory were utilised as the overarching code families in the coding process which gave rise to an initial deductive coding system. After the initial linking of the codes to these code families, a more traditional inductive grounded theory approach was adopted with the purpose of identifying themes within each of these code families.

The Computer Assisted Qualitative Data Analysis Software (CAQDAS) utilised in this study is Atlas.ti. Utilising CAQDAS made it possible “to take analysis of qualitative data significantly further than is possible undertaking this analysis by hand” (Leech & Onwuegbuzie, 2007, p. 578). Leech and Onwuegbuzie (2007) cite various advantages of utilising CAQDAS in the data analysis process. Some of these advantages relevant to the context of this study are firstly the fact that it is an excellent tool for recording, storing and sorting voluminous data. Although voluminous data is relative, 146 initial codes across the four code families have been generated. Sorting and consolidating these codes by hand

would have been a daunting process. Apart from streamlining the initial coding process, it is particularly useful in assigning the codes to their code families. Friese (2012) adds to the advantages of using Atlas.ti by referring to the powerful search and retrieval functionality, as well as the network-building feature, which is particularly useful in visually grouping codes into emerging themes. What contributed to the use of Atlas.ti in the data analysis process is the fact that it features “state-of-the art multimedia processing” (Atlas.ti for Windows, 2015). The frame-level and audio wave previews (the vertical columns close to the centre of the page in Figure 4.2) make Atlas.ti an ideal platform to analyse the screen casts in this study, which will not be possible in many similar CAQDAS.

Braun and Clarke’s (2006) stages of the analytic process which were used as the basis to analyse the screen casts are summarised in Table 4.3, followed by a detailed presentation of the coding process and findings.

Phases of thematic analysis	
Phase	Description of the process
1. Familiarising yourself with your data:	Transcribing data (if necessary); reading and rereading the data; noting down initial ideas
2. Generating initial codes:	Coding interesting features of the data in a systematic fashion across the entire data set; collating data relevant to each code
3. Searching for themes:	Collating codes into potential themes; gathering all data relevant to each potential theme
4. Reviewing themes:	Checking if the themes work in relation to the coded extracts (Level 1) and the entire data set (Level 2); generating a thematic “map” of the analysis
5. Defining and naming themes:	Doing an ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells; generating clear definitions and names for each theme
6. Producing the report:	Providing the final opportunity for analysis; selecting vivid, compelling extract examples; doing a final analysis of selected extracts, relating back of the analysis to the research question and literature; producing a scholarly report of the analysis

Table 4.3: Phases of thematic analysis (Braun and Clarke, 2008, p. 35)

4.2.2.2 Description and findings of the phases of thematic analysis

4.2.2.2 (a) Phase 1 - Familiarising yourself with your data

Since the researcher was an active participant in the virtual classroom sessions, the data analysis was necessarily approached with some prior knowledge of the data. Braun and Clarke

(2006, p. 16) emphasise that, regardless of the level of previous knowledge, it is essential for the researchers should immerse themselves in the data during this stage to the extent that they are “familiar with the depth and breadth of the content”. They explain that immersion involves the active repeated reading of the data. In this study it means the repeated viewing of the screen casts. They further advise notetaking and writing down some broad ideas for the formal coding to follow.

In this study the three screen casts were actively watched once at the initial stage of the analysis. Since the three screen casts presented similar structures, patterns and codes it would have been unnecessarily time-consuming to watch each screen cast more than once, especially since the researcher had been an active participant in the virtual classroom.

The initial sketchy notes made by the researcher revealed the following:

- A lot of time was spent and wasted on minor technical details such as checking that everyone was logged in to the virtual classroom and sorting out sound problems.
- A lot of time was spent and wasted on repeating information and instructions.
- Once all technical difficulties had been sorted out, the focus of the learning activities seemed to shift to communication relating to the English language content.
- Learning activities seemed to become more interactive once the learners had grown used to the platform.

Usually the transcription of the verbal data such as interviews is also done during this initial phase, but since Atlas.ti makes it possible to analyse multimedia data directly, this was not needed. Authentic data was presented for the coding process without the possibility of inaccurate reporting.

4.2.2.2 (b) Phase 2 – Generating initial codes

Since Moore’s theory of Transactional Distance (1993) was used as a lens through which the virtual classroom environment was explored, the data analysis of this study was, to use Braun and Clarke’s terminology (2008, p. 18), more “theory driven” than “data driven”. The data was approached with specific research questions in mind relating to the learners’ experiences of the virtual classroom with particular attention paid to *learner-instructor*, *learner-learner*, *learner-content* and *learner-interface* interaction. This theoretical lens was applied during the initial coding process as follows.

Braun and Clarke (2006) explain how this phase is about generating initial codes based on the most basic elements of the raw data. The codes are in other words “grounded” in the data. During this phase the researcher sticks closely to the data with a particular focus on action, rather than on topics or themes (Charmaz, 2012). In this study this implied a close look at what the learners and the instructor were doing (or not doing) during their interaction. The simple, yet precise initial coding examples presented by Charmaz (2012) were particularly helpful in creating a concept of the initial coding process.

Charmaz (2012) explains how this initial coding process can be done word-for-word, line-by-line or incident-by-incident. She explains that the choice of the size of the unit of data to code is dependent on the particular type of data. Word-for-word coding may be helpful when analysing Internet blogs, where the focus is on the content of the text itself. She goes on to explain how line-by-line coding is particularly useful when working with detailed data on empirical problems and processes. Since this study was not so much about what the learners and instructor were saying (mostly related to the topic of the learning activity), but rather on action – what they did and their interaction (or lack thereof), an analysis of the transcription of their verbal interaction would hardly have yielded any useful information regarding the research questions of this study. An analysis of their interaction yielded useful information regarding their experiences of the virtual classroom environment.

The process followed during this phase is set out as follows. Braun and Clarke (2006, p. 6) refer to a coded chunk of data as a “data extract”, also called an “incident”. The researcher started by identifying an incident during the virtual classroom activity. Each data extract (incident) was then viewed and analysed in terms of Moore’s four elements of Transactional Distance. Each data extract (incident) could therefore be linked to one or more of the four elements by adding one or more of the following abbreviations to the front of each extract: LL (learner-Learner), LT (Learner-Tutor), LI (Learner-Interface) and/or LC (Learner-Content). These preceding abbreviations are listed in Table 4.4. Linking of these abbreviations to each coded extract made it easier to group the data of each of the Transactional Distance elements together after the coding process. In Atlas.ti these categories are referred to as “code families.” Assigning these codes to the initial open coding extracts made it easier to categorise these codes later into their code families. During this initial coding process the researcher applied an inductive approach and a deductive approach simultaneously. The assigning of pre-existing codes to the data is deductive, followed by a more traditional inductive grounded theory open coding approach.

The initial coding process generated 146 coded data extracts (see Table 4.4). Repetitive and similar codes were then collated and merged in Atlas.ti, resulting in 130 coded extracts. These codes were then assigned to their particular code families which resulted in 45 codes relating to *learner-instructor* interaction, 49 codes to *learner-interface* interaction, 22 codes to *learner-content* interaction and 14 codes to *learner-learner* interaction. Each code family was then colour coded to make it easier to differentiate between the code families as they are linked to the data in Atlas.ti. The code families were colour coded as follows:

- Learner-Instructor – **orange**
- Learner-Content – **grey**
- Learner-Interface – **purple**
- Learner-Learner – **green**

These colours are used throughout the dissertation to indicate the codes relating to the four families. The initial codes are listed in Table 4.4.

A systematic thematic analysis could then be conducted on each of these code families.

Learner-Instructor Interaction	<p>Lt-tutor starts written chat</p> <p>Lt-tutor shares prepositions doc with learners</p> <p>Lt-tutor seems preoccupied by interface - mouse movements and clicking</p> <p>Lt-tutor responds after 30 seconds</p> <p>Lt-tutor repeats the question</p> <p>Lt-tutor repeats the instruction</p> <p>Lt-tutor repeats response</p> <p>Lt-tutor is not sure who is participating - only two responses</p> <p>Lt-tutor moves on without response</p> <p>Lt-tutor has to clarify who is talking to him</p> <p>Lt-tutor gives positive feedback to learner's response</p> <p>Lt-tutor gives positive feedback for correct answers</p> <p>Lt-tutor encourages specific learner to try</p> <p>Lt-tutor does not understand learner's pronunciation ("echo")</p> <p>Lt-tutor does not understand learner's explanation of sound problem</p> <p>Lt-tutor is unable to use gestures (arms/hands) to enhance explanation</p> <p>Lt-tutor asks learners whether they can hear him</p> <p>Lt-only top half of tutor's face is visible</p> <p>Lt-only one learner responds to tutor's question (addressed to all)</p> <p>Lt-only one learner responds to tutor's question</p> <p>Lt-one learner starts interacting for first time</p> <p>Lt-nobody responds to mute button instruction</p> <p>Lt-learners are unsure who should respond when question addressed to group</p> <p>Lt-learners seem to follow instruction</p> <p>Lt-learners respond when addressed individually</p> <p>Lt-learners respond simultaneously to question</p> <p>Lt-learners respond simultaneously to tutor's question</p> <p>Lt-learners do not respond orally to tutor's question</p> <p>Lt-learner wonders if rest can hear him (hello...?)</p> <p>Lt-learner uses tutor's first name</p> <p>Lt-learner is unsure whether to give verbal or written response</p> <p>Lt-learner responds when addressed personally</p> <p>Lt-learner responds to rhetorical question</p> <p>Lt-learner does not respond to tutors question</p> <p>Lt-learner asks tutor to repeat</p> <p>Lt-learner asks question to ensure comprehension</p> <p>Lt-learner asks for response from tutor 3 times</p> <p>Lt-learner asks for clarification</p> <p>Lt-learner is asked to repeat</p> <p>Lt-learners are slow to respond to instruction</p> <p>Lt-eye contact - tutor appears to look down at screen</p> <p>Lt-all analyse written chat sentences together</p>
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Table 4.4: Initial codes generated during the analysis of the screen casts

Learner-Instructor Interaction	<p>Lt-addresses specific learners more effectively</p> <p>Lt-2nd learner asks question to ensure comprehension</p> <p>Lt-tutor's facial expressions are easy to read</p> <p>Lt-tutor's facial expressions - seems not to hear clearly</p> <p>Lt-tutor is unsure which of them have finished watching video</p> <p>Lt-tutor is unsure which of them have entered chat room</p> <p>Lt-tutor thanks learner for chat post</p> <p>Lt-tutor summarises use of prepositions orally</p>
Learner-Learner Interaction	<p>Ll-learners complete fill-in exercise together</p> <p>Ll-learner posts chat room response</p> <p>Ll-one learner starts interacting for first time</p> <p>Ll-learners read definition clearly</p> <p>Ll-learner's facial expression shows excitement about chat post</p> <p>Ll-learners do not know which of them have finished watching</p> <p>Ll-learner shares his personal experience</p> <p>Ll-learner shares dictionary definition clearly</p> <p>Ll-learner posts directions in chat room</p> <p>Ll-learner interrupts others watching video because she cannot see video</p> <p>Ll-second learner posts chat room response</p> <p>Ll-all analyse written chat sentences together</p> <p>Ll-authentic written interaction</p>
Learner-Interface Interaction	<p>Li-one learner cannot hear audio</p> <p>Li-Youtube video and sound are clear</p> <p>Li-vocabulary is clearly pronounced by tutor</p> <p>Li-use of self-mute button brought to attention of learners to improve sound</p> <p>Li-tutor uses cursor to indicate place in exercise</p> <p>Li-tutor is unsure about how to share screen</p> <p>Li-tutor is unaware of background noise being picked up</p> <p>Li-tutor types instructions and repeats them orally</p> <p>Li-tutor spends 1min37sec on getting video ready</p> <p>Li-tutor seems preoccupied with interface - mouse movements and clicking</p> <p>Li-tutor moves to quiet location</p> <p>Li-tutor does not know his microphone is muted</p> <p>Li-tutor cannot use gestures (arms/hands) to enhance explanation</p> <p>Li-takes 5min for everyone to join chat room</p> <p>Li-learners are using mute function effectively</p> <p>Li-one learner still has not watched video</p> <p>Li-one learner out of screen frame</p> <p>Li-one learner cannot see video</p> <p>Li-not paying attention to how they appear on screen - cut off</p> <p>Li-nobody responds verbally to tutor's instruction</p> <p>Li-lot of time is spent on waiting for response</p>

Table 4.4: Initial codes generated during the analysis of the screen casts (continued)

Learner-Interface Interaction	
Learner-Content Interaction	<p>Li-learners watch Youtube video</p> <p>Li-learners seem to become more comfortable with interface (normalisation)</p> <p>Li-learners are instructed to mute themselves</p> <p>Li-learner's facial expression shows excitement about chat post</p> <p>Li-learner watches video on somebody else's computer</p> <p>Li-learner is unaware that he should click on tutor's profile to see document</p> <p>Li-learner is unaware that everyone can hear her speaking with friend</p> <p>Li-learner does not respond to question</p> <p>Li-learners need further instruction on how to view the video</p> <p>Li-experience heavy sound distortions (mics)</p> <p>Li-eye contact - tutor appears to be looking down at screen</p> <p>Li-external noise is brought to tutor's attention</p> <p>Li-everyone analyses written chat sentences together</p> <p>Li-everybody watches video at different times</p> <p>Li-delay between audio and lip movement</p> <p>Li-30sec is spent on sorting out muted microphone</p> <p>Li-6min is spent on sorting out learner's audio problem</p> <p>Li-1min30sec is spent on sorting out a learner's audio</p> <p>Lc-learner recalls tenses and personal experience exercise</p> <p>Lc-learner misunderstands instruction of written chat</p> <p>Lc-learner asks question to ensure comprehension</p> <p>Lc-learners' facial expressions show involvement/concentration</p> <p>Lc-instructions are mainly auditory</p> <p>Lc-Google definition is displayed clearly on screen</p> <p>Lc-first learner posts written response</p> <p>Lc-everybody watches Youtube video together</p> <p>Lc-dictionary definition easy to follow on screen</p> <p>Lc-2nd learner asks question to ensure comprehension</p> <p>Lc-all analyse written chat sentences together</p> <p>Lc-new terms clearly pronounced by tutor</p> <p>Lc-tutor's directions explanations lack visual aid/gestures</p> <p>Lc-tutor types instructions in chat room</p> <p>Lc-tutor shares prepositions document with learners</p> <p>Lc-tutor repeats instructions orally</p> <p>Lc-tutor recaps on previous session- tenses, writing and editing</p> <p>Lc-tutor recaps on previous session</p> <p>Lc-tutor gives instructions on chat room exercise</p> <p>Lc-learners complete fill-in exercise with help of tutor</p> <p>Lc-learner posts chat room response</p> <p>Lc-second learner posts chat room response</p> <p>Lc-one learner summarises activities of previous session</p> <p>Lc-learners watch Youtube video</p> <p>Lc-learners type directions to their homes (prepositions)</p>

Table 4.4: Initial codes generated during the analysis of the screen casts (continued)

Learner-Content Interaction	<p>Lc-learners have to use analytical skills to identify barriers in video</p> <p>Lc-learner’s facial expression shows excitement about chat post</p> <p>Lc-learners do not understand words used by the tutor</p> <p>Lc-learner uses analytical skills to identify appropriate definition</p> <p>Lc-learner shares his personal experience</p>
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Table 4.4: Initial codes generated during the analysis of the screen casts (continued)

4.2.2.2 (c) Phase 3 - Searching for themes

During this phase the analytical focus moves from coding the data extracts to sorting the different codes into potential themes. The researcher therefore starts analysing the codes generated in the previous phase (Braun & Clarke, 2006). This stage is similar to focused coding in Grounded Theory where researchers “use these codes to sort, synthesize, and analyze large amounts of data” (Charmaz, 2012, p. 138). She adds that this process can also involve the coding of your initial codes. Similar to Braun and Clarke’s (2006) phase of searching for themes, Charmaz (2012) defines focused coding as the assessment of the initial codes by focussing on what the codes say and what the links are between them.

Braun and Clarke (2006) mention how visual representations such as tables or mind maps can be particularly helpful during this phase. This is where the Network View Manager functionality of Atlas.ti was particularly useful. The Network View Manager enables the researcher to “represent complex information by showing it in an intuitively accessible graphic means” (Atlas.ti for Windows, 2015). In other words Atlas.ti makes it possible to represent and manoeuvre conceptual structures visually. Although the Network View Manager has already been used during this phase, the themes and related codes are presented in table format. Tables 4.5 to 4.8 list all the identified themes in this stage of the analysis. In the next phase where overlapping and interconnections become important, a network view of coded data is presented.

In this phase of the study each code family was analysed separately. Ten potential themes were initially identified for *learner-instructor* interaction, nine for *learner-content* interaction, seven for *learner-interface* interaction and five for *learner-learner* interaction. A detailed discussion of these themes is presented during phase five of the thematic analysis process. The themes and their related codes at the end of phase three are listed in the following tables.

	Initial Codes	Themes
Learner-Instructor interaction	Lt-tutor is unable to use gestures (arms/hands) to enhance explanation Li-tutor seems preoccupied with interface - mouse movements and clicking Li-eye contact - tutor appears to be looking down at screen Lt-tutor's facial expressions - he seems not to hear clearly Lt-only top half of tutor's face is visible Lt-tutor's facial expressions are easy to read	Facial expressions
	Lt-learner is unsure of verbal or written response Lt-tutor is unsure which of them have finished watching video Lt-tutor is unsure which of them have entered chat room Lt-tutor is not sure who are participating - only two responses Lt-learners are unsure who should respond to question Lt-learner wonders if rest can hear him (hello...?)	Uncertainty
	Lt-tutor does not understand learner's pronunciation ("echo") Lt-tutor does not understand learner's explanation of sound problem Lt-learner responds to rhetorical question	Misunderstanding
	Lt-learners are slow in responding to instruction Lt-tutor responds after 30 seconds Lt-one learner starts interacting for first time	Delay
	Lt-tutor has to clarify which of them are talking to him Lt-learner asks question to ensure comprehension Lt-tutor asks learners whether they can hear him	Clarification
	Lt-tutor repeats the question Lt-tutor asks learner to repeat Lt-learner asks for response from tutor 3 times Lt-learner asks tutor to repeat Lt-tutor repeats the instruction	Repetition
	Lt-tutor shares prepositions document with learners Lt-tutor summarises preposition lesson orally Lt-tutor shares Youtube video Lt-tutor shares dictionary meaning on internet Lt-tutor starts written chat	Sharing resources
	Ll-learners complete fill-in exercise together Lt-only one learner responds to tutor's question Lt-nobody responds to mute button instruction Lt-only one learner responds to tutor's question (addressed to all) Lt-addresses specific learners more effectively Lt-learner does not respond to tutors question Lt-learners respond simultaneously to tutor's question Lt-learners do not respond orally to tutor's question Lt-tutor is not sure which of them are participating - only two responses Lt-learners seem to follow instruction Lt-Tutor moves on without response	Oral interaction

Table 4.5: Potential themes relating to *learner-instructor* interaction

	Initial Codes	Themes
	Lt-tutor encourages specific learner to try Lt-tutor thanks learner for chat post Lt-tutor gives positive feedback for correct answer Lt-tutor gives positive feedback to learner's response	Positive feedback/ Encouragement
	Lt-learner responds when addressed personally Lt-learner uses tutor's first name Lt-learners respond when addressed individually	Personal

Table 4.5: Potential themes relating to *learner-instructor* interaction (continued)

	Initial Codes	Themes
Learner-Content interaction	Lc-learners complete fill-in exercise with help of tutor Lc-learners post chat room response Lc-second learner posts chat room response Lc-everybody watches Youtube video together Lc-learner shares his personal experience Lc-learners type directions to their homes (prepositions)	Learner action
	Lc-dictionary definitions easy to follow on screen Lc-Google definitions is clearly displayed on screen Lc-tutor shares prepositions document with learners Lc-tutor types instructions in chat room	Written info
	Lc-instructions are mainly auditory	Auditory info
	Lc-everyone analyses written chat sentences together Lc-learner uses analytical skills to identify appropriate definitions Lc-learners use analytical skills to identify barriers in video Lc-learner summarises activities of previous session Lc-learner recalls tenses and personal experience exercise	Analytical skills
	Lc-learner asks question to ensure comprehension Lc-2nd learner asks question to ensure comprehension	Clarification
	Lc-learner misunderstands instruction of written chat Lc-learners do not understand words used by of tutor	Misunderstanding
	Lc-tutor's directions/explanations lack visual aids/gestures	Lacking visual aid
	Lc-tutor's instructions are mainly auditory	Auditory info
	Lc-leaners' facial expressions show involvement/concentration Lc-learner's facial expression shows excitement about chat post	Facial expressions

Table 4.6: Potential themes relating to *learner-content* interaction

	Initial Codes	Themes
Learner-Interface interaction	Li-takes 5min for everyone to join chat room Li-nobody responds verbally to tutor's instruction Li-a lot of time is spent waiting for response Li-1min30sec is spent sorting out learner's audio Li-30sec is spent sorting out muted microphone Li-tutor spends 1min37sec getting video ready Li-learners preoccupied with sorting out audio problem Li-one learner cannot hear audio Li-learner does not respond to question	Time wasting
	Li-everybody watches video at different times Li-learners need further instruction on how to view the video Li-learner does not know how to play video Li-learner watches video on somebody else's computer Lc-learners watch Youtube video Li-one learner cannot see video Li-one learner still has not watched video Li-tutor is unsure about how to share screen	Interface knowledge
	Li-not paying attention to how they appear on screen - cut off Li-eye contact - tutor appears to be looking down at screen Li-learner is instructed to adjust screen to see whole face Li-one learner's face is cut off Li-one learner is out of screen Li-one learner's face is very dark - she is not paying attention to display	Screen appearance
	Li-heavy sound distortions (microphones) are experienced Li-external noise is brought to tutor's attention Li-sounds of indiv videos are picked up over microphones Li-delay exists between audio and lip movement Li-tutor moves to quiet location Li-words are clearly pronounced (enunciated) by tutor Li-Youtube video and sound are clear	Audio tech
	Li-learners are instructed to mute themselves Li-learner is unaware that everyone can hear her speaking with friend Li-researcher demonstrates mute button to learners individually Li-tutor is unaware of background noise picked up Li-learners use mute function effectively (later) Li-use of self-mute button is brought to att of learners to improve sound Li-tutor does not know he is muted	Mute functions
	Li-tutor types instructions and repeats orally Li-tutor uses cursor to indicate place in exercise	Useful interface
	Li-tutor is unable to use gestures (arms/hands) to enhance explanation Li-tutor seems preoccupied with interface - mouse movements and clicking	Facial expressions

Table 4.7: Potential themes relating to *learner-interface* interaction

	Initial Codes	Themes
Learner-Learner interaction	LI-all watch Youtube video together LI-learners complete fill-in exercise together	Interaction
	LI-learner interrupts others watching video because she cannot see video LI-learners do not know which of them have finished watching LI-all analyses written chat sentences together LI-learner shares dictionary definition clearly LI-learner reads definition clearly	Uncertainty
	LI-learner posts chat room response LI-second learner posts chat room response LI-learner posts directions in chat room LI-one learner starts interacting for first time	Learner action
	LI-authentic written interaction occurs LI-learner shares his personal experience	Personal
	LI-learner's facial expression shows excitement about chat post LI-learners' facial expressions show involvement/concentration	Facial expressions

Table 4.8: Potential themes relating to *learner-learner* interaction

4.2.2.2 (d) Phase 4 – Reviewing themes

This phase involves the refinement of the initial themes generated during the previous phase (Braun & Clarke, 2006). The refinement of these themes takes place on two levels, namely reviewing the coded data extracts and then reviewing the entire data set. They further explain how it might become evident that particular themes “are not really themes” because there are not enough data to support them, or the data are too diverse (Braun & Clarke, 2006, p. 20). Some themes may have to be broken down into sub themes while others may overlap in to such an extent that they can be merged. Two levels of reviewing the themes and how they were applied in this study are explained next.

First, Braun and Clarke (2006) suggest reviewing the extracts for each theme individually to consider whether they form a coherent pattern related to the particular theme. As explained in phase 2 of the data analysis, redundant codes were discarded and similar codes were already consolidated during that phase. Because of the nature of the coded extracts of the screen casts, the number of codes is not as significant in the analysis as it is in traditional grounded theory. A specific code linked to a recorded incident, may refer to bad lighting or a silhouetted face on the screen. In terms of quantity, it could at first seem insignificant, but bad lighting could have

affected communication for the entire session. Therefore, the main criterion for each data extract is not the frequency of appearance, but whether it adds to the knowledge of transactional distance.

In terms of *learner-instructor* interaction, only one code under the theme ‘facial expressions’ was identified as not relating to the emerged theme. Under the theme of ‘delay’ two similar codes were merged. Under *learner-content* interaction, one code under the theme ‘misunderstanding’ was identified as irrelevant. Most changes were made in terms of *learner-learner* interaction. Four codes were not assigned to a theme at this stage, but were merged with the codes under the theme ‘learner action’. One of the codes under ‘learner action’ led to an additional theme named ‘confidence’. No changes were made to the code level of *learner-interface* interaction.

Second, individual themes were reviewed in relation to the entire data set. The purpose is to establish whether the thematic map accurately reflects the meanings evident in the data set, and this accurate representation depends on the theoretical approach (Braun & Clarke, 2006). For the purposes of this study each theme was therefore reviewed to establish whether it added to the knowledge of increasing or decreasing transactional distance for each of the four elements of transactional distance.

In terms of *learner-instructor* interaction all ten themes were reviewed and considered relevant and adding to the knowledge of transactional distance. Overlaps and links between some of the emerged themes were identified. The theme ‘uncertainty’ could have been a reason for the theme of ‘delay’, while ‘delay’ in itself could have been a reason for ‘repetition’. Similarly, under *learner-interface* interaction the theme of ‘time wasting’ could have been the reason for ‘interface knowledge’ (or the lack thereof). The theme ‘audio tech problems’ could have been a contributory factor to time wastage. In *learner-content* interaction the theme ‘auditory info’ was dropped due to a lack of data. The code under the initial theme that related to the theme of ‘lacks visual aid’ was subsequently merged under that theme. The theme ‘written info’ was adapted to a more descriptive ‘sharing written info’. The theme ‘positive repetition’ was changed to ‘repetition’ only, since positive and negative distinctions of the codes and themes were made during the next phase of the thematic analysis. The overlapping nature of the coded extracts and the themes is evident, yet a theme was retained if it added any unique information on transactional distance in the virtual classroom.

The code set and related themes at the end of phase 4 of the thematic analysis are presented in the following tables (Figures 4.2 to 4.5). Each theme, as well as its various interconnections, is discussed in detail in the next phase of the analysis.

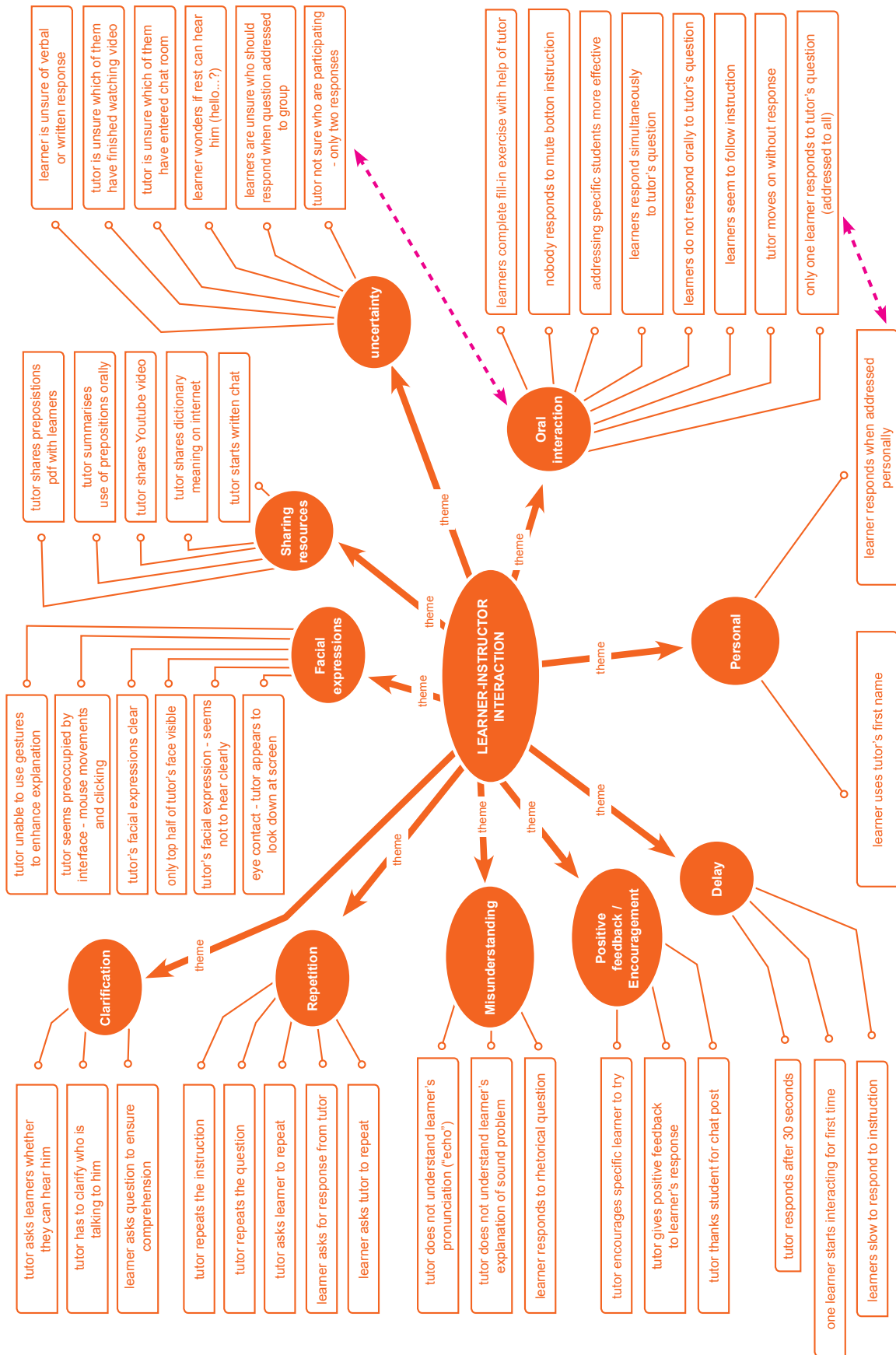


Figure 4.2: Themes relating to *learner-instructor* interaction

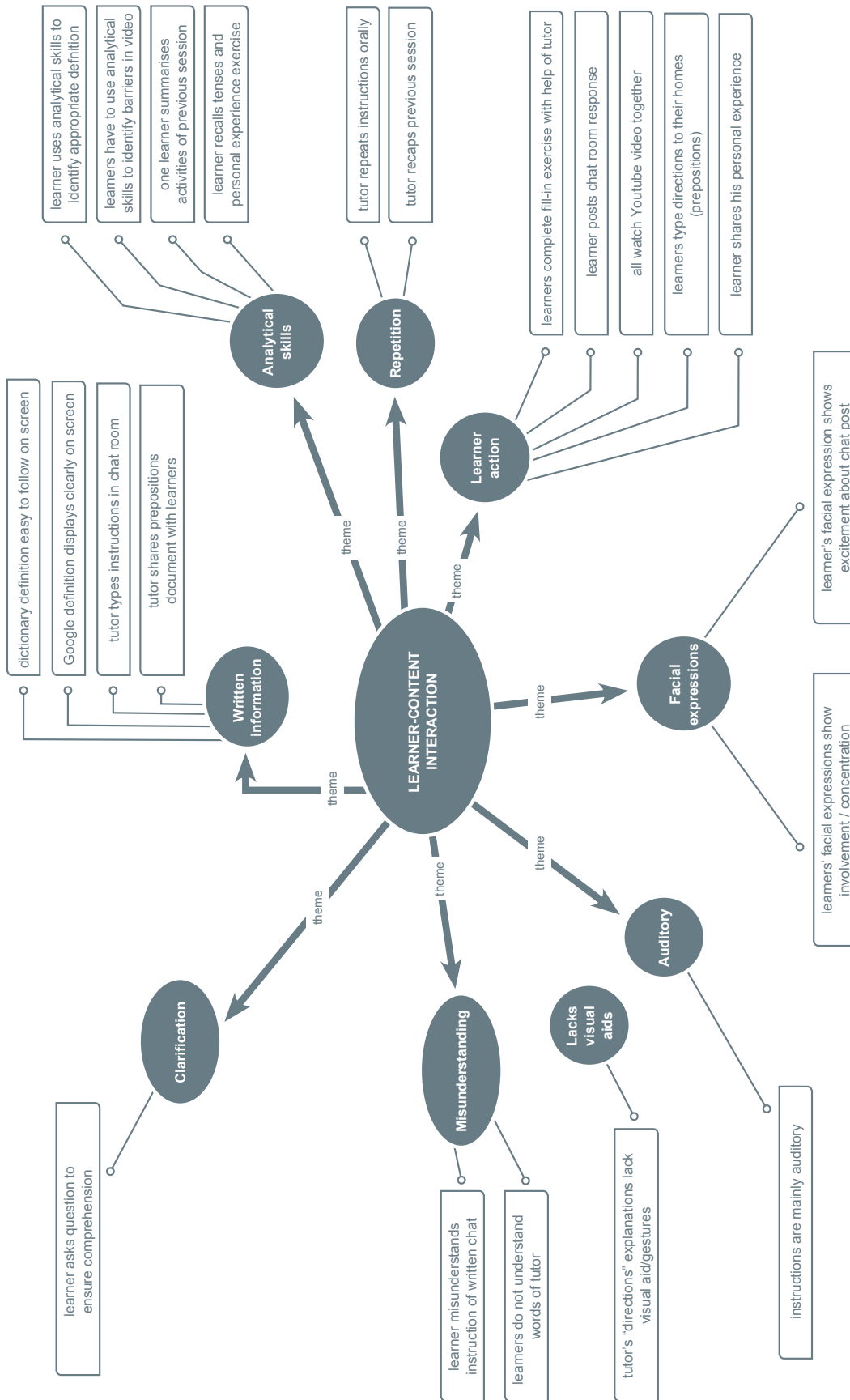


Figure 4.3: Themes relating to *learner-content* interaction

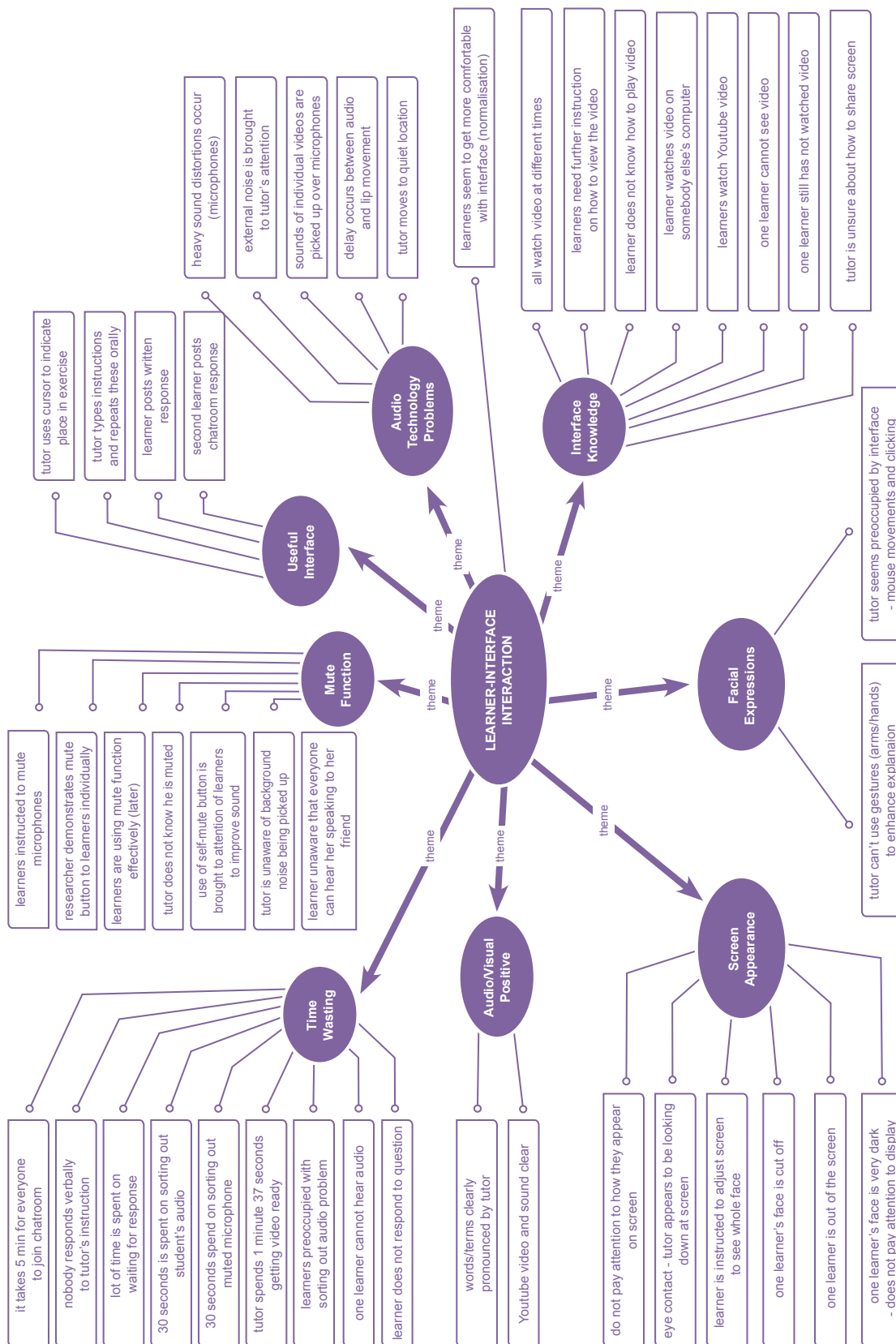


Figure 4.4: Themes relating to learner-interface interaction

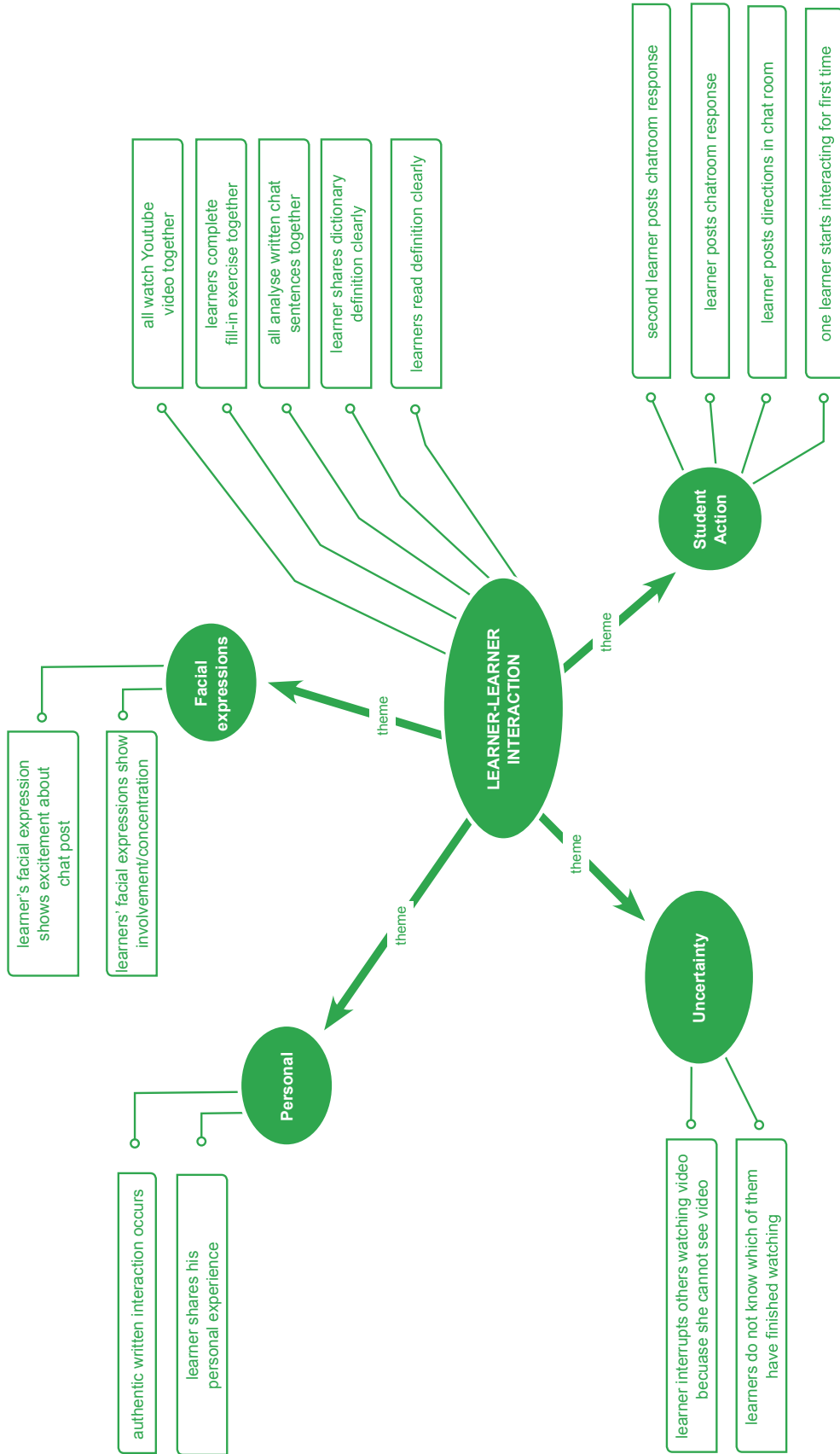


Figure 4.5: Themes relating to *learner-learner* interaction

4.2.2.2 (e) Phase 5 – Defining and naming themes

This phase of the thematic analysis is characterised by identifying what Braun and Clarke (2006) refer to as the essence of the emerged themes, as well as the aspects of the data that the themes capture. This is done by organising the data extracts for each theme so that each forms a coherent picture of the data and explaining it using an accompanying narrative. In other words, each individual theme is analysed, so that “the broader overall ‘story’ that you are telling about your data, in relation to your research question or questions” becomes clear (Braun & Clarke, 2006, p. 22). They further explain that part of the refinement of the data is identifying sub-themes.

In a study by Braun and Wilkinson (2003) of women’s discussions on their own sexuality, all themes were categorised as either positive or negative during this phase. Similarly, in this study all the themes with their particular data extracts were categorised as either narrowing the transactional distance during the interaction (positive) or increasing it (negative). Therefore, during this phase the link between the data and the research questions was established, identifying the essence of the data analysis. The positive and negative categorisation of themes and data extracts are presented in Figures 4.7 to 4.10 by colour (blue - decreasing TD; red -increasing TD; black – elements of both increasing and decreasing TD). The narrative analysis of the “story” related in each theme and the interrelationships are discussed as follows.

4.2.2.2 (e) (i) Narrative analysis of *learner-instructor* interaction themes

The analysis of the *learner-instructor* interaction reveals a total of ten themes presented in Figures 4.6.1 and 4.6.2. These themes and their interrelationships, as well as the transactional distance implications are discussed under the following sub-headings.

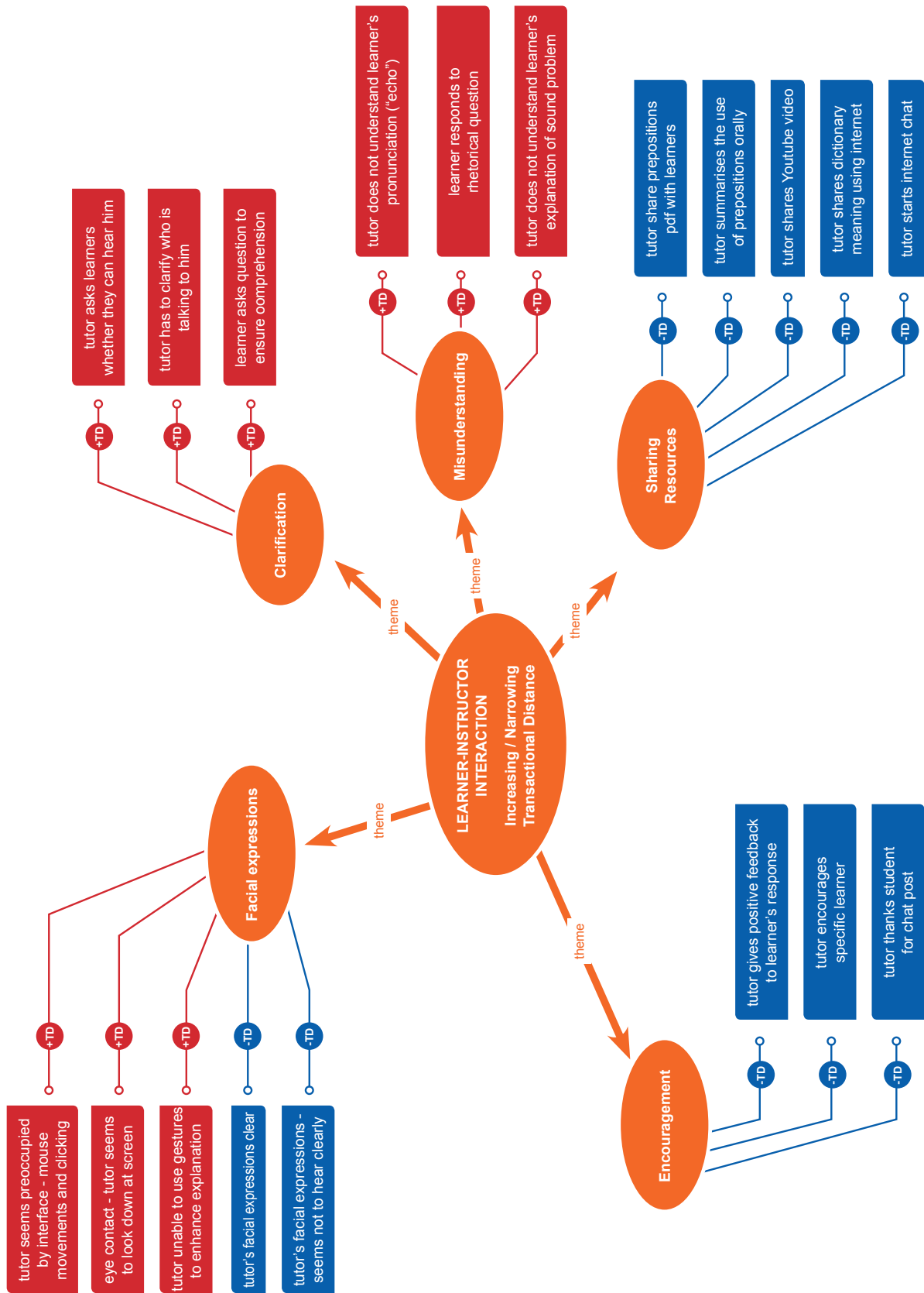


Figure 4.6.1: Learner-instructor interaction

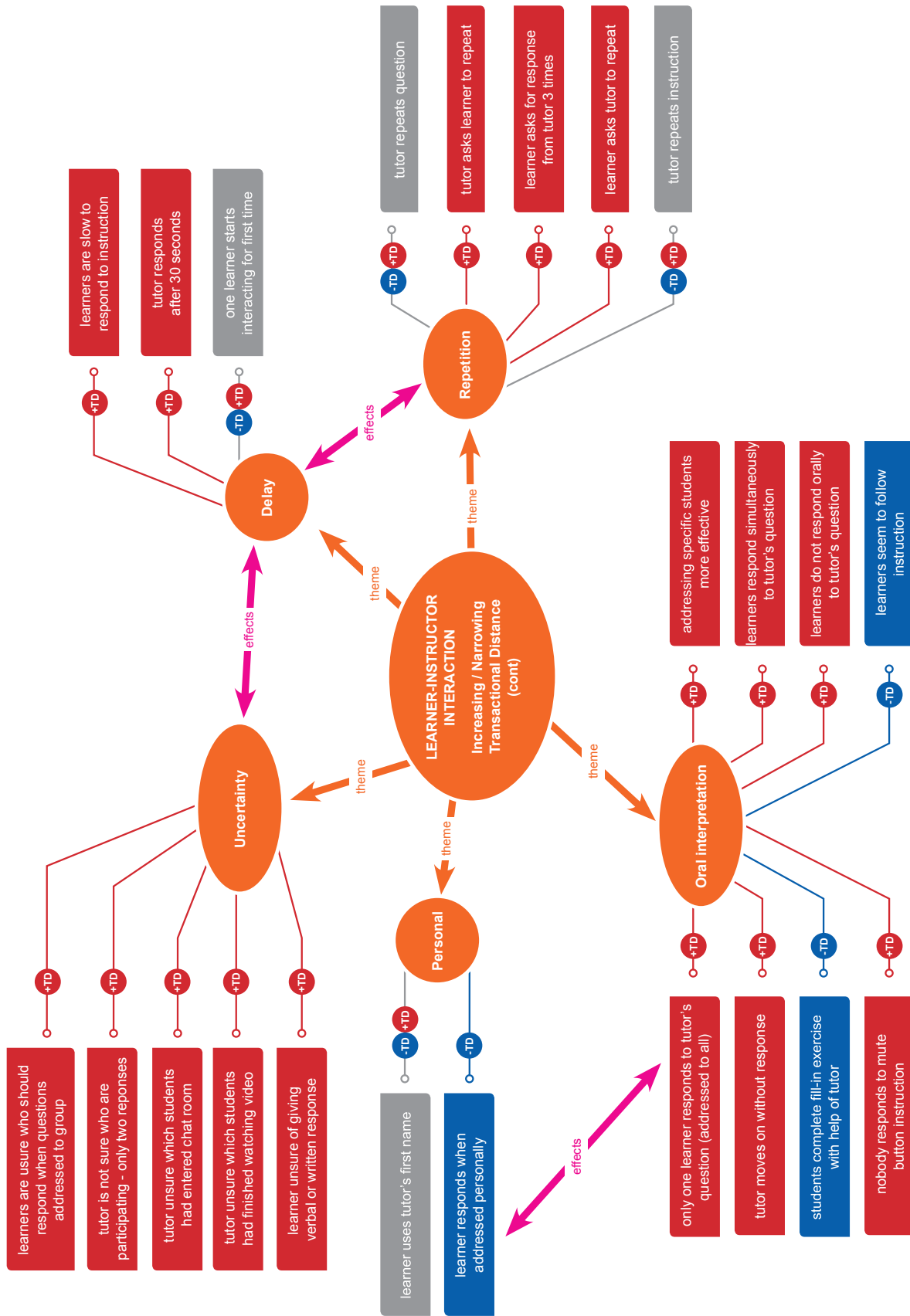


Figure 4.6.1: Learner-instructor interaction (continued)

□ Facial expressions

It was interesting to note that during the learning activity relating to the use of prepositions when giving directions, the instructor found it difficult to explain the difference between prepositions without the use of hand and arm gestures. Cleary (2008, p. 21) refers to a concept known as “complementing” where the non-verbal messages “add to, or elaborate on the verbal message”. Although the hands and arms of the instructor were not visible in the frame, slight movements and subtle jerks of the shoulders suggested the natural tendency of the instructor to want to use gestures, especially when explaining something relating to position such as prepositions. The instructor’s non-verbal expressions, as well as the constant repetition of the explanations, suggest an underlying frustration at that moment. This lack of non-verbal enhancement of the verbal message increases the transactional distance.

During the first session the instructor seemed to look down to the bottom of his screen. The instructor’s eye contact seemed to connect more with the audience during the second session. This can be explained by the instructor not being used to the interface therefore not knowing that he is able to enlarge the frames of learners, which will automatically make the eye contact more natural.

Another aspect that negatively influenced the eye contact was the instructor who at times seemed preoccupied with trying to figure out aspects of the interface. This was evident in the movement of the cursor all over the screen and the repetitive clicking of the mouse. Both these aspects related to the lack of eye contact that increases transactional distance. Both these aspects were the result of the instructor’s lack of experience in the use of Google+ interface.

Ironically the fact that these deductions were drawn from subtle nuances of facial expressions and body language proves that learners in this virtual classroom environment are also able to observe these subtleties of non-verbal communication, similar to those in a traditional classroom environment. The transactional distance evident in these extracts is therefore not about the lack of facial expressions, but rather about the instructor not being used to the interface. Perhaps these facial expressions are even more pertinent in the virtual classroom close-up interactions, whereas in a traditional classroom environment some of these subtle nuances of facial expressions might get lost because of the physical distance between the instructor and the learners.

□ Clarification

During the learning activities the instructor repetitively asked the learners whether they could hear him, which is an indication of transactional distance. This can be ascribed to two main factors, first the instructor and learners were not comfortable with the interface and secondly, learners were unsure about whom the instructor was addressing, therefore did not respond individually. This links up with the theme of uncertainty. What is significant about these requests related to clarification is that they were mostly made at the beginning of the sessions. The instructor wanted address all technical problems before the sessions started. These clarification requests also make sense if you consider all the technical issues the learners had to cope with especially in terms of audio which is discussed under the *learner-interface* themes.

The fact that the instructor had to establish who was talking to him also links up with the theme of uncertainty. This clearly increases transactional distance, that could easily have been avoided by a simple convention of learners mentioning their names before speaking, especially during the first couple of sessions when the instructor did not know the learners well. This type of clarification was limited to the early stages of the learning activities.

An obvious question in terms of this clarification, is why the instructor was unable to see on the screen who was talking to him, especially since all participants' names were displayed. After having analysed the screen casts carefully it was evident that the bad lighting on some learners' faces reduced their faces to silhouettes. This explains why the instructor was uncertain of who was talking to him.

On the other hand, the fact that learners posed numerous questions to the instructor regarding their lack of comprehension of the subject material, is positive in terms of *learner-instructor* interaction. The learners, in other words, had the autonomous liberty to communicate with the instructor to explain what they did not understand.

Apart from the factors relating to the interface and omission mention a name at the beginning stages of the sessions, the theme of clarification indicates minimal proof of transactional distance.

□ Misunderstanding

During one of the learning activities one of the learners tried to give an explanation to

the instructor of a sound problem he was experiencing. The instructor had difficulty comprehending what the learner was trying to say. The word “echo” was phonetically pronounced as “eco”. This meant that the instructor could not understand what the learner was trying to say.

This kind of misunderstanding was inevitable in this EFL learning environment, because most of the learners participating in this study had French as their home language. Even though this kind of misunderstanding could suggest transactional distance, it could not be solely attributed to the virtual classroom environment, but rather to the nature of any EFL learning environment.

□ Sharing resources

The sharing of resources is closely linked to the communication possibilities of the Google+ platform, which are discussed under Learner/Interface interaction. In this virtual classroom environment it was possible for the instructor to share resources in various formats. First, the instructor shared a pdf document containing a prepositions exercise with the learners, so that all participants could view the pdf simultaneously. Second, the instructor summarised the theory of the activity at the end of the session orally. The instructor therefore used his own knowledge of prepositions as a shared resource. Third, the instructor shared a Youtube video with the learners showing the idiomatic use of prepositions when giving directions. Another shared resource was dictionary definitions directly accessed by the instructor on the Internet.

These are examples of how resources were easily shared during the learning activities, and the direct access to any information on the Internet which can be accessed by both the instructor and the learners, that can be viewed simultaneously by all participants in the virtual classroom. These are positive contributors to minimising transactional distance.

□ Encouragement

During the learning activities the instructor regularly gave positive feedback based on learners’ feedback. He encouraged interaction by thanking learners for their individual contributions. The instructor made a conscious effort to encourage a specific learner who was not participating actively.

What is encouraging about this *learner-instructor* interaction is that authentic communication took place between the instructor and individual learners. This virtual classroom platform

seems to be conducive to interaction on a one-on-one basis, and while being small enough for the instructor to encourage participation by all participants. This theme is a positive contributor to narrowing transactional distance between learner and instructor.

□ Uncertainty

During the learning activities there were numerous examples of uncertainty displayed by the instructor, as well as the learners. During the chat room sessions the instructor was unsure of who had entered the chat room and who were participating. Similarly the instructor was unsure who was able to view the Youtube video and who had finished watching the video. The learners on the other hand were uncertain of whether to respond orally or via the chat room to the instructor's instruction.

An interesting observation made during the analysis of this theme is that learners seemed unsure of who were expected to respond and when to respond to the instructor's questions addressed to the group as a whole. This played a major role in interrupting the flow of conversation, thereby representing a major source of transactional distance between the instructor and learners. This communication barrier could easily have been avoided if the instructor had addressed learners by name when asking a question. These are valuable lessons for future virtual classroom environments.

It is significant to note the causal interrelationship of the themes of 'uncertainty', 'repetition' and 'delay'. This interrelationship of these themes is discussed next.

□ Repetition

During the learning activities the instructor often had to repeat instructions and questions addressed to the learners. The uncertainty of the instructor could probably have been one of the main reasons for the instructor having to repeat so many questions and instructions.

Similarly the learners asked the instructor to repeat instructions and questions frequently. This theme of repetition suggests a significant transactional distance between the instructor and learners. However, if the instructor had posed questions or had given instructions to individual learners, uncertainty would have been virtually non-existent.

Repetition could possibly have been reduced if questions and instructions were not given orally only. Perhaps instructions or questions could also have been given visually, for example on a web page or a document, so that learners were not faced with uncertainty.

Logically, the themes of ‘uncertainty’ and ‘repetition’ have a time implication that inevitably leads to the theme of ‘delay’ which is discussed below.

- Delay

During the learning activities there are numerous examples of slow responses from both the learners’ side as well as the instructor’s after questions or instructions. This could be an indication of uncertainty and being unaccustomed to the interface. It is not clear why the instructor only responded to a learner after thirty seconds, but it seemed as if the instructor had been distracted and was probably focussing on issues relating to the interface. The slow response could be a combination of uncertainty in terms of the interface, as well as uncertainty about whom the instructor was addressing.

The delay which was present in the *learner-instructor* interaction inhibited the flow of conversation. This is an indication of transactional distance which can mainly be attributed to interface issues. An analysis of this theme concludes that learners communicate more freely using platforms they are familiar with.

- Oral interaction

This theme highlights oral interaction between the instructor and the learners. In general, learners managed to follow instructions of the instructor, keeping in mind the themes of uncertainty, repetition and delay. The instructor also managed to facilitate the oral completion of the fill-in exercise effectively with the help of learners. Learners seemed to be absorbed in the exercise activity which suggests minimal transactional distance.

Indications of transactional distance during the fill-in exercise were first that the instructor at times continued giving answers to some of the questions when there were no responses from learners. This links up with the issue already mentioned where the instructor often addressed a question to the group as a whole. Sometimes there was one response or no response at all. When the instructor addressed a specific learner by name, the response was more natural and communication was more effective. This phenomenon also overlaps with the next theme namely ‘personal’ discussed as follows.

- Personal

Apart from communication being more effective when learners were addressed personally, it was interesting to note that learners often responded using the instructor’s first name. This

could suggest that interaction was becoming more comfortable, natural and authentic. This personal intimation could imply minimal transactional distance.

4.2.2.2 (e) (ii) Narrative analysis of *learner-content* interaction themes

The analysis of the *learner-content* interaction revealed the eight themes presented in Figure 4.7. Apart from the themes of ‘misunderstanding’ and ‘lack of visual aids’ all themes that emerged under *learner-content* interaction suggest no evidence of transactional distance. These themes and their interrelationships, as well as the transactional distance implications are discussed as follows.

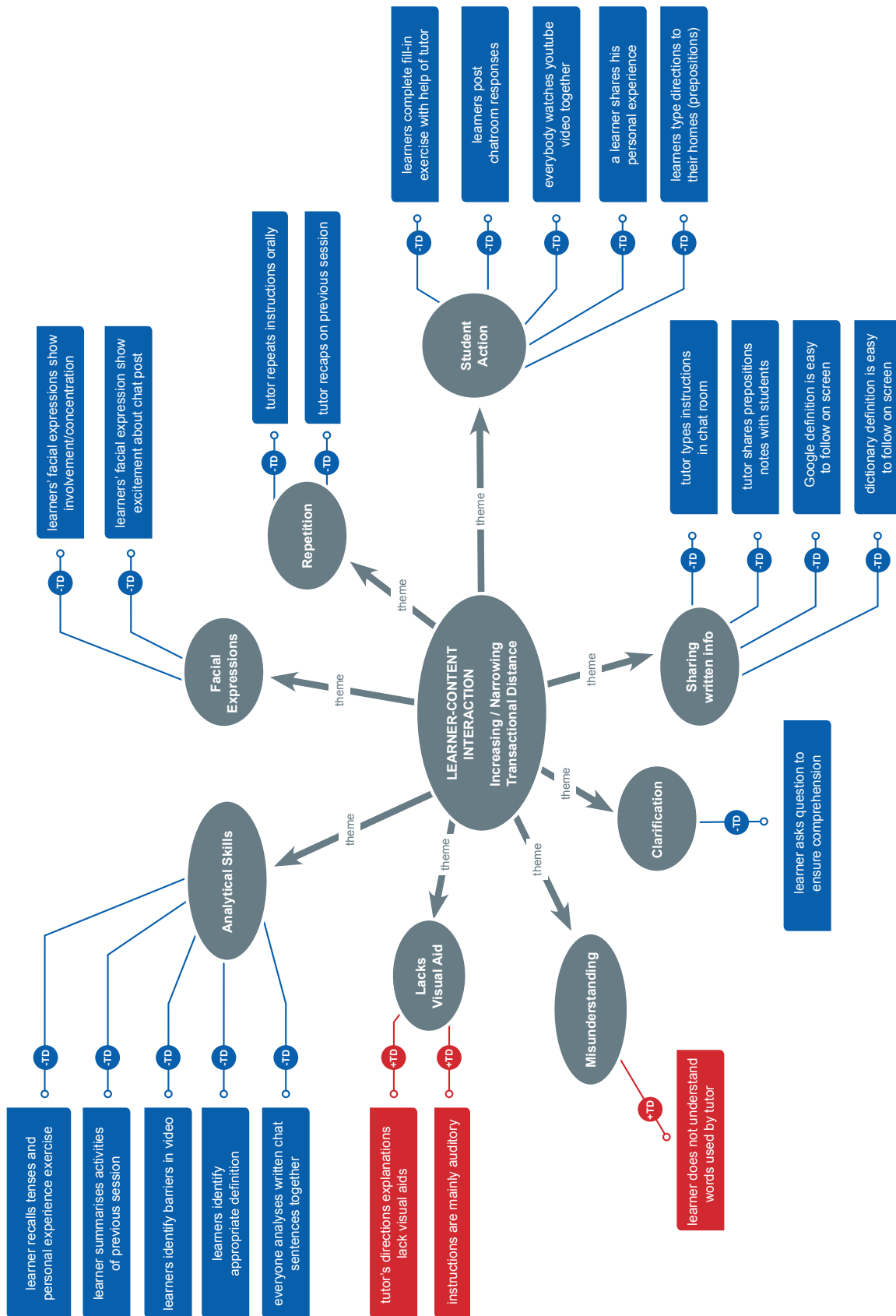


Figure 4.7: Learner-content interaction

- Analytical skills

During the learning activities the learners applied various analytical skills such as analysing and editing their own written chat room sentences, selecting the most appropriate definition of communication barriers, identifying communication barriers in the video scenario as well as summarising learnt content from the previous session.

Although the application of analytical skills by the learners is mostly determined by the design of the learning activities, it is significant to note that this virtual classroom environment was conducive to the application of analytical skills individually and as a group.

- Facial expressions

As mentioned under *learner-instructor* interaction the nuances of facial expressions can clearly be observed in this virtual classroom environment. What is significant about the learners' facial expressions in terms of their interaction with the English theory is that it showed involvement, concentration and excitement. This was particularly evident during the chat room interaction where the eye movement of the learners indicated that they were reading the posts of the other learners. Often an amused smile followed in response to what had been read. These observations of learners' involvement present no evidence of transactional distance.

- Repetition

Unlike the transactional distance suggested by the theme of 'repetition' in the analysis of the *learner-instructor* interaction, repetition in terms of content was effectively used by the instructor to summarise what had been learnt during the previous sessions.

Where the instructor in the chat room sessions presented written instructions, as in the prepositions document, or the initial instructions post, the instructor always repeated the instructions orally. This virtual classroom platform therefore seems to be conducive to the simultaneous use of visual and oral interaction. The repetition evident in the summarising and the oral repetition of instructions contribute to minimising transactional distance.

- Learner action

In terms of the learners' interaction with English content it is imperative to analyse all the actions that occurred (what learners did) during these sessions. Even though the actions were

mainly dependent on the design of the learning activities by the instructor, it is interesting to note the specific actions of the learners. The actions during these session included mental action, as discussed under ‘analytical’ skills, as well as oral, written and visual actions. Learners for example first completed a fill-in exercise in written format with pen and paper individually, whereafter all of them completed it orally as a group facilitated by the instructor, which worked well. Furthermore learners typed responses to one another’s posts in the chat room as well as directions to their own homes as part of the prepositions exercise.

Apart from responding orally to questions by the instructor, learners for example had to share their individual experiences of where or when they had experienced communication or language barriers as foreigners in South Africa. The fact that learners were able to share these personal experiences is a positive indicator of minimal transactional distance.

In terms of visual action, learners read each other’s posts in the chat room, they watched and analysed Youtube videos together, and they read instructions for various exercises.

These are a few of the learner actions that were evident during these sessions, but since this platform makes it possible to access the Internet, to share documents in various formats, as well as to do screen sharing, the possibilities in terms of learner actions are limitless. It is imperative that the instructor has full knowledge of and is aware of the all the myriad possibilities offered by this platform.

- Sharing written information

This theme links up with the previous theme in terms of what actions took place during the sessions, but specifically about sharing written information originating from the instructor. The instructor was able to type instructions, share notes and to share dictionary definitions directly from the Internet which were accessed and read by all participants simultaneously. These are examples of how written information was effectively shared with learners during these activities, although the majority of instructions were given orally by the instructor.

- Clarification

On numerous occasions learners had to summarise or paraphrase the new content while checking their comprehension with the instructor. This suggest that learning was taking place. The fact that learners felt at liberty to share their level of comprehension is an indication of

minimal transactional distance in terms of the learners' interaction with new English material.

□ Misunderstanding

In the analysis of the theme 'misunderstanding' under *learner-instructor* interaction, it was evident that a misunderstanding took place because of incorrect pronunciation of a word by the learner. In terms of *learner-content* interaction, misunderstandings took place because of the instructor having used words/terms that were unfamiliar to the learners. This was evident when the instructor referred to "communication barriers" without clarifying whether the learners knew the definition of "barrier". This is what Cleary (2008, p. 12) refers to as a "perceptual barrier" where the instructor assumes the learners know particular words.

Similar to the misunderstanding discussed under *learner-instructor* interaction, this kind of misunderstanding is inevitable in an EFL learning environment, where the educator sometimes forget to take into consideration the level, background and culture of the participating learners. Even though this kind of misunderstanding is a perceptual barrier that implies transactional distance, this could not be attributed to the virtual classroom environment, but rather to incorrect assumptions by the instructor.

□ Lack of visual aids

During the analysis of the theme of 'facial expressions' the underlying frustration of the instructor was discussed where the hand and arm gestures that often enhance the verbal message were absent. In terms of the acquisition of new knowledge (prepositions) from the learners' side it was evident that the instructor's explanation lacked visual aids. Directions and prepositions are topics that are necessarily visual in nature. Trying to give someone directions, without being allowed to use your arms and hands, is difficult.

This inability of the instructor not to use his or her full body to enhance the verbal communication messages implies an element of transactional distance. This can easily be remedied by using a plethora of options available on this platform to present the information more visually, for example by using drawings, pictures and videos. This is a valuable lesson for future instructors in virtual classroom environments to remember when dealing with visual or abstract information.

4.2.2.2 (e) (iii) Narrative analysis of *learner-learner* interaction themes

The amount of *learner-learner* interaction during these sessions is dependent on the design of the learning activities. During the session there were activities where interaction was to take place directly among the learners themselves. Notwithstanding the analysis of the *learner-learner* interaction revealed the five themes presented in Figure 4.8. Apart from the theme of ‘uncertainty’ all the themes suggest minimal evidence of transactional distance. These themes and their interrelationships, as well as the transactional distance implications will be discussed.

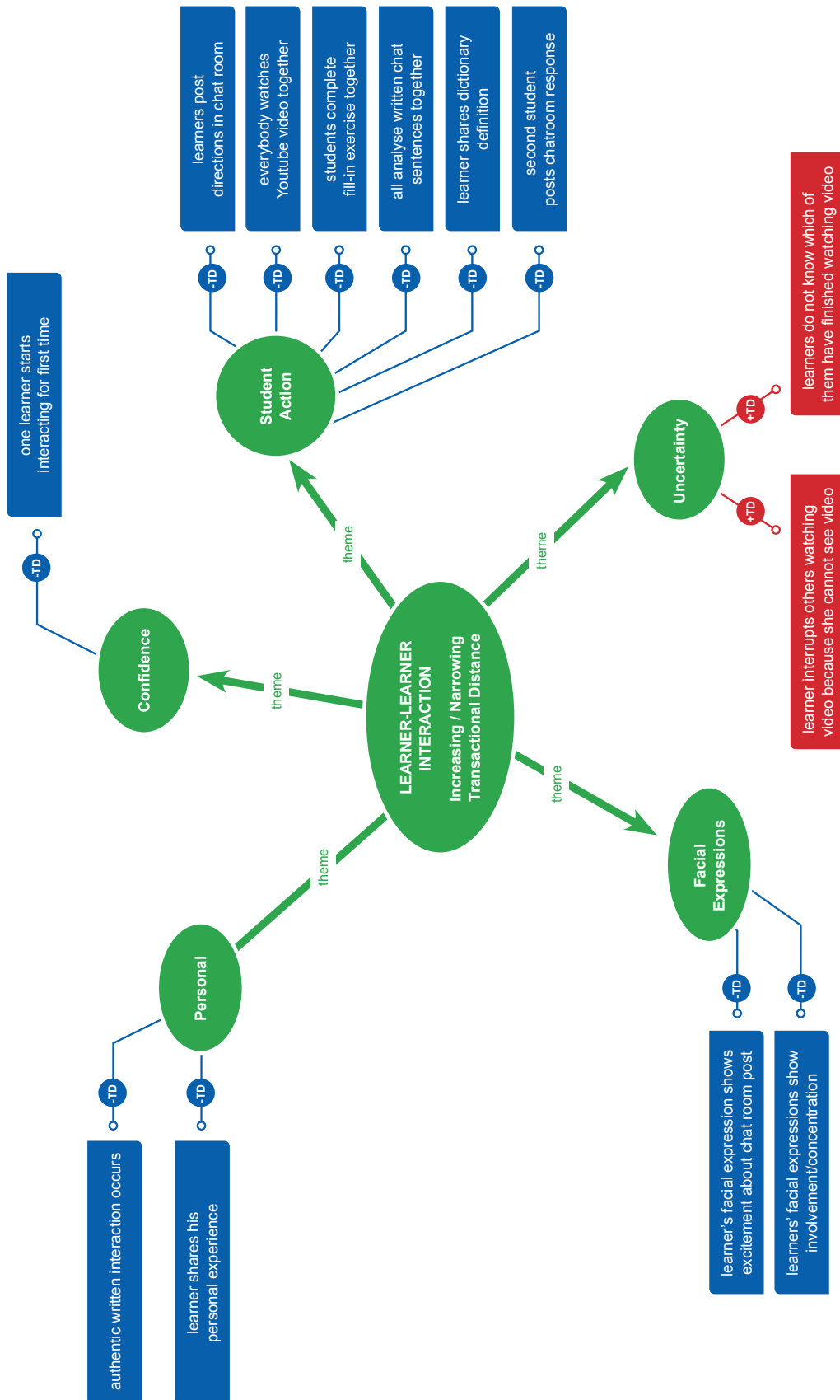


Figure 4.8: Learner-learner interaction

- Facial expressions

Similar to the discussion of facial expressions in terms of *learner-content* interaction, facial expressions give us information about the *learner-learner* interaction. Involvement, concentration and excitement were particularly evident among the learners when instructed to participate in group activities such as the chat room sessions or the sharing of personal experiences with the other learners.

Observations of facial expressions during the *learner-learner* interaction present no evidence of transactional distance.

- Personal

During the first session the instructor facilitated a discussion on communication barriers during which learners had to share their individual experiences of where or when they had experienced communication or language barriers as foreigners in South Africa. As mentioned under *learner-content* interaction, the fact that learners were able to share these personal experiences was a positive indicator of minimal transactional distance. The sharing of those stories suggested authentic interaction amongst participants.

Another example of authentic interaction amongst the learners themselves, as well as the instructor, occurred during the chat room session where learners had to share their personal thoughts regarding different kinds of communication barriers present in the Youtube video they had watched together. It was evident that learners were comfortable and perhaps used to communicating in a written synchronous chat room environment.

- Confidence

One of the learners found it particularly hard to express herself orally in English. As a result she hardly participated in the oral conversations. During the online chat room activity where learners had to share their thoughts regarding communication barriers in the video scenario, the learner started sharing her ideas more freely. This could be an indication that she was more comfortable with writing English than speaking, probably because learners were used to interacting in written format on cell phones and social media, whereas video was a new medium for all participants in this study. Perhaps the instructor should have made a conscious effort to involve the particular learner during the oral interactions. The fact that only one of the learners seemed to lack confidence, in particular during oral interaction, is an indication

that the virtual classroom environment is not directly linked to transactional distance. The learner would probably display the same lack in confidence in a traditional face-to-face classroom environment.

□ Learner action

The codes linked to ‘learner action’ under *learner-content* interaction are the same as those linked to the theme under *learner-learner* interaction. Under *learner-learner* interaction the focus is not so much on what the learner did, but rather on what the learners did together during the sessions.

As discussed under *learner-content* interaction, learner action included ‘analytical’ skills, as well as oral, written and visual action. When learners completed a fill-in exercise orally as a group facilitated by the instructor, this worked effectively. Furthermore learners typed responses to one another’s posts in the chat room and typed directions to their own homes as part of the prepositions exercise. It is significant to note that communication during the chat room sessions were not one-directional, but the reciprocal nature of the communication was evident. Learners not only posted their own messages, but also responded to the messages of others. This occurred when learners edited one another’s sentences together. Learners simultaneously watched and analysed Youtube videos.

It is perhaps important to note that most of the oral interaction took place between learners and instructor, while limited discussion took place among learners themselves. As previously mentioned, actions and interaction of the learners are mainly dependent on the design of the learning activities used by the instructor. However, the learning activities in this study included minimal evidence of interaction, and in particular oral interaction among learners themselves. Therefore it lies beyond the scope of this study to draw conclusions on how conducive a virtual classroom environment is in terms of oral discussions.

□ Uncertainty

During the learning activities learners were instructed to click on the Youtube link which is part of the Hangout interface to watch the video on communication barriers. One of the learners had difficulty in opening the video and kept on interrupting the others by telling them that she could not see the video. These interruptions were very disruptive for the other learners who were concentrating on the video. What is interesting about this interaction is that

all learners were bound to listen to her interruptions, while in a traditional classroom setup, the interaction could have been limited to one-on-one interaction with the instructor without disrupting the rest of the learners. The fact that all participants of this virtual classroom are of necessity exposed to all communication between everybody is generally useful, but as illustrated here, it can also be disruptive during individual engagement.

The Google Hangout interface makes it possible for participants to click on the shared Youtube video at any time to watch the video. This function can be useful, particularly when learners are working at a different pace, yet what was also evident was that learners did not know which other learners had finished watching the video. The instructor therefore had to use his discretion on when to ask the learners whether they had finished watching the video. This uncertainty suggests a margin of transactional distance.

4.2.2.2 (e) (iv) Narrative analysis of *learner-interface* interaction themes

Apart from positive aspects regarding the interface as a whole and in particular regarding positive audio and visual attributes of the interface, this *learner-interface* interaction was the main source of transactional distance in the virtual classroom environment in this study. A total of six themes emerged during the analysis of *learner-interface* interaction which suggested evidence of transactional distance (see Figure 4.9). Although minimal positive aspects of the interface are discussed in this section, it should be noted that it is this Google+ Hangout interface which made all the other positive attributes discussed in the previous themes possible. Although each theme is discussed individually, the apparent overlapping of these themes is evident. These themes and their interrelationships, as well as the transactional distance implications, are discussed as follows.

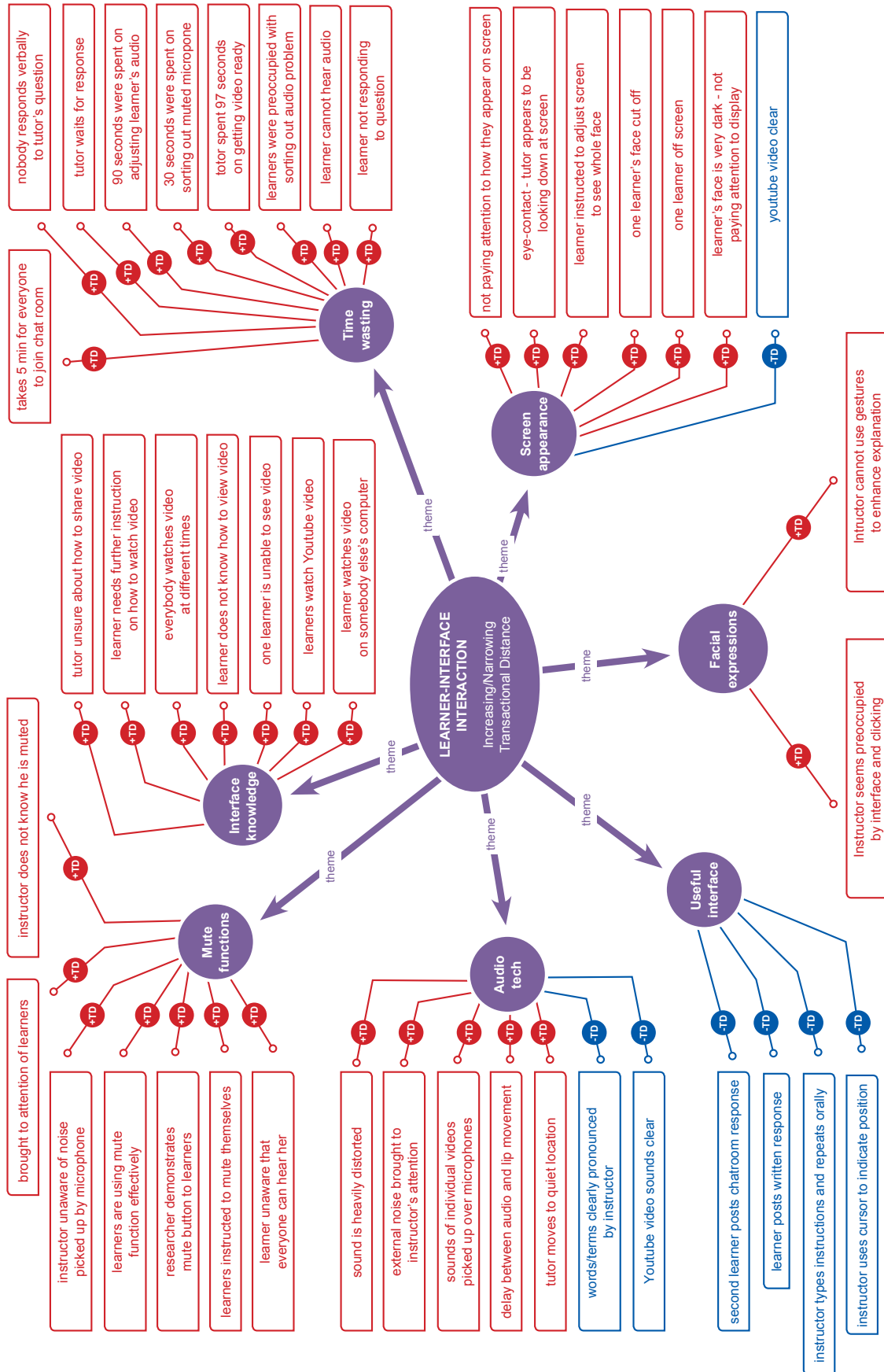


Figure 4.9: Learner-interface interaction

□ Audio technology

According to Cleary (2008) any factors from the external environment, such as external noise, can be classified as a physical barrier. External noise, such as people speaking in the background, as well as traffic noise was a major communication barrier during the first learning activity. This was mainly picked up from the instructor's background. What is interesting in the analysis of the screen casts is that the instructor did not seem aware of the physical barrier caused by the noise in his proximity. The external noise was brought to the attention of the instructor by the researcher whereafter the instructor moved to a quieter location.

It is significant at this stage to describe the context of the setting in which the virtual classroom interaction took place. Since most of the learners did not have access to the Internet at home, the learners had to rely on Internet access via the Wifi network at the school. The absence of Internet access and broadband/bandwidth quality for learners in South Africa is discussed in the final chapter of this dissertation. All participants, although physically separated, were therefore placed in various venues and corners of the school in relatively close proximity to one another. This led to another major audio complication. Because of the close proximity to one another, the amplification of sound waves of the various electronic devices caused heavy sound distortions. During the second session the researcher suggested that all participants use headphones. This solved the audio distortion problem.

Another audio issue that became evident during the sessions was the lack of synchronisation between voice (audio) and lip movement. This was sporadically observed in learners as well as the instructor. This is a common occurrence which is related to the bandwidth quality on the school's Wifi network. The unsynchronised voice and lip movements result in inconsistencies in body language and, in particular, facial expressions that were discussed under the previous themes. This is therefore a source of transactional distance that instructors need to be aware of. The extent of the transactional distance is determined not only by Internet access, but rather by the bandwidth quality that participants have access to.

It is significant to mention that both the issues of the audio distortions, as well as the sound delay would have had minimum impact if the learners had independent, quality access to sufficient broadband Internet and control over their physical environment. Knowledge of the interface's mute function would also have minimised the microphone distortion. The mute function is explored as the next theme.

- Mute function

It was evident, particularly during the first session that learners and instructor were not aware of the self-mute function in a Google+ hangout. One of the participants had a conversation with a friend next to her, unaware that the rest of the participants could hear their conversation in the hangout. The fact that nobody used the mute button function increased the noise levels picked up in the backgrounds of all participants.

The mute button function was eventually explained to the participants by the researcher. After the external noise issue had been explained to the participants they were encouraged to mute themselves while they were not communicating orally. Although learners started using the mute button function effectively during the second session, it was evident that they had to get used to operating it during their interaction. At one stage the instructor was unaware that he was muted. It had to be brought to his attention by the researcher.

External noise is clearly a source of transactional distance, but this was minimised once participants were used to using the self-mute function. The transactional distance relating to this theme therefore is directly related to knowledge of the interface and practice in navigating themselves within the platform.

This knowledge of the interface is one of the major themes under *learner-interface* interaction that is discussed below.

- Interface knowledge

Much of the transactional distance in this virtual classroom environment can be attributed to participants not being familiar with the interface as was evidenced in the mute function. Even though a Google+ hangout practice session was held with all the participants before the official sessions to familiarise them with the platform, numerous issues emerged especially relating to the sharing and watching of the Youtube videos.

The Google+ hangout makes it possible to share Youtube videos directly within the application. However, it was clear that the instructor was unsure of how to share the video with the learners. Once the instructor had managed to access the Youtube video and share it with the learners, it was difficult for him to monitor who were able and who were not able to access the video. Two learners in particular had difficulty viewing the video. One learner asked for assistance to view the video and another who did not manage to access the video

watched the video with one of the other participants who was in the venue next door. Reasons for learners not being able to access the video could be attributed to the Internet bandwidth connection or ignorance of how to navigate to the video. The result was that participants watched the video at different times, and it was difficult for the instructor to keep track of who had and who had not finished watching the video.

During the orientation (practice) session it was noted that all participants were familiar with various forms of social media, but Google+ and, in particular, hangouts were a new experience for all of them including the instructor. Usually, social media in general are very intuitive and user friendly. The fact that the instructor and some of the participants appeared uncertain and at times did not know how to proceed, raises questions about the intuitiveness of Google+ hangouts as a social media platform, especially when integrating various applications during a hangout session. Despite the sense of normality which seemed to improve after every session (even after an orientation session and three official virtual classroom hangouts) learners still had problems navigating and managing themselves in the platform. The Google+ hangout interface in itself suggests an extent of transactional distance.

- Time wasting

The previously mentioned challenges in the virtual classroom relating to audio technology, the mute function and a lack of interface knowledge in general meant that time was wasted. Unfortunately time lost was an unfortunate by-product in all of the virtual classroom sessions.

A significant amount of time was wasted on sorting out the technical problems relating to Internet connectivity, audio technology and switching from one application in the virtual classroom to another. This occurred from face-to-face interaction to joining the chat room or the video platform. Most time was wasted at the beginning of the sessions, particularly when trying to get everybody connected to the school's Wifi and joining it with the hangout, and at the beginning of a new activity which usually meant switching from one application to another. Once the technicalities had been sorted out the interaction became natural and authentic.

- Facial expressions

As discussed under *learner-instructor* interaction the instructor found it hard to explain the use of prepositions without the benefit of hand and arm gestures. The fact that body language in this virtual classroom environment is mainly limited to facial expressions, unlike in a face-to-face classroom environment, can be viewed as a shortcoming of the virtual classroom, because it creates a margin of transactional distance. On the other hand one can argue that the fact that participants have a constant close-up view of one another's faces, implies that they are able to pick up the finer nuances of facial expressions which may go unnoticed in a traditional classroom environment. It was evident through the facial expressions of the instructor together with the cursor movements on screen at a particular point of one of the sessions that the instructor was perplexed by and preoccupied with trying to figure out the interface.

Since the facial expressions can be observed on a physical screen by each participant, this theme goes hand-in-hand with the theme of screen appearance.

- Screen appearance

Under the theme of facial expressions in *learner-instructor* and *learner-learner* interaction, the nuances of facial expressions as a component of the communication process was mentioned. Cleary (2008) explains how non-verbal communication such as body language, facial expressions and tone of voice play a vital role in successful communication. The fact that participants have a constant close-up view of one another's faces can therefore be seen as a positive attribute of a Google+ hangout.

Unfortunately, what is evident from observation of these sessions is that learners as well as the instructor did not pay much attention to their screen appearance. Only the top half of one learner's face was visible during most of one session. Another learner was at times unaware that he was totally off the screen.

Another issue that was observed in most participants was that they did not pay attention to the lighting on their faces. Some learners appeared as silhouettes because of strong backlighting, while others had strong shadows over their faces because of strong lighting from above.

Participants being unaware of their appearance, precludes exposure to often subconscious

finer nuances of facial expressions that form a significant part of effective communication. Although the appearance of participants on screen can increase transactional distance, this can easily be eliminated if participants are made aware of the significance of their appearance, particularly regarding lighting, as a component of the communication process. Although learners had limited control of their environment during these sessions because of their dependence on the school, becoming aware of these factors in future virtual classroom environments will not only help to minimise transactional distance, but will render this close-up interaction one of the assets of a virtual classroom environment.

□ Useful interface

So far the analysis of the virtual classroom sessions has revealed the versatility of Google+ hangout as a virtual classroom interface. The four language skills (reading, writing, listening and speaking) form part of the learning activities. In the three learning sessions that formed part of this study use was made of a combination of face-to-face oral interaction and discussions, sharing of documents and exercises via screen sharing, internet definitions via screen sharing, watching of Youtube videos as well as chat room (typed) interaction. Since the hangout interface makes it possible to access the Internet communally, the educational possibilities are limitless.

Apart from these useful possibilities, a final attribute that emerged under *learner-interface* interaction is that the instructor was able to type instructions or display instructions via screen sharing for learners to read, while simultaneously explaining or repeating instructions orally. The instructor could also address any misunderstanding or uncertainty among the learners.

4.2.2.2 (f) Phase 6 – Producing the report

Braun and Clarke (2006, p. 23) explain that the purpose of this final phase of the thematic analysis is “to tell the complicated story of your data” and to “go beyond description of the data, and make an argument in relation to your research question.” In other words, during this final phase the researcher himself makes sense of the data, and then explains to the reader what the meaning or possible meaning of the data is.

During this phase, the “story” of the data is told as it relates to each of the research questions.

4.2.2.2 (f) (i) Primary research question

- *How can transactional distance be minimised within a synchronous virtual classroom environment?*

In the previous phase of the thematic analysis, the themes were categorised as either narrowing transactional distance during the interaction (positive), or increasing it (negative). By identifying possible contributors to transactional distance, these elements can be avoided by facilitators and participants in virtual classroom environments, with a focus on identifying elements that could decrease transactional distance. Therefore, both these positive and negative elements of transactional distance provide valuable information on how transactional distance can be minimised within a synchronous virtual classroom environment.

The primary research question implies a form of action required from the instructor and/or the learners to minimise transactional distance. To answer the research question the analysis during the previous phase is used to identify what the instructor and participants can physically do, or avoid, to minimise transactional distance in a virtual classroom environment. Where action is required from the learners' side, it is still the instructor or facilitator of the virtual classroom who should initiate these actions. A list of these practical actions which can be applied to minimise transactional distance is presented next.

Learner-interface interaction

- Organise a technical practice session with learners so that everyone can familiarise themselves with the interface. This will reduce time wasting, delays, uncertainty and unnecessary repetition and interruptions during the official sessions.
- Familiarise yourself with all applications and functionality of the interface. This will present more possibilities in the design of the learning activities, and in the sharing of resources.
- Give instructions and ask questions orally as well as visually (in writing). This can be done via document sharing or via a website within the Google+ platform where students can analyse instructions and questions fully, or clear up uncertainty. This will reduce unnecessary repetition of instructions and questions by the instructor.
- Choose a quiet location or venue for a virtual classroom session, such as a personal study or bedroom. This will reduce any possible external noise during the session

which could form a physical barrier during the interaction, while it would encourage natural volume and tone of voice.

- Avoid public spaces where the sound waves of other electronic devices in the proximity could lead to sound distortion.
- Make use of the Google+ hangout's self-mute function when not communicating orally. If all participants get used to applying this it will minimise external noise as well as microphone distortion.
- Make use of earphones during virtual classroom sessions, especially in close proximity to other people. This will minimise external noise as well as microphone distortion.
- Obtain access to a Wifi network or any data network with sufficient bandwidth to sustain video interaction. Unfortunately free Wifi access is often available in public spaces such as campuses, offices or restaurants. This dilemma was particularly evident during this study where learners were dependent on the Wifi network of the school. Participants should address this issue before engaging in virtual classroom sessions. Access to an adequate bandwidth data network will reduce time wasted on sorting out Internet connectivity problems while minimising the delay between lip movement and voice. Once these technicalities have been cleared up, interaction becomes natural and authentic.

Learner-content interaction

- Incorporate reading, writing, listening and speaking skills in the design of EFL learning activities. With the diversity of applications and functionality, the Google+ platform is conducive to the development of all four language skills, as well as analytical skills.
- Be creative in optimising the communal access to the Internet which creates limitless educational possibilities, especially in terms of exposing EFL students to authentic English language scenarios via website platforms such as Youtube.
- Consider the level, background and culture of the learners before and during the sessions. Use an appropriate register for the specific audience and be culturally

sensitive in the selection of material and topics for the sessions. This will reduce potential perceptual and semantic barriers between instructor and EFL learners.

- Avoid relying on oral interaction only.
- Enhance the verbal communication with visual elements such as drawings, pictures, videos and websites, which are easily accessible in the Google+ platform, especially when dealing with abstract concepts or information. A knowledge of the interface is a prerequisite for success.

Learner-learner and learner-instructor interaction

- Take advantage of the subtleties and nuances of facial expressions that are probably more obvious in a virtual classroom than in a traditional classroom because of the physical close-ups of the participants. Learners' involvement, concentration and excitement were evident during the study's sessions. Be aware constantly of the significance of visible facial expressions in the virtual classroom to enhance the verbal message.
- Enlarge the frame of the speaker by clicking on the small frame at the bottom of the screen. Make a conscious effort to make eye contact as much as possible with participants. This will enhance the quality of eye contact in the virtual classroom and make it more natural.
- Mention your own name before addressing the participants, especially in the early stages of a session. This gives the rest of the participants time to click on the speaker to enlarge his/her frame. Once participants get used to one another's voices and start linking a voice to a specific face, this will no longer be necessary.
- Become aware of screen appearance. Pay attention to good frontal lighting on face in a virtual classroom environment to avoid a silhouetted face or dark shadows over the eyes. This will improve non-verbal communication and will make speaker identification easier.
- Check that all participants' faces are centred in their particular frames.
- Encourage participation and interaction of all learners by addressing questions to specific learners, and thanking individual learners for their contributions. Give

positive feedback, particularly to learners who are not actively participating.

- Encourage oral interaction. Learners appeared to be more comfortable communicating in a written synchronous chat room environment. Perhaps this was because this form of social media interaction is what they are used to. The increase in oral interaction will heighten a sense of normality of oral social media interaction. In the focus group interview it became evident that students were not used to this kind of interaction. The encouragement of oral interaction will therefore minimise transactional distance among participants and will simultaneously enhance authentic interaction in EFL which is one of the underlying principles of the communicative approach to language teaching.
- Address learners by name when asking questions or giving instructions to individuals. When the instructor addressed specific learners by name during the learning activities, their responses were more natural and spontaneous. This practice will eliminate any uncertainty about who should respond to the instructor's questions or instructions, thereby facilitating the flow of conversation.
- Give learners the opportunity to paraphrase or summarise their understanding of EFL content. This will minimise misunderstanding and will be an indication to the instructor whether there is a need for clarification.
- Request learners to indicate when an individual exercise, such as watching of a Youtube video, has been completed. This can be done via the written chat room, where the instructor is able to monitor the progress and pace each learner without disrupting the rest of the learners.
- Make additional material, such as interesting web articles or videos available on the particular topic of the day to learners who have completed exercises before others. This will save time and prevent boredom among faster learners by creating an enriched and unlimited learning environment.

4.2.2.2 (f) (ii) Secondary research questions

- *What are learners' perceptions of communication in the virtual classroom? (learner-learner, learner-instructor and learner-interface transactional distance)*
- *What are learners' perceptions of knowledge development (learning English) in the virtual classroom? (learner-content and learner-interface transactional distance)*

Both research questions deal with the subjective experience of learners of the interaction and learning that took place. Because of the subjective nature of the questions, the thematic analysis of the screen casts could not provide any significant data to answer these questions. On the other hand, the analysis of the data obtained from the focus group interviews, as well as the opinionnaire, provided useful information on these research questions. The focus group data relating to these two questions are discussed in phase six of the thematic analysis of the focus group data.

4.2.3 Thematic analysis of focus group data

As described in 3.6.3, a consolidated list of the note-taker and instructor's notes were used to record the focus group interviews. Similar to the approach followed during the analysis of the screen casts of the learning activities, the thematic analysis approach as set out by Braun and Clarke (2006) was used as the basis for the process followed in analysing the researcher's notes. This deductive theoretical thematic analysis approach is particularly useful for analysing the focus group notes that were made during the focus group interviews, as learners answered the four specific questions based on the four dimensions of transactional distance. Even though this narrowed approach provides less rich data, it provides a more detailed analysis of aspects relating to the specific research questions (Braun & Clarke, 2006).

In the same way as in the analysis of the screen cast data, Atlas.ti was used for the coding of the focus group data. Braun and Clarke's (2006) stages of the analytic process which were used as the basis to analyse the focus group data are summarised in Table 4.3. A detailed presentation of the coding process and findings follows.

4.2.3.1 Description of and findings on the phases of the thematic analysis

4.2.3.1 (a) Phase 1 - Familiarising yourself with your data

Braun and Clarke (2006, p. 16) emphasise that regardless of the level of previous knowledge, it is essential that researchers should "immerse" themselves in the data during this stage to the extent that they become "familiar with the depth and breadth of the content." Since the researcher generated the notes for the analysis (appendix E) the researcher was already familiar with the data. Braun and Clarke (2006, p. 16) explain that immersion involves the active repeated reading of the data and to start the formulation of some broad ideas based on the data. At this stage of the analysis the following broad and general themes had emerged.

- Learners were generally positive about the interaction and found it to be similar to a traditional classroom. (Question 1: *learner-instructor* interaction)
- This question generated a weak response since the learning activities required limited *learner-learner* interaction. Where interaction was required, learners found it useful especially regarding the chat room interaction. (Question 2: *learner-learner* interaction)
- Learners responded positively to this question. Special reference was made to the diversity of the activities which helped effective learning to take place. (Question 3: *learner-content* interaction)
- Learners shared various technical challenges they had experienced during the sessions. A lack of knowledge of the interface (Google+) presented various complications. (Question 4: *learner-interface* interaction)

4.2.3.1 (b) Phase 2 – Generating initial codes

Braun and Clarke (2006) explain how this phase is all about generating initial codes based on the most basic elements of the raw data. The codes are grounded in the data. As explained in the second phase of the analysis of the screen casts of the learning activities, the data analysis of this study was, to use Braun and Clarke's terminology (2008, p. 18), more "theory driven" than "data driven". The data set was approached with specific research questions in mind relating to learners' experiences of the virtual classroom in particular in terms of *learner-instructor* (question 1), *learner-learner* (question 2), *learner-content* (question 3) and *learner-interface* (question 4) interaction. Therefore unlike the process followed during phase 2 of the screen casts analysis where each coded extract was linked to one or more of the four elements of Moore's theory (*learner-learner*, *learner-instructor*, *learner-interface*, and/or *learner-content* interaction), the focus group data had already been categorised into the four categories by the researcher.

Charmaz (2012) explains how this initial coding process can be done word-for-word, line-by-line or incident-by-incident. She explains that the choice of the size of the unit of data to code is dependent on the particular type of data. Since the data set was constructed by the researcher, a word-for-word analysis could have been misleading in reflecting learners' experiences. In fact, the researcher had already started summarising and paraphrasing learners' account of their experiences. Since the focus was on identifying the themes raised by

learners, a line-by-line coding process was more appropriate.

The process followed during this phase follows. Since each of the focus group questions had already been linked to a specific element of Moore’s theory, the responses to each question could be analysed independently. The responses to each question were thus analysed as an independent data set. The researcher started generating initial codes for each of the four data sets.

In addition to the thematic analysis approach followed during the analysis of the screen casts, the researcher applied an inductive and a deductive approach simultaneously. The construction of the focus group questions based on Moore’s elements of Transactional Distance data was deductive, while a more traditional inductive grounded theory open coding approach was followed for each of the four data sets.

The initial coding process generated 26 codes across the four data sets (see Table 4.9). Some of these codes were assigned to more than one data set resulting in 9 codes relating to *learner-instructor* interaction (orange), 9 codes to *learner-interface* interaction (purple), 9 codes to *learner-content* interaction (grey) and 7 codes to *learner-learner* interaction (green). Since each focus group question was analysed as a separate data set, it was not necessary to colour code the initial codes in Atlas.ti as was done during the screen cast analysis. However, for the sake of cohesion in this dissertation colours are used to identify the four categories.

	Initial open codes
Learner-Instructor Interaction	getting used to
	became easier later in session
	lacked confidence
	clarification
	felt restricted
	awkward/uncomfortable at first
	mind shift
	similar to traditional classroom
	misunderstanding

Table 4.9: Initial open codes of focus group data

	Initial open codes
Learner-Content Interaction	edited chat room text chat room sharing Youtube videos oral interaction diversity of activities authentic material reading, writing, listening, speaking enjoyed interaction preferred chat room to video
Learner-Interface Interaction	sound distortions Wifi challenges technical difficulties data expensive interface knowledge became easier later in session practice session useful personal use learners excited about G+
Learner-Learner Interaction	similar to traditional classroom enjoyed interaction useful experience learnt through interaction interaction interesting preferred chat room to video needed technical support

Table 4.9: Initial open codes of focus group data (continued)

4.2.3.1 (c) Phase 3 - Searching for themes

During this phase the analytic focus moves from coding the data extracts to sorting the different codes into potential themes. The researcher therefore starts analysing the codes

generated in the previous phase (Braun & Clarke, 2006). This stage is similar to focused coding in Grounded Theory where you “use these codes to sort, synthesize, and analyze large amounts of data” (Charmaz, 2012, p. 138). She adds that this process can also involve the coding of your initial codes. Similar to Braun and Clarke’s (2006) phase of searching for themes, Charmaz (2012) explains focused coding as the assessment of the initial codes by focussing on what the codes say and identifying the links between them.

Braun and Clarke (2006) mention how visual representation such as tables or mind maps can be particularly helpful during this phase. The Network View Manager functionality of Atlas.ti was used to represent and manoeuvre conceptual structures visually.

During this phase of the study each code family was analysed separately.

The codes under *learner-instructor* interaction related to the themes of ‘misunderstanding’, ‘awkward/uncomfortable at first’ and ‘similar to traditional classroom’. The themes and their related sub-themes are summarised in Figure 4.10.

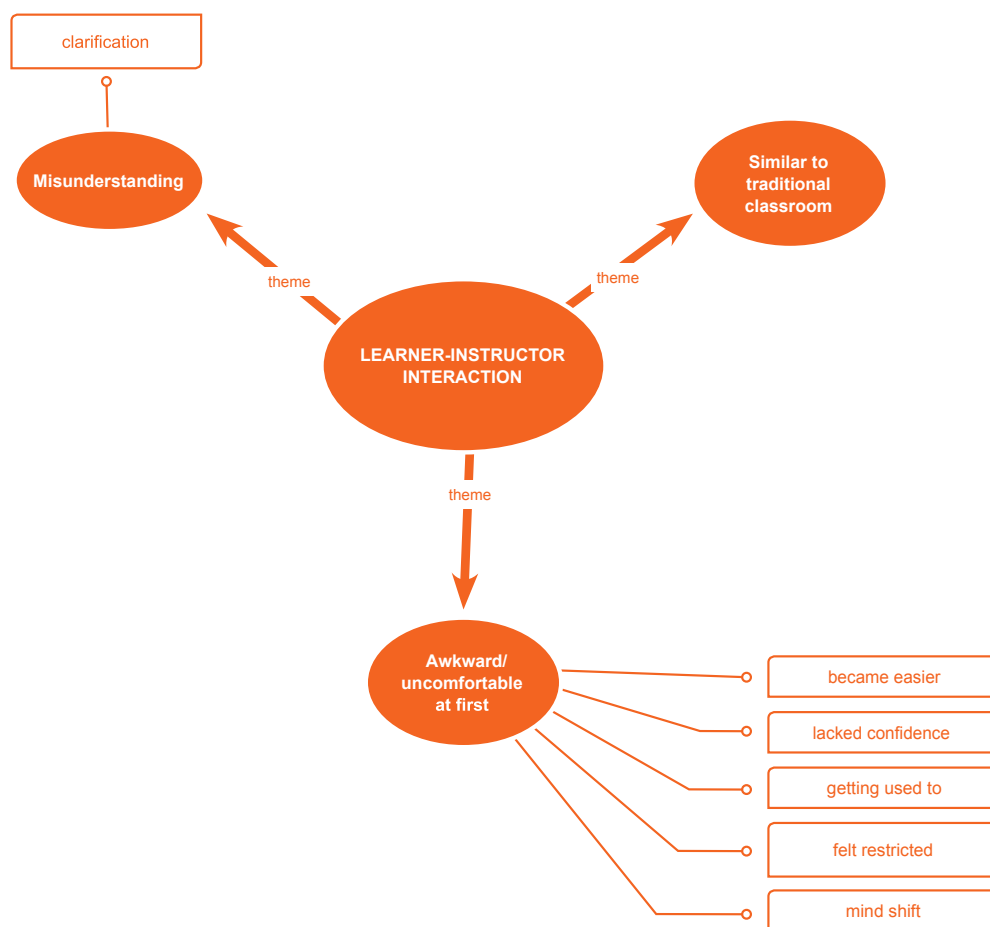


Figure 4.10: *Learner-instructor* interaction (focus group)

The codes under *learner-content* interaction related to various forms of interaction with the content including reading, writing, listening and speaking, as well as learners' responses to these interactions such as 'prefer chat room to video' and the fact that they mentioned how they enjoyed the exercises. The themes and the related sub-themes at this stage are summarised in Figure 4.11.

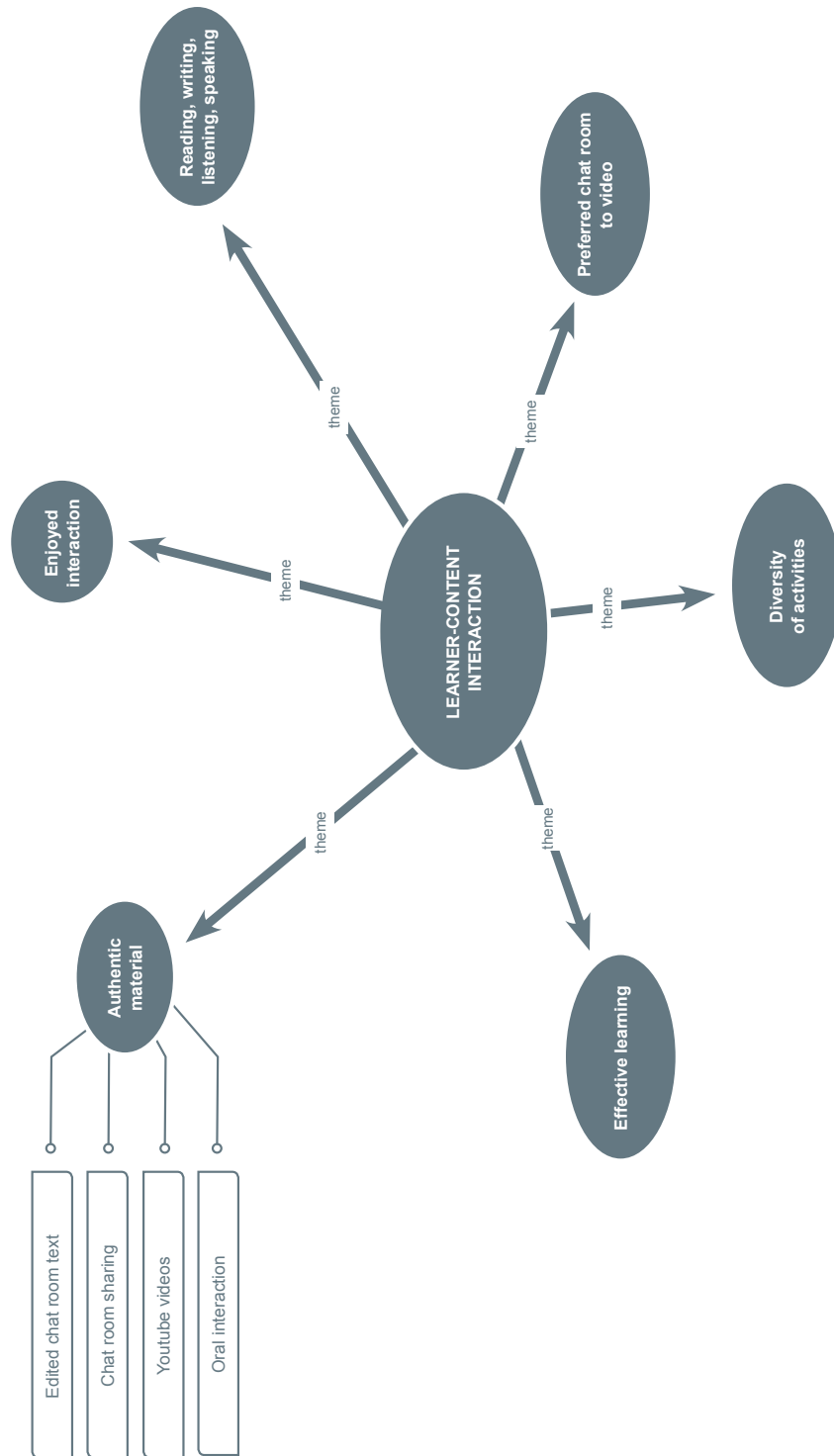


Figure 4.11: *Learner-content* interaction (focus group)

The codes under *learner-interface* interaction related to technical challenges and a lack of interface knowledge. Learners mentioned how excited they were about Google+ and why they experienced it as a useful tool. The initial themes and the related sub-themes at this stage are summarised in Figure 4.12.

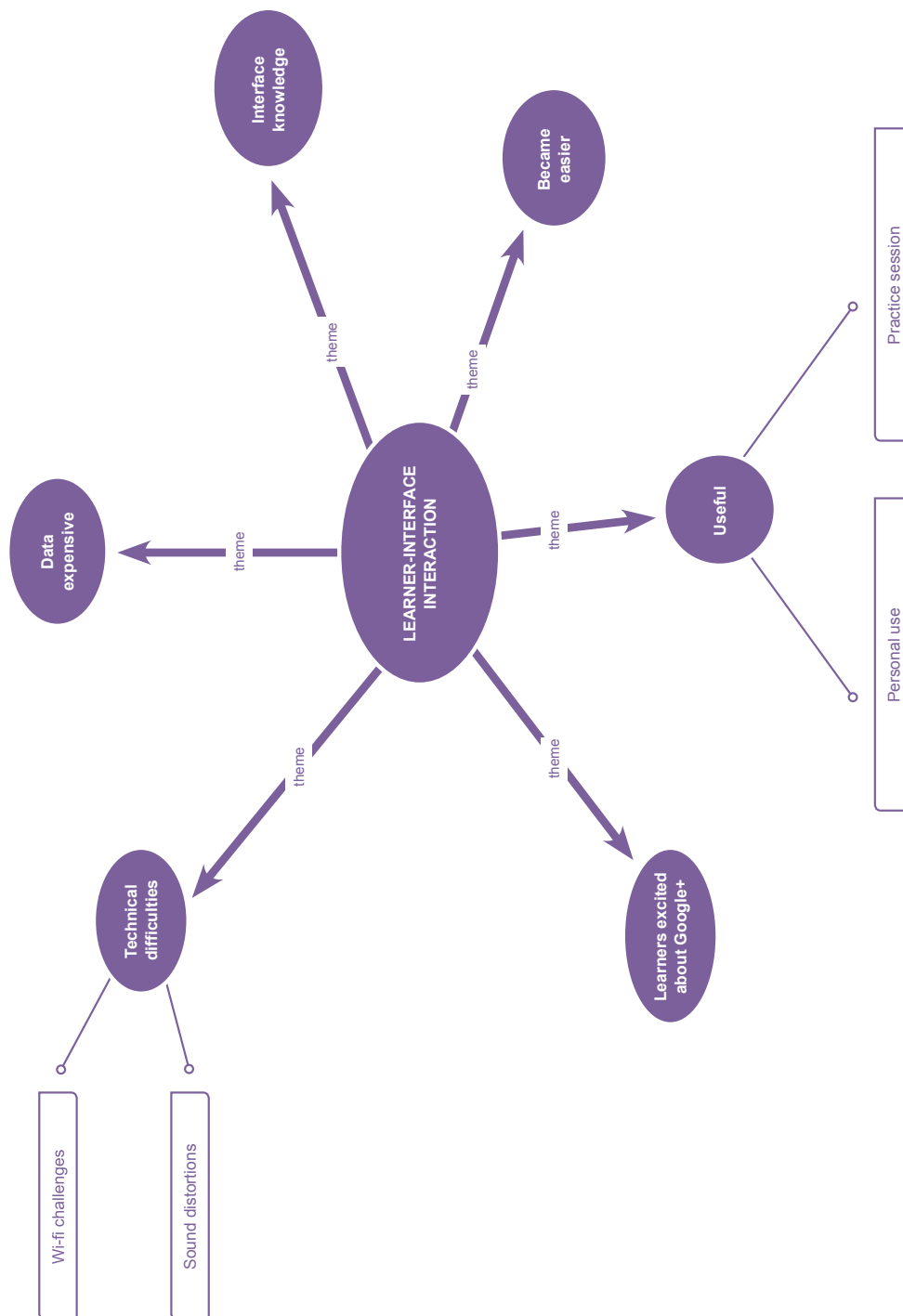


Figure 4.12: *Learner-interface* interaction (focus group)

From the codes under *learner-learner* interaction two main themes emerged relating to face-to-face technical support required by learners and how learners experienced the interaction as positive and useful. Learners experienced the interaction as similar to traditional classroom, although they preferred chat room interaction to video chat. They mentioned that they had

found the interaction interesting and enjoyable. The themes and the related sub-themes at this stage are summarised in Figure 4.13.

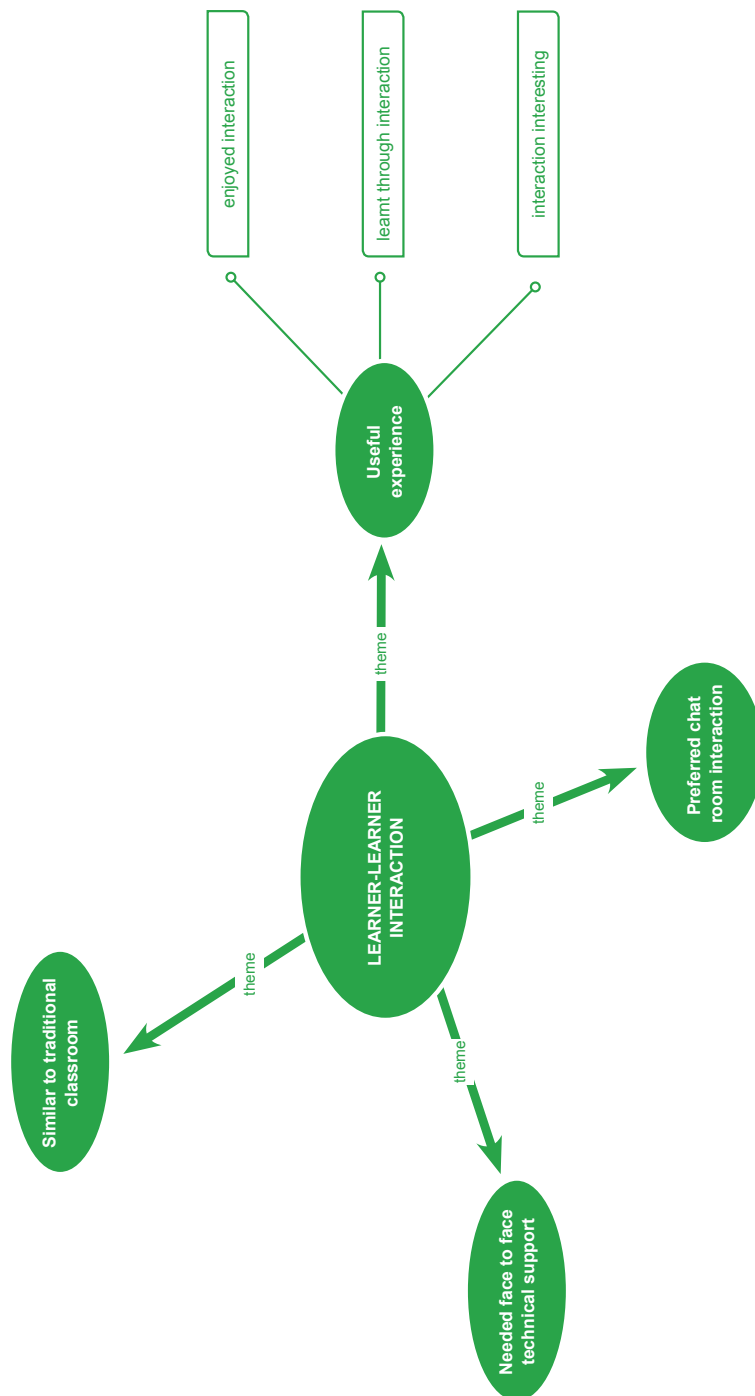


Figure 4.13: *Learner-learner* interaction (focus group)

4.2.3.1 (d) Phase 4 – Reviewing themes

This phase involves the refinement of the initial themes generated during the previous phase (Braun & Clarke, 2006). The refinement of these themes takes place on two levels, namely first reviewing the coded data extracts and then reviewing the entire data set. Furthermore they explain how it could happen that particular themes “are not really themes” because there are not enough data to support them, or the data are too diverse (Braun & Clarke, 2006, p. 20). Some themes may have to be broken down into sub themes while others may overlap to such an extent that they can be merged. The two levels of reviewing the themes and how they were applied to this study are explained as follows.

First, Braun and Clarke (2006) suggest reviewing the extracts for each theme individually to consider whether they form a coherent pattern related to the particular theme. As explained in phase 2 of the data analysis, redundant codes were discarded and similar codes were consolidated during that phase.

Since the data set for this study is so small, quantity (the number of appearances of each code) is not particularly significant. The main purpose of this study is to identify any possible aspects in the virtual classroom environment that could increase transactional distance. All themes and sub-themes were analysed in terms of whether they added to the knowledge of transactional distance. Since the data set for each focus group question is relatively small, limited changes were made to the theme structures developed during stage 3.

After having reviewed the structure and themes of the *learner-interface* interaction the researcher concluded that the coded structure created during stage 3 reflects a coherent structure in which all themes add to an understanding of learners’ experiences in terms of interaction with the instructor. Only the theme of ‘became easier’ was directly linked to ‘interface knowledge’. The interconnectedness and reciprocal effects in the identified themes particularly in terms of *learner-instructor* interaction were clearly starting to emerge. Overlapping and interconnectedness are discussed during stage 5 of the analysis. Similar to *learner-interface* interaction, in terms of *learner-instructor* interaction the theme of ‘getting used to’ was linked to the theme of ‘became easier’. In terms of *learner-content* interaction the four English language skills, namely reading, writing, listening and speaking became the centre of the thematic structure. The interconnectedness and overlapping of these themes are also significant and are discussed in stage 5 of this thematic analysis. No changes to the thematic structure were necessary in terms of *learner-learner* interaction.

The three adapted thematic structures are presented in Figures 4.14 to 4.16.

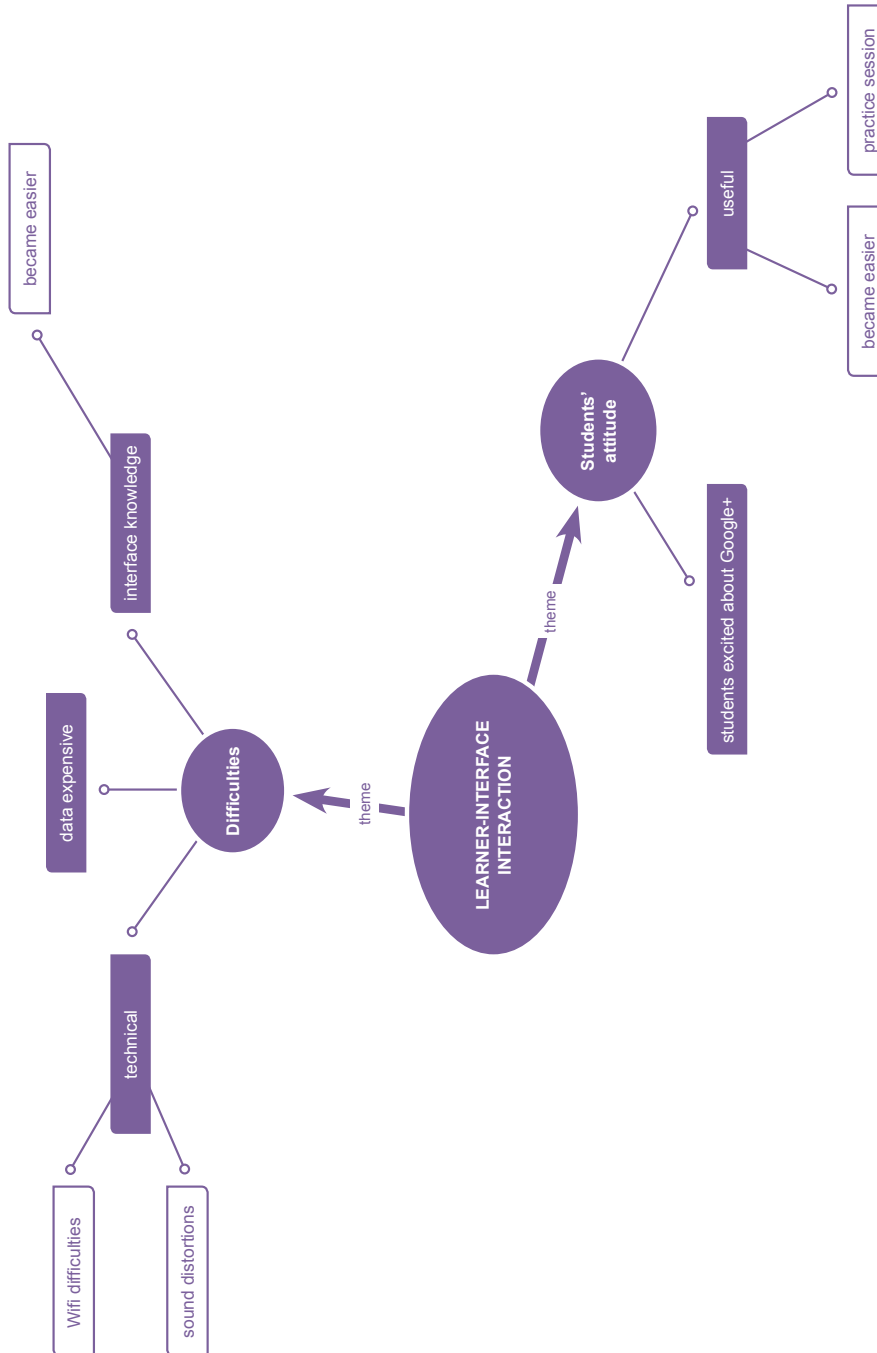


Figure 4.14: *Learner-interface* interaction (focus group)

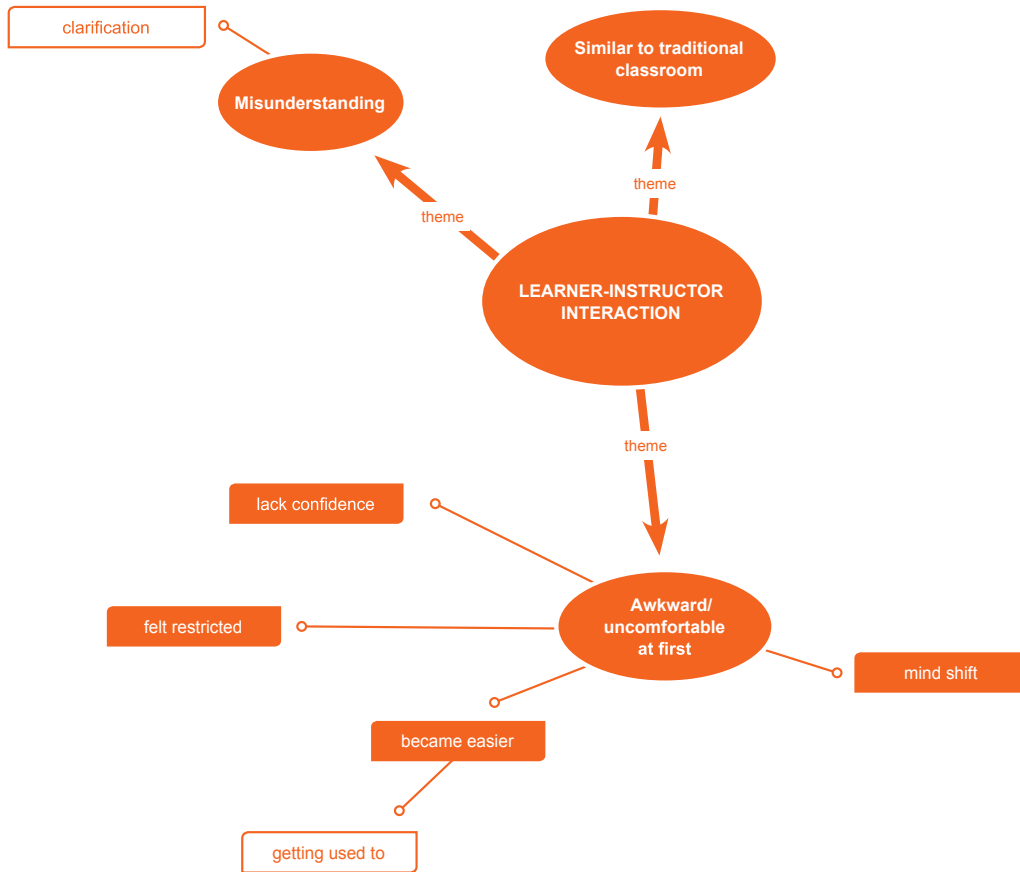


Figure 4.15: *Learner-instructor* interaction (focus group)

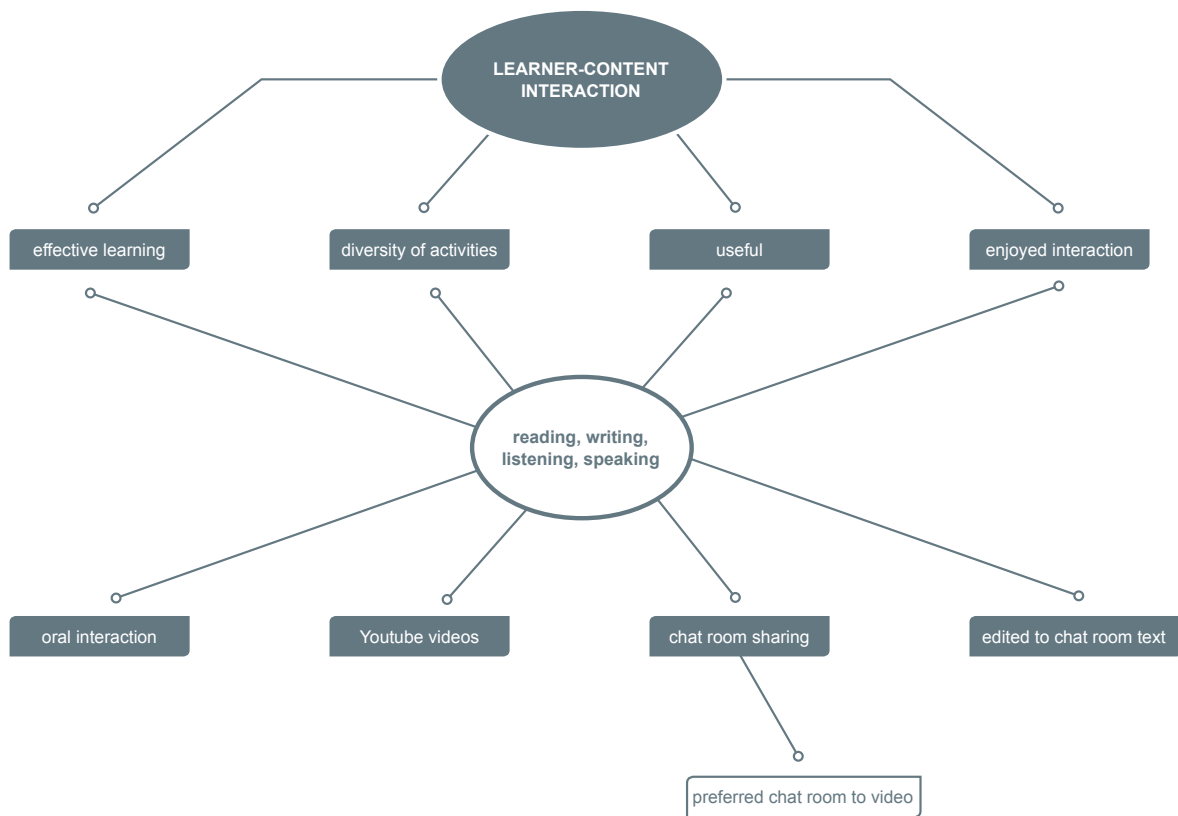


Figure 4.16: *Learner-content* interaction (focus group)

4.2.3.1 (e) Phase 5 – Defining and naming themes

This phase of the thematic analysis is characterised by identifying what Braun and Clarke (2006) refer to as the essence of the emerged themes, as well as the aspects of the data that the themes capture. During this phase each individual theme gets analysed, so that “the broader overall ‘story’ that you are telling about your data, in relation to your research question or questions” becomes clear (Braun & Clarke, 2006, p. 22). Overlapping of themes as well as the reciprocal effects of themes on one another started emerging during the previous stage. These interconnections and reciprocal effects are also emphasised during this phase.

Similar to the categorisation during stage 5 of the screen cast thematic analysis, all themes were categorised as either narrowing the transactional distance during the interaction (positive), or increasing it (negative). Therefore, during this phase the link between the data and the research questions is established, identifying the essence of the data analysis. The positive and negative categorisation of themes and data extracts are presented in Figures 4.18 to 4.21 through the use of colour (blue - decreasing TD; red -increasing TD; black – elements

of both increasing and decreasing TD). The narrative analysis of the “story” told by each theme and the interrelationships are discussed as follows.

4.2.3.1 (e) (i) Narrative analysis of *learner-instructor* interaction themes

The analysis of the *learner-instructor* interaction revealed the three main themes presented in Figure 4.17. These themes, their subthemes and their interrelationships, as well as the transactional distance implications are discussed.

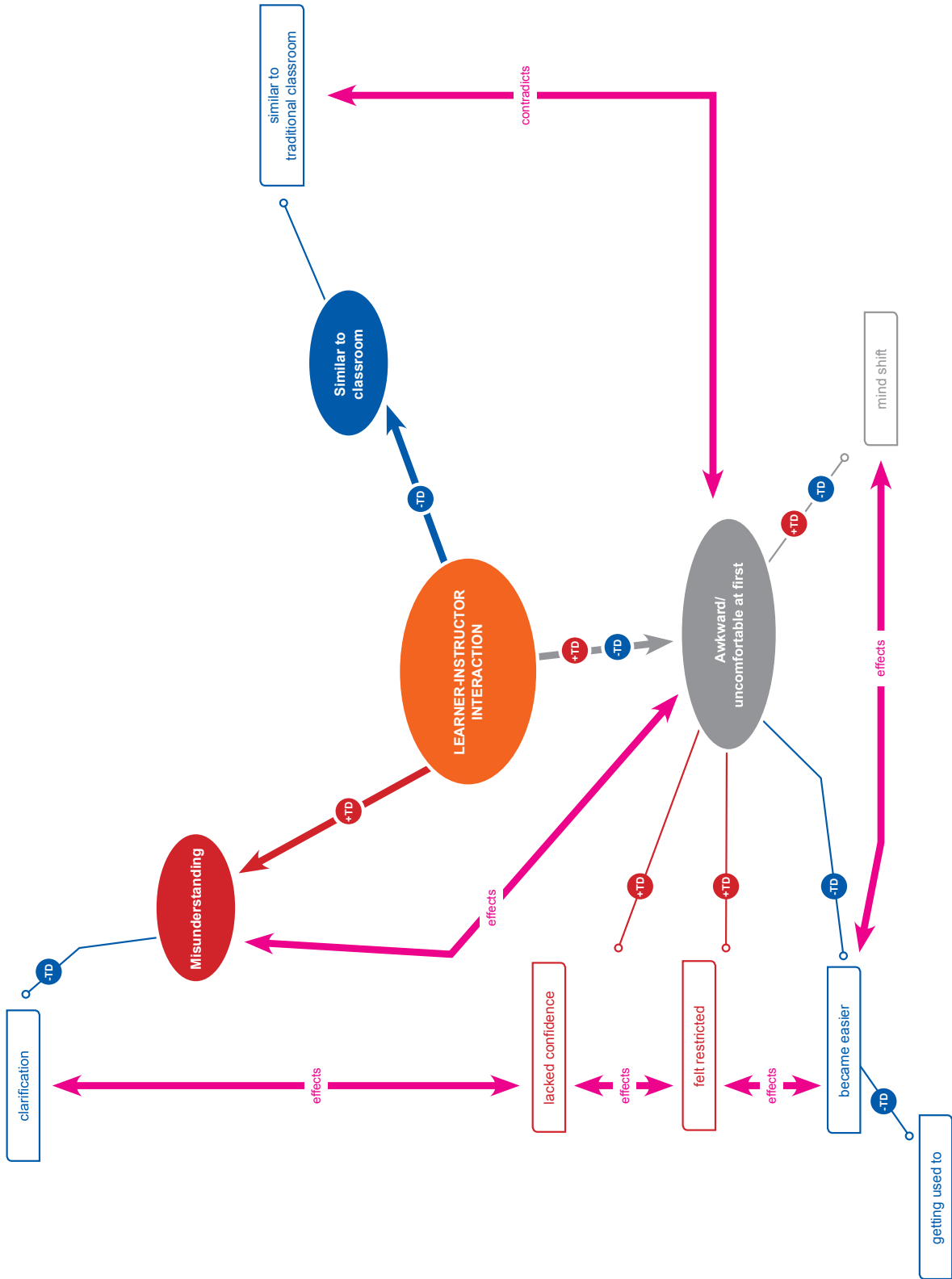


Figure 4.17: Learner-instructor interaction (focus group)

During the focus group interview learners reported that they had felt uncomfortable communicating with the instructor during the first session because they lacked confidence to communicate freely with the lecturer. Learners also opined that they felt restricted. Unfortunately specific details of what made them feel restricted were not discussed during the interview, yet a lack of confidence is probably synonymous with a feeling of restriction. These two subthemes are closely linked. It is however important to mention that learners explicitly stated that it became easier to communicate with the instructor once they had started becoming used to the platform. One learner even mentioned that there had to be a mind shift to get used to communicating with the instructor via video. Although the lack of confidence could suggest an increase in TD, it was clear that the diffidence decreased as the learners got used to the platform and grew in confidence. This analysis suggests that factors that suggest an increase of TD could be minimised as learners get used to the platform.

Another theme that emerged from the interview is ‘a lack of understanding’. Learners mentioned that there were times when they did not understand the instructor, but they were able to address the instructor to gain understanding. Although a lack of understanding in itself could be viewed as increasing TD, the fact that learners sought clarification on these issues suggests a decrease in TD.

It was also mentioned during the interview that the virtual classroom sessions were similar to the traditional classes they were used to. One learner specifically mentioned how that particular session was similar to their face-to-face class that same morning. This contradicts the statement that learners felt uncomfortable at first, and had to make a mind shift. Perhaps it would have been useful to explore exactly what was meant by “mind shift”. Yet, what is significant in terms of learner-instructor interaction is that all aspects that suggested an increase in TD initially seemed to decrease with and during each session.

4.2.3.1 (e) (ii) Narrative analysis of *learner-content* interaction themes

The analysis of the *learner-content* interaction revealed that the two main themes relate to the four pillars of language learning, namely reading, writing, listening and speaking, which form the basis of the content of all learning activities. The first main theme refers to the attitude and opinion of the learners regarding the learnt content (English language skills) covered during the session, and the second theme is based on the various activities referred to during the focus group interview. This thematic map is presented in Figure 4.18. These themes and their interrelationships, as well as the transactional distance implications are discussed as follows.

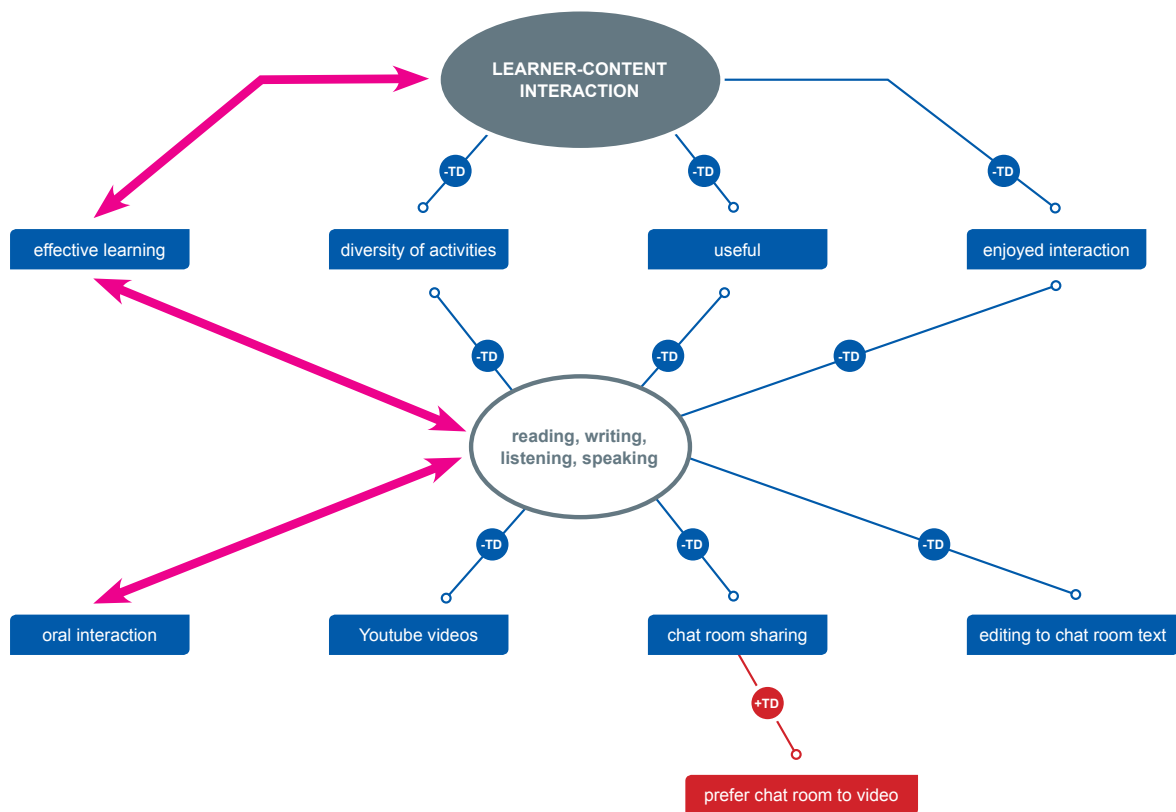


Figure 4.18: *Learner-content* interaction (focus group)

In terms of the learners' attitudes and opinions regarding the four virtual classroom sessions, learners expressed that they found the interactions useful and learnt a lot. They explicitly mentioned that they enjoyed the sessions and the diversity of the activities. Learners were encouraged to elaborate on which activities they had found useful. Oral interaction, the Youtube videos, the chat room interaction and, in particular, the editing of each other's sentences were singled out.

What is particularly interesting is that learners again indicated that they preferred the chat room interaction to the video interaction. This theme also emerged during the responses in terms of *learner-learner* interaction. This could be attributed to the fact that learners had had no experience of face-to-face video interaction until these sessions, while most learners were familiar with interactions similar to the chat room with applications such as Facebook, What's App and Short Message Service (SMS).

In conclusion all these themes suggest a decrease in TD, apart from an underlying constraint evidenced in the fact that learners prefer chat room to video interaction.

4.2.3.1 (e) (iii) Narrative analysis of learner-interface interaction themes

The analysis the learner-interface interaction revealed three themes relating to challenges experienced using the interface, suggesting an increase in TD. On the other hand, the analysis revealed two themes relating to learners' attitude towards the interface, suggesting a decrease in TD. This thematic map is presented in Figure 4.19.

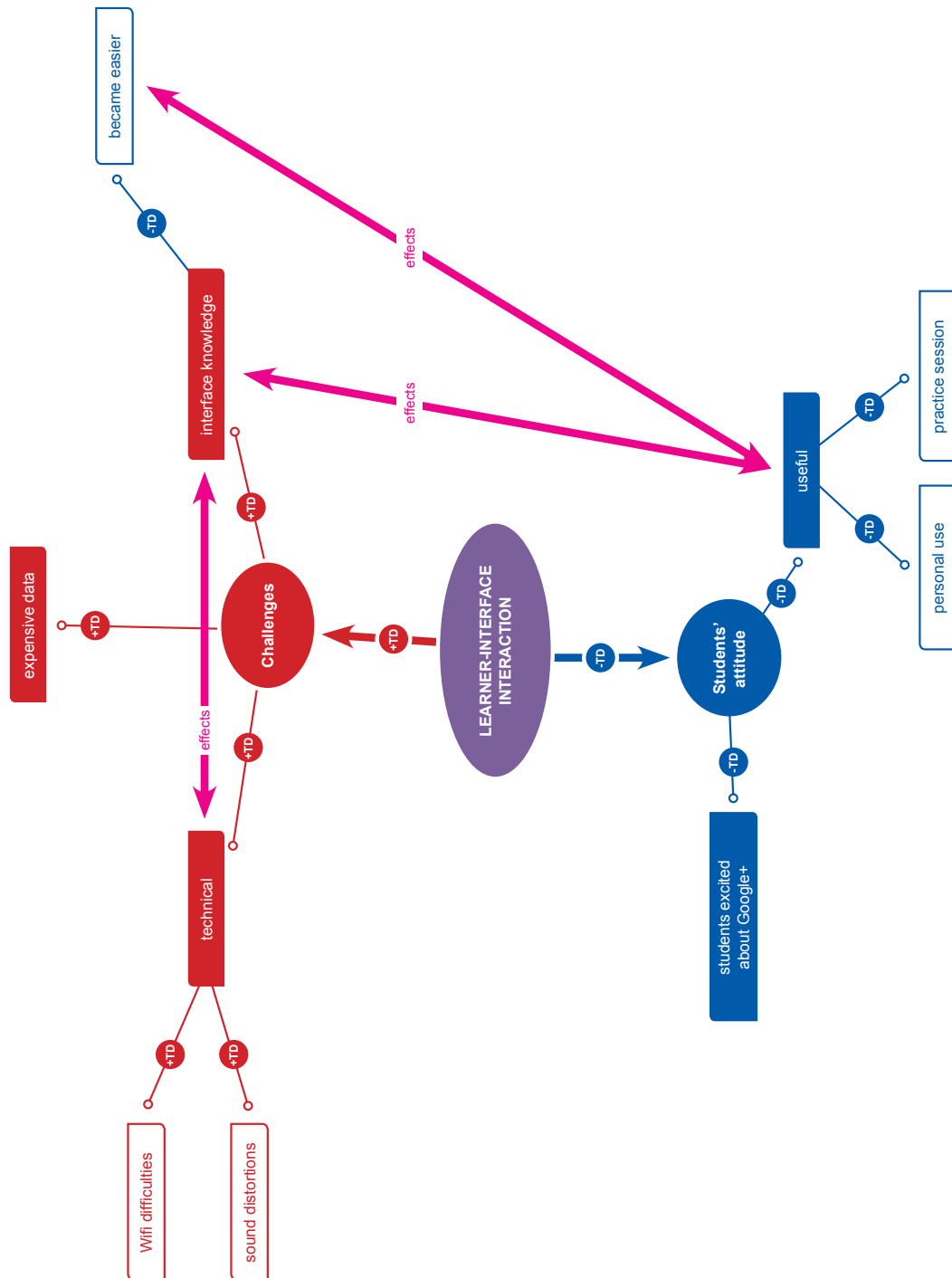


Figure 4.19: Learner-interface interaction (focus group)

In response to the question about their experiences of the interface, learners were quick to point out the technical difficulties they had encountered during the sessions. One of the major problems was sound distortion. It was established that learners had to participate in the virtual classroom in relatively close proximity to one another because of the dependence on the school's Wifi network. Owing to the close proximity to one another, the amplification of sound waves of the various electronic devices caused heavy sound distortions. As discussed in the screen cast analysis, the researcher suggested that all participants use headphones. All participants agreed that this had solved the audio distortion problem. Although these sound distortions suggest an increase in TD, this source of TD was largely eliminated when learners started using headphones.

The fact that learners were dependent on the school's Wifi network highlighted Internet access as another major obstacle to learners. A lack of Internet access is still faced by many South Africans where only 10.9% of South African households have access to the Internet at home. Gauteng has the highest number of households that have access to the Internet with a percentage of 17.3%, while in Limpopo only 2.7% of households have access to the Internet (Statistics South Africa, General Household Survey, 2015). During the online sessions of this study it was discovered that only one of the learners had access to a private Internet connection at home.

One learner reported a delay between the visual mouth movements and the audio sound of the speaking participants, which is a clear indication of the school's inadequate Wifi data bandwidth. Another major challenge faced by many South Africans is that according to the content delivery network, Akamai, who serve up to 30% of all web traffic, South Africa has an average Internet connection speed of 3.4 Mbps, which puts South Africa at the bottom of the EMEA (Europe, Africa and Middle East) countries (Akamai, Report on the state of the Internet, 2015). This became evident in the difficulty that some learners experienced in downloading the Youtube videos. Although the source of this problem had been identified early by the researcher and the learners, the dependence on the school's Wifi access meant that this source of Transactional Distance could not be eliminated.

One learner used his own personal data connection to the Internet to minimise these technical obstacles. The researcher asked the particular learner about the data usage and costs of a session. According to the learner he used about 2 GB of data per session which he had to pay for personally. This highlighted the expenses regarding Internet access as a factor that could

be a major challenge in terms of virtual classroom environments. It can therefore be argued that data expenses could be a source of Transactional Distance for many South Africans.

The third theme, which also featured strongly in the analysis of the screen casts, is ‘interface knowledge’. None of the participants, including the instructor, were familiar with Google+ and in particular Google+ hangouts as a social media application before the first session. Learners shared how they found the platform difficult in the beginning, and had to rely on direction from the instructor. At this point the instructor shared how he had the same problem as the learners, and how he had to rely on the researcher to guide him through the interface and the various features used during the learning activities. The learners and the instructor agreed that it became easier as the sessions progressed and both parties specifically mentioned how the initial practice session was particularly useful in getting used to the application and in getting an overview of its various features. This links up with the themes relating to the learners’ attitude towards Google+ hangouts as a virtual classroom platform.

In the responses to the question about their experiences of the platform their excitement was evident. Some learners mentioned that they had started using it personally as a social media platform and one learner who had a keen interest in Information Technology (IT) mentioned how he planned to use it as an IT support tool. He specifically referred to the useful feature of screen sharing which would be useful in an IT tutoring environment.

In conclusion, in learners’ response to the question on their experiences of the interface, learners revealed three aspects that suggest a margin of TD, namely technical difficulties, interface knowledge and expensive data. It is significant to note that the technical difficulties and the interface knowledge are changeable variables. Learners themselves admitted that it became easier to conduct themselves in the Google+ hangout, suggesting that TD could decrease as the learners become familiar with the interface. Although the dependence on the school’s Wifi and expensive data are also changeable variables, these factors are dependent on personal finance and access to Internet connectivity for South African learners on a more holistic level.

4.2.3.1 (e) (iv) Narrative analysis of learner-learner interaction themes

In response to the question on how learners experienced interaction with one another, learners revealed themes that overlapped with the themes discussed under *learner-instructor*, *learner-content* and *learner-interface* interactions.

The learners' positive attitude was again evident. They shared how they had enjoyed the interaction and found it interesting, and that they had learnt through their interaction. In response to the question on *learner-content* interaction, learners indicated early that they preferred interaction with one another via the chat room (typed interaction). As discussed under *learner-content* interaction this could have been attributed to the fact that learners had not been familiar with face-to-face video interaction until these sessions, but they were familiar with typed interaction via other social media applications. Although this might be an indication of underlying TD in terms of video interaction it could decrease TD as learners become familiar with video chat. It is perhaps also significant to mention that limited face-to-face video chat interaction was required to carry out specific learning activities. This is one of the shortcomings of this study that was realised only at the analysis stage of the research process.

As mentioned during the *learner-instructor* interaction, learners repeatedly mentioned that interaction was similar to that in a traditional classroom. This contradicts the opinion expressed by learners that they were uncomfortable communicating via video chat. Would learners have been uncomfortable communicating face-to-face in a traditional classroom? This is unlikely. Although the data do not present an explanation of this contradiction, it does point to a margin of TD in face-to-face video chat.

An interesting theme that emerged in the discussion, which was also evident in the screen casts, was that learners communicated face-to-face to solicit technical support. Since they were in close proximity to one another on the premises of the school, they were able to call on one another for support, especially on technical issues and issues regarding the interface. Although this relates to *learner-interface* interaction, it is interesting to note that some learners preferred calling for help on a face-to-face level which theoretically could have been done via the Google+ interface. This supports the earlier notion that there is some margin of TD present in the hangout interaction.

The fact that learners were compelled to participate in the sessions in close proximity to one another is perhaps another shortcoming of the study. It raises questions about how learners would have reacted differently if they had not been in physical close proximity to one another. Would they have been forced to resolve technical issues themselves? Would they have had to make use of the platform itself to communicate with other learners for support? Perhaps that independence would have had an influence on how quickly learners got used to the platform.

The thematic map of these themes is presented in Figure 4.20.

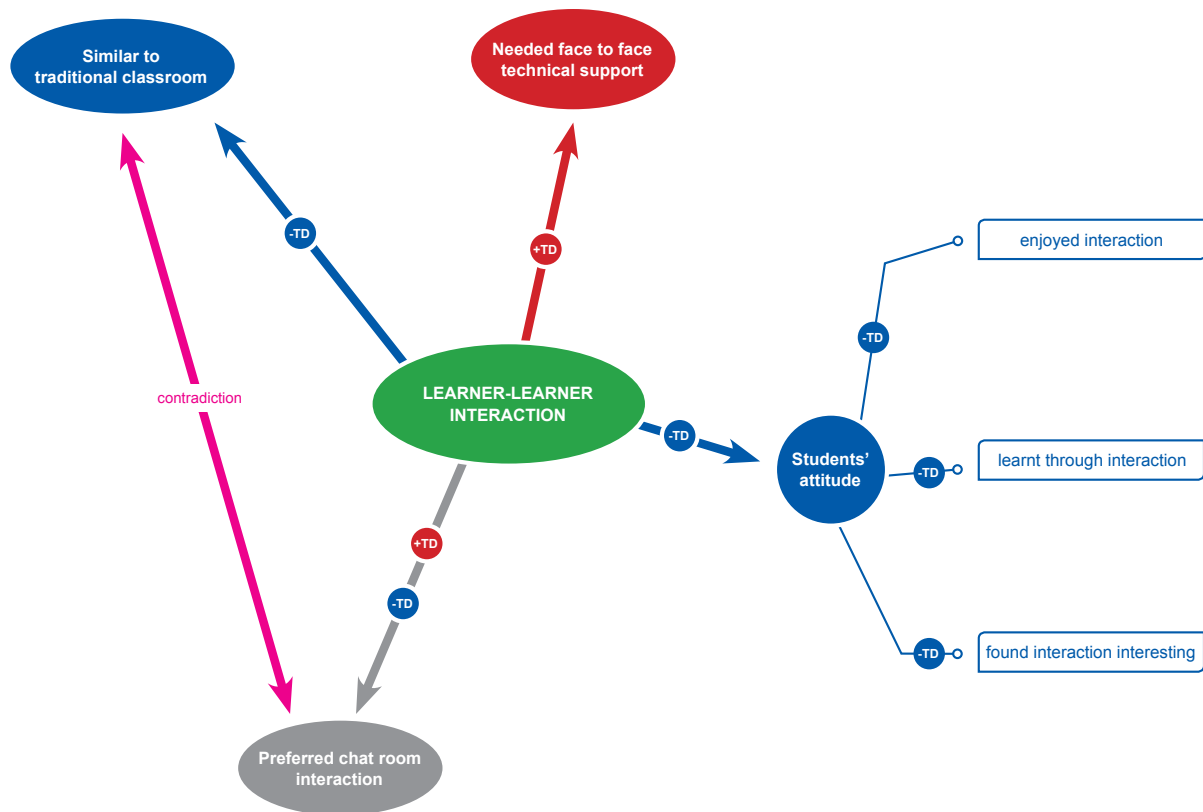


Figure 4.20: *Learner-learner* interaction (focus group)

4.2.3.1 (f) Phase 6 – Producing the report

As explained during phase six of the screen casts data analysis, the purpose of the final phase of the thematic analysis is “to tell the complicated story of your data” and to “go beyond description of the data, and make an argument in relation to your research question” (Braun & Clarke, 2006, p. 23). In other words, during this final phase the researcher will attempt to make sense of the data relating to the research questions. Where the thematic analysis of the screen casts provided findings relating to the primary research question only, an analysis of the thematic analysis of the focus group data provided similar findings relating to the primary research question, apart from additional findings relating to the two secondary research questions from the learners’ perspectives.

The focus group findings are discussed with reference to each research question.

4.2.3.1 (f) (i) Primary research question

- *How can transactional distance be minimised within a synchronous virtual classroom environment?*

In the previous phase of the thematic analysis, the themes were categorised as either narrowing transactional distance during the interaction (positive), or increasing transactional distance (negative). As in the analysis of the screen casts, the identification of possible contributors to transactional distance obtained through the focus group interview highlights elements that can be consciously avoided by facilitators and participants in virtual classroom environments to minimise transactional distance. A conscious effort to register positive experiences during the sessions also highlights elements that might decrease transactional distance. Therefore, both positive and negative elements of transactional distance provide valuable information on how transactional distance can be minimised within a synchronous virtual classroom environment.

As mentioned during the final phase of the screen cast analysis, the primary research question implies a form of action required from the instructor and/or the learners to minimise transactional distance. In order to answer the research question an analysis of the themes that emerged during the focus groups discussions is used to identify what the instructor and participants could physically do, or avoid, to minimise transactional distance in a virtual classroom environment. The list of these practical actions gleaned during the focus group interview reflects and supports the items obtained during the screen cast analysis. The similar list of these practical actions which can help to minimise transactional distance is presented next.

Learner-interface interaction

- Organise a technical practice session with learners so that all of them can familiarise themselves with the interface. This will increase interface knowledge and minimise technical problems which emerged as major themes. It will also build the confidence of learners to participate.
- Make use of earphones during virtual classroom sessions, especially in close proximity to other people, to minimise external noise, as well as microphone distortion.

- Ensure that the virtual classroom sessions are accessed on adequate data bandwidth networks. This is where academic institutions and instructors can play a role by providing free and adequate Wifi networks. This became evident through learners' experience that the data bandwidth of the school's Wifi network was not adequate for the student numbers and data usage.
- Provide plenty of direction and technical support during initial virtual classroom sessions. Students indicated their dependence on direction from the instructor at the beginning of the sessions.
- Put forward suggestions on how the interface can be used for personal use by students in an academic or personal setting. It could be a social media platform, for training/tutoring or for group work in academic environments. Possibilities can be brainstormed with students. Personal use could increase normalisation of the interface for students, especially in terms of face-to-face interaction.

Learner-content interaction

- Incorporate reading, writing, listening and speaking skills in the design of EFL learning activities. With the diversity of applications and functionality, the Google+ platform appears to be conducive to the development of all four language skills, as well as analytical skills.
- Include a diversity of activities during the virtual classroom sessions which include reading, writing, listening and speaking skills. It was clear that the Google+ platform was conducive to practising all these skills, with students explicitly mentioning how they enjoyed the diversity of activities such as oral interaction, Youtube videos, chat room interaction and editing of one another's sentences.
- Make a conscious effort to include plenty of oral (face-to-face) interaction, especially during the initial sessions, since students preferred chat room (written) interaction. As virtual face-to-face interaction was a new experience for all learners, it needs to be normalised for those who are not familiar with it.

Learner-learner and learner-instructor interaction

- Give learners the opportunity to clarify learning content. This will reduce the lack of understanding which was prevalent in the TEFL environment. Learners specifically mentioned that they could clarify their understanding with the instructor.
- Promote and facilitate interaction (oral and written) among learners. They mentioned during the interview that they had learnt from one another and from others' mistakes.
- Avoid close physical proximity of learners to one another during sessions. This could promote individual autonomy and might speed up the process of getting used to the platform.

4.2.3.1 (f) (ii) Secondary research questions

- *What are learners' perceptions of communication in the virtual classroom? (learner-learner, learner-instructor and learner-interface transactional distance)*
- *What are learners' perceptions of knowledge development (learning English) in the virtual classroom? (learner-content and learner-interface transactional distance)*

Both these research questions deal with the subjective experience of the learners of their own interaction and the learning that took place. The analysis of the data obtained from the focus group interviews provides useful information on these research questions. The learners' perceptions of communication concur with the data obtained during the "additional comments" sections of the opinionnaire. For the purpose of answering these research questions, data obtained during the focus group interview were analysed with the purpose of identifying specific references by participants relating to their experiences of communication and knowledge development. First, the learners' perceptions of communication are discussed with a focus on direct references made by them during the interview relating to their experiences, and this discussion is followed by a discussion of specific references to their learning experiences (knowledge development).

Learners' perceptions of communication

- Felt uncomfortable at the beginning, but relaxed as they got used to the platform.
- Lacked confidence initially, but confidence grew as they got used to the platform.
- Made a mind shift as they got used to communicating virtually face-to-face.

- Were able to clarify their understanding with the instructor when they could not follow the lesson.
- Expressed their experience as similar to that in a traditional face-to-face class.
- Preferred chat room interaction to face-to-face interaction. Learners mentioned how they were more used to chat room (written) interaction in social media interaction.
- Expressed how technical difficulties (inadequate Wifi internet bandwidth) inhibited communication.
- Expressed excitement when asked about their experience of Google+ and suggested how the interface could be used for personal communication in other contexts.

Learners' perceptions of knowledge development

- Stated that they found the sessions useful and that they had learnt a lot.
- Enjoyed the diversity of activities with specific reference to oral interaction, the Youtube videos, written chat room interaction and the editing of one another's sentences.

4.3 Answering research questions (triangulation of analyses)

Primary research question

- How can transactional distance be minimised within a synchronous virtual classroom environment?

The thematic analysis of the screen casts and the focus group discussion, as well as the analysis of the Likert scale data of the opinionnaire, provided findings relating to possible contributors to transactional distance. These contributors led to valuable guidelines on how transactional distance can be minimised within a synchronous virtual classroom environment.

Lists and discussions of these practical actions obtained through the thematic analyses of the screen casts and the focus group interview were presented in sections 4.2.2.2 and 4.2.3.1, respectively. These lists, together with relevant data obtained in the questionnaire relating to actions which could minimise transactional distance, are consolidated and triangulated. The triangulation of these findings is summarised in Figure 4.21.

How can transactional distance be minimised within a synchronous virtual classroom environment?

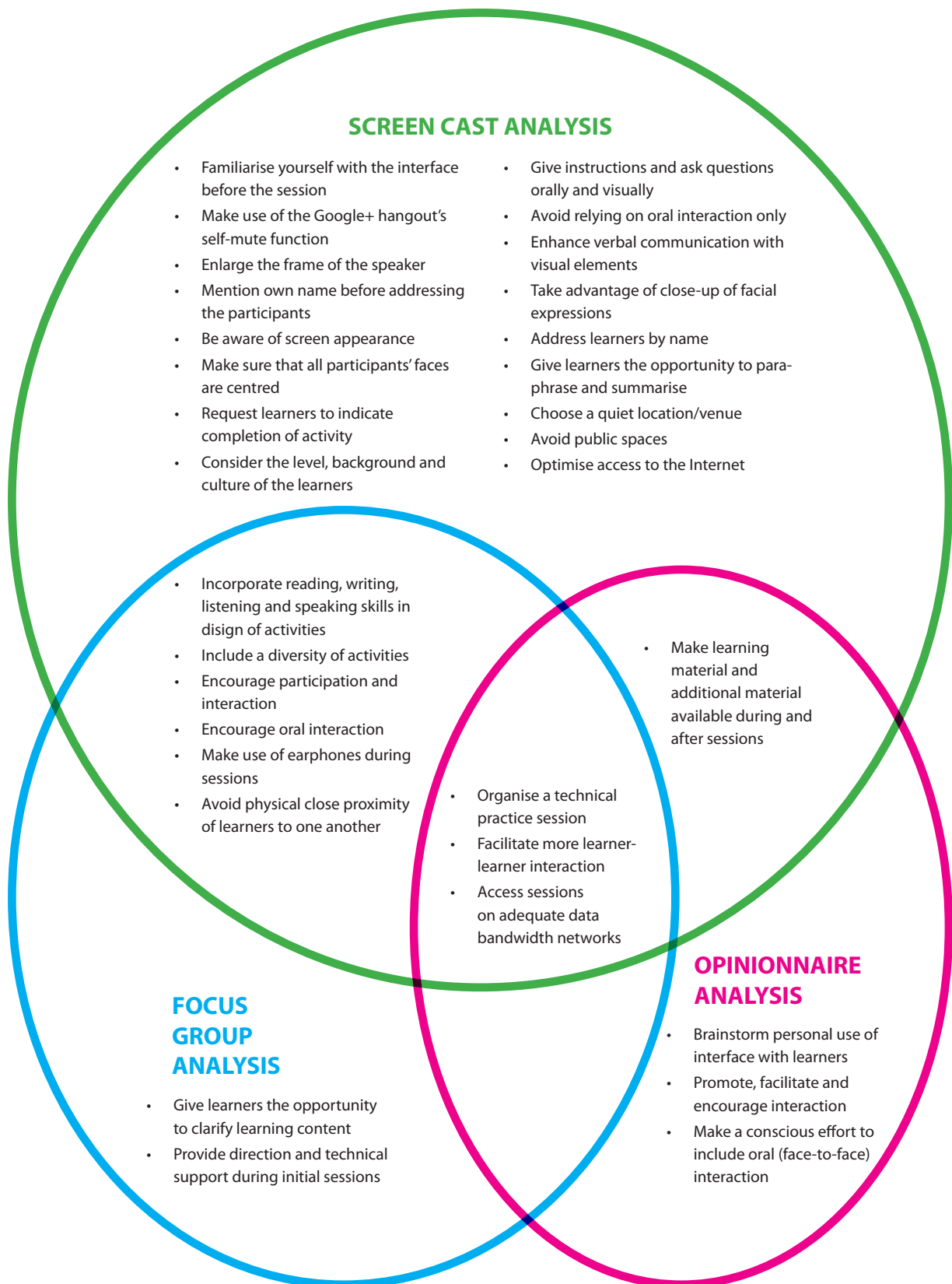


Figure 4.21: Triangulation of findings relating to minimising transactional distance

The screen cast analysis provided a comprehensive list of useful guidelines for teachers, tutors, instructors and facilitators of virtual classroom environments. The detailed and objective analysis of the screen casts provided insight into the learner-learner, learner-instructor, learner-interface and learner-content interaction of which participants were not necessarily aware during the sessions. Guidelines on relatively small, simple and practical actions and arrangements relating to the interface which could have a significant effect on minimising transactional distance were formulated.

- Familiarise yourself with the interface before the session
- Make use of the Google+ hangout's self-mute function
- Enlarge the frame of the speaker
- Mention own name before addressing the participants
- Be aware of screen appearance
- Make sure that all participants' faces are centred
- Request learners to indicate completion of activity

Furthermore, the screen cast analysis provided useful guidelines to EFL teachers on a pedagogical level. These guidelines include the following actions:

- Consider the level, background and culture of learners
- Give instructions and ask questions orally and visually
- Avoid relying on oral interaction only
- Enhance verbal communication with visual elements
- Take advantage of close-ups of facial expressions
- Address learners by name
- Give learners the opportunity to paraphrase and summarise

Some of the actions identified in the analysis are not always within the ambit of the instructor or participants such as Internet access in quiet locations and preferably not in public places.

Unfortunately learners are often dependent on free Internet services on campuses and other public spaces as became evident in this study, yet instructors, teachers, tutors and learners should be aware of these factors to minimise these elements of transactional distance wherever possible.

The focus group discussion provided similar themes to the screen cast analysis although the discussions were more general in terms of their experience. The following proposed actions emerged independently from both the screen cast analysis and the focus group interview.

- Incorporate reading, writing, listening and speaking skills in design of activities
- Include a diversity of activities
- Encourage participation and interaction
- Encourage oral interaction
- Make use of earphones during sessions
- Avoid physical close proximity of learners to one another

The first four of these actions relate to guidelines for EFL teachers on a pedagogical level, while the last two relate to physical actions that will avoid technical sound issues.

During the focus group interview learners specifically mentioned the usefulness of having been able to clarify learning content and how they appreciated the direction and support from the instructor during the initial sessions. It is therefore suggested that instructors should allow learners the opportunity to clarify learning content and to provide direction as well as technical support during initial sessions while reducing the support as autonomy increases.

Two more actions that surfaced based on the focus group themes, as well as the analysis of the additional comments on the opinionnaire, are the following:

- Brainstorm personal use of interface with learners
- Promote, facilitate and encourage interaction
- Make a conscious effort to include oral (face-to-face) interaction

Learners made specific reference to their personal use or intended personal use of the interface. This should be encouraged to increase the normalisation of the platform. Since the intended uses of the platform may differ from what learners wish to use it for, a brainstorming

session with the learners could be fruitful. Learners referred to the usefulness of the interaction, and their preference for written (chat room) interaction, in particular. Therefore, while the instructor should capitalise on the interaction, he should also try to encourage face-to-face interaction which is fundamental to becoming proficient in EFL.

One overlapping theme, that has emerged in both the screen cast analysis and the opinionnaire, is the need to make learning material and additional material available during and after sessions. Making it available during sessions will save time and avoid boredom among faster learners. Since learners are often accustomed to physical hand-outs of exercises and study material, it is essential to make material available for revision and study purposes after the session. These files can easily be shared using Google+ or Google Documents. The direct upload to Youtube functionality of Google+ hangouts can also be very useful.

The following three actions have emerged independently in all three analyses of this study.

- Organise a technical practice session
- Facilitate more learner-learner interaction
- Access sessions on adequate data bandwidth networks

The analyses proved the value and need for a practice session before the official sessions begin so that both learners and the instructor can familiarise themselves with the platform. This will reduce the waste of time, delays, uncertainty as well as unnecessary repetition and interruption during the official sessions. It also became evident that minimal face-to-face interaction took place among learners themselves. Most interaction took place between the learners and the instructor. This was identified as one of the pedagogical shortcomings in the current development of the learning activities. This interaction is necessary for EFL learning as was evident in the Communicative Approach discussion in the literature review. Lastly, the inadequate data bandwidth network of the school resulted in major technical difficulties during the sessions. Sufficient bandwidth is imperative to sustain video interaction. Participants should try to gain access to sufficient bandwidth before engaging in the virtual classroom sessions.

Secondary research questions

- What are learners' perceptions of communication in the virtual classroom?

Minimising transactional distance goes hand in hand with optimising communication. The

learner-learner, learner-instructor, learner-content and learner-interface interaction during the sessions are, in essence elements of communication within the virtual classroom. Yet, the focus of this research question is specifically on the learners' perceptions of the communication during the sessions. As perceptions are subjective, they might differ from learner to learner, therefore data obtained directly from the participants were used to analyse their perceptions. Both the focus group interview as well as the additional comments of the opinionnaire provided direct subjective data on their perceptions of the level of communication (interaction) during the sessions. Triangulation of these findings is summarised in Figure 4.22.

What are the learners' perceptions of communication in the virtual classroom?

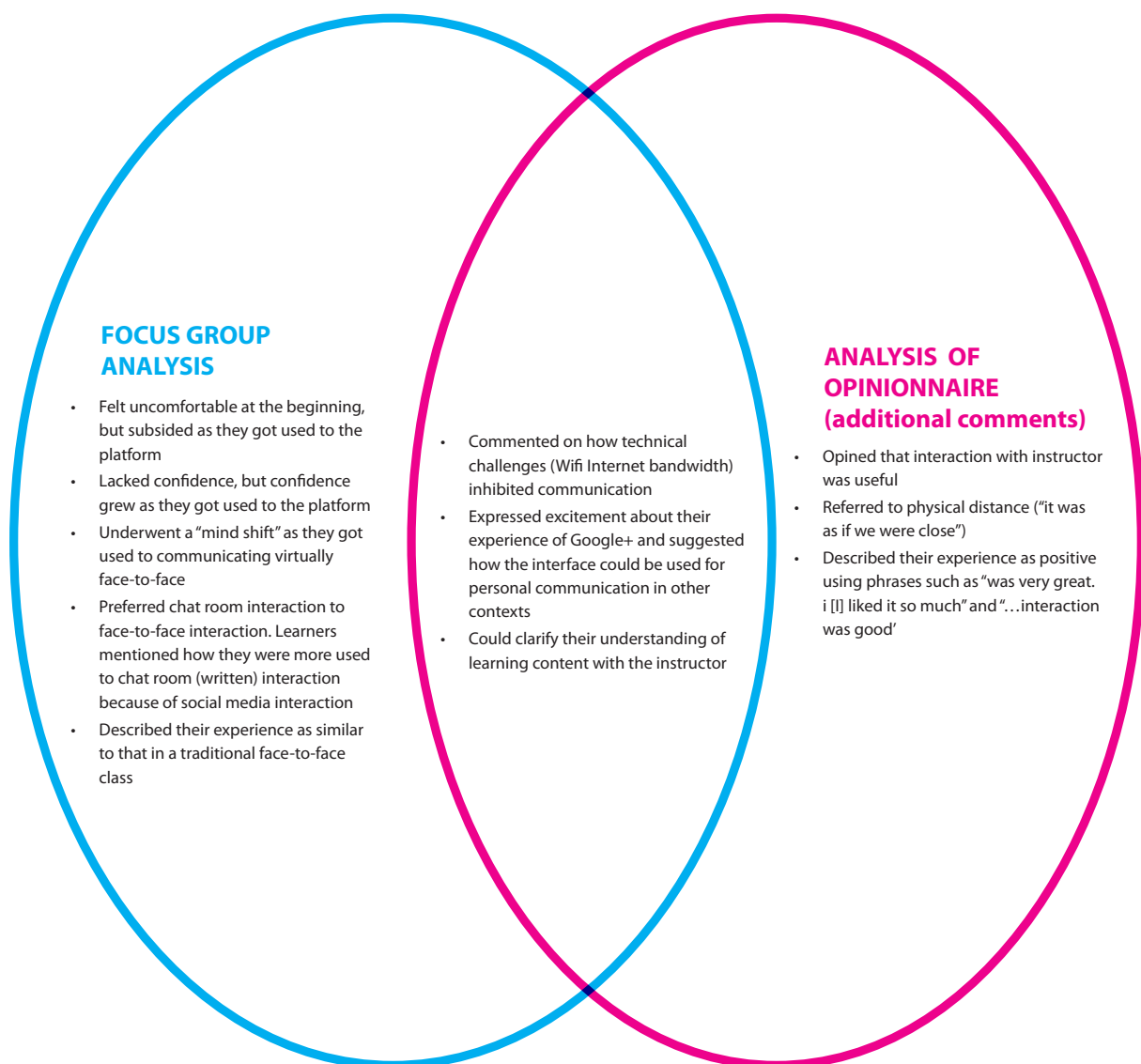


Figure 4.22: Triangulation of findings relating to learners' perceptions of communication

During the focus group interview learners did not contradict one another, but generally shared and affirmed one another's views. Therefore in the researcher's as well as in the moderator's notes, some individual perceptions were generalised as the experience of the whole group.

The thematic analysis of the focus group data revealed a sense of discomfort and a lack of confidence which, according to the learners, lessened as they got used to the platform. This affirmed the importance of familiarising learners with the platform before commencement of the sessions. Learners expressed their experience as similar to that in a traditional face-to-face learning environment. Yet one learner specifically described the experience as a "mind shift" which contradicts the statement on discomfort and lack of confidence at the beginning. Unfortunately, what exactly was meant by a mind shift was not explored during the interview. Perhaps the discomfort and lack of confidence could be ascribed to the unfamiliar interface, rather than the interpersonal interaction itself. Learners further shared that they preferred chat room interaction to face-to-face interaction and ascribed this to the fact that they were used to chat room (written) interaction.

Three themes emerged in both the focus group analysis as well as the analysis of the additional comments of the opinionnaire. All learners expressed how technical challenges (Wifi internet bandwidth) inhibited their communication. The learners' general excitement was evident with learners saying how they had started and how they would use the interface for personal communication. The final point that emerged in both the analyses is learners' mentioning how they could clarify new content and clear up any misunderstandings with the instructor at any time.

In the additional comments on the opinionnaire a number of anecdotal expressions reflecting the perceptions of individual learners, which included a reference to the absence of physical distance ("it was as if we were close"), while other learners offered positive comments with phrases such as "was very great. i [I] liked it so much" and "...interaction was good". One learner stated that the interaction with the instructor was "useful".

What became evident in the analyses of learners' perceptions of communication is that negative perceptions that had emerged, ceased to exist as learners got used to the platform or were ascribed to the lack of adequate Internet access. Therefore, similar to the findings of the thematic analysis of the screen casts, based on learners' perceptions, technical difficulties seemed to be the main source of transactional distance.

- What are learners' perceptions of knowledge development (learning English) in the virtual classroom? (*learner-content* and *learner-interface* transactional distance).

The focus of this research question is on learners' perceptions of knowledge development, rather than on the knowledge development itself. The primary purpose of learners in a EFL environment is to learn the language and to become proficient in English. For some learners the focus might be more on becoming proficient in informal, social spoken language, while others might have more academic purposes in mind with the focus being on reading and writing. The purpose of this research question is to gain insight into learners' perceptions of learning that took place during the sessions, despite their individual reasons for wanting to learn English. Similar to the previous research question, data obtained directly from the participants were used to analyse the perceptions obtained from both the focus group interview as well as the additional comments on the opinionnaire. Triangulation of these findings is summarised in Figure 4.23.

What are the learners' perceptions of knowledge development (learning English) in the virtual classroom?

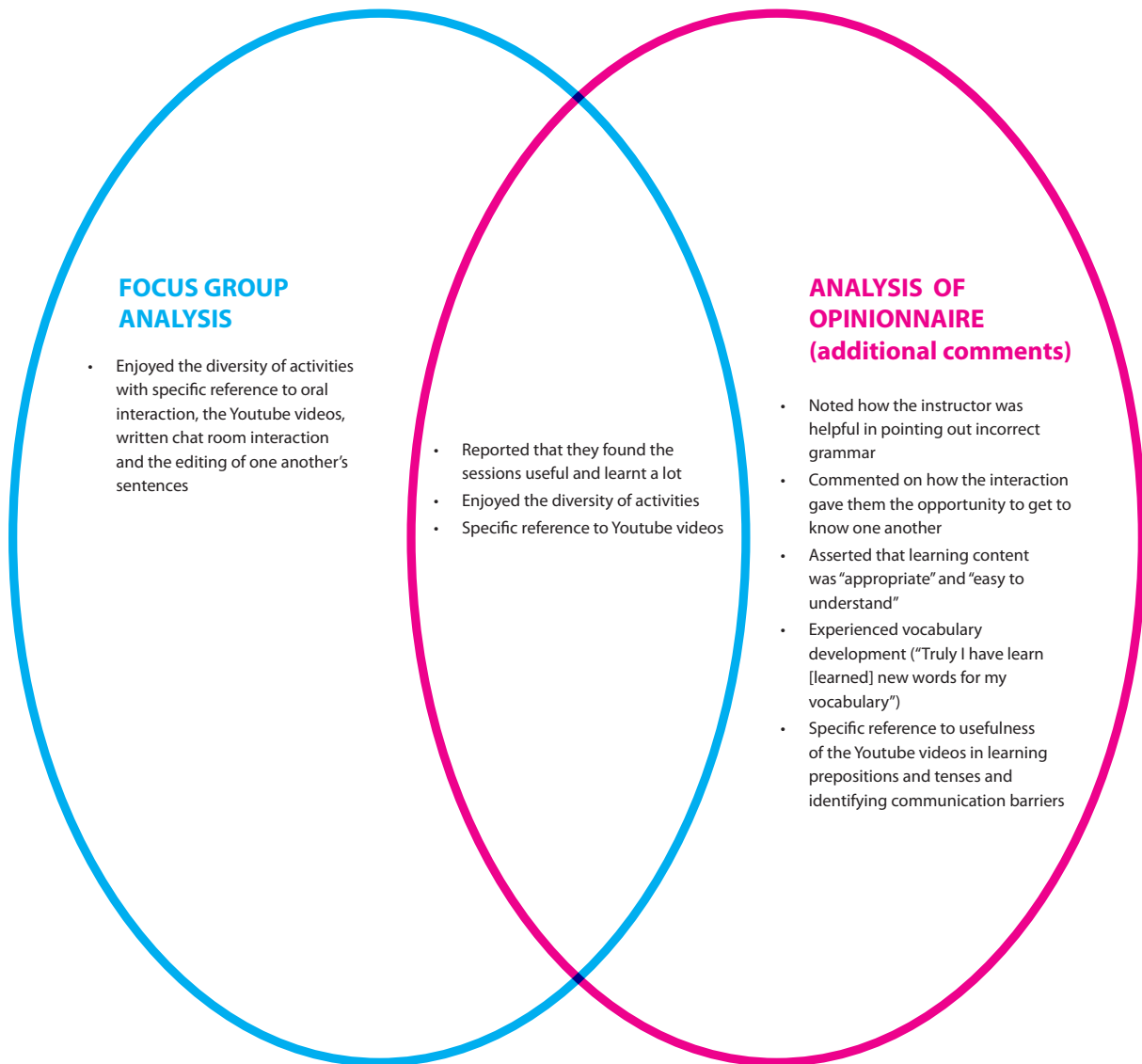


Figure 4.23: *Triangulation of findings relating to learners' perceptions of knowledge development*

During the focus group interview learners shared their enjoyment of the diversity of activities with specific reference to oral interaction, the Youtube videos, written chat room interaction and the editing of one another's sentences. A reference to the enjoyment of the diversity of activities came through in the additional comments on the opinionnaire. This supports the notion that the Google+ hangout platform is conducive to authentic communicative tasks, as discussed in the literature review, for the development of reading, writing, listening and

speaking skills. However, the diversity of activities and tasks is dependent on the design of these activities by the instructor. As discussed under the primary research question, instructors should therefore be conversant with all the communicative possibilities of the platform.

In both the focus group interview as well as the additional comments on the opinionnaire, learners opined that they had found the sessions useful and had learnt a lot. Although these statements were general and vague, they were supported by a few anecdotal references to learning grammar and tenses and identifying communication barriers, all of which suggest a margin of knowledge development. Learners used words and phrases such as “appropriate”, “easy to understand” and “Truly I have learn [learnt] new words for my vocabulary” in the additional comments to describe their perceptions of knowledge development.

Thus, during both the focus group interview, as well as on the opinionnaire, no negative responses were recorded of learners’ perceptions of knowledge development.

CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

5.1 Introduction

The focus in this chapter is to draw conclusions based on the findings of the study, that relate to the purpose, the research questions and the implications for online virtual classroom environments. This section is followed by recommendations for participants (instructors and learners) in virtual classroom environments on how to minimise transactional distance. Limitations of the study and suggestions for further studies are also discussed.

5.2 Conclusions

The purpose of the study was to examine and analyse learners' experiences of the virtual classroom sessions with the purpose of identifying any factors or elements that contributed to transactional distance in the synchronous virtual classroom environment used in this study. Analyses of the opinionnaire, screen casts of the virtual classroom sessions and the focus group discussion yielded valuable findings relating to factors of transactional distance and the learners' experiences of the sessions. Triangulation of the analyses of all the data gleaned on the primary and two secondary research questions is presented in chapter four.

Although the research questions refer to "a" synchronous virtual environment and not "the" synchronous virtual environment, it should be noted that all the findings in this study cannot necessarily be transferred or generalised to all virtual classroom contexts, since this study is based on the subjective experience of a small group of EFL learners using a particular application (Google+). The findings from this study therefore provide specific guidelines for use by teachers, tutors, instructors, facilitators and participants in an EFL learning environment using a Google+ hangout. Nevertheless, many of these guidelines might be

useful to apply in any virtual classroom environment.

In answering the primary research question relating to how transactional distance can be minimised within a synchronous virtual classroom environment the screen cast analysis provided the most comprehensive list of useful guidelines for teachers, tutors, instructors and facilitators of virtual classroom environments. The detailed and objective analysis of the screen casts provided insight into the learner-learner, learner-instructor, learner-interface and learner-content interaction of which participants were not necessarily aware during the sessions. It provided guidelines on relatively small, simple and practical actions and arrangements relating to the interface which could have a significant effect on minimising transactional distance to EFL teachers on a pedagogical level. Although a number of descriptive actions identified in the analysis are not always within the control sphere of the instructor or participants such as Internet access in quiet locations and not in public places, they should still be considered as far as possible.

The focus group discussion yielded similar themes to those of the screen cast analysis albeit the discussions were more general in terms of the learners' experiences. It also provided guidelines to EFL teachers on a pedagogical level, as well as actions to avoid technical sound issues. The focus group data further intimated that instructors should provide direction and technical support during initial sessions and to reduce the support as autonomy increases.

All three analyses agreed on the value and necessity of a practice session before the official sessions so that learners and the instructor could familiarise themselves with the platform. This session would reduce time wasted, while precluding delays, uncertainty, repetition and interruption during the official sessions. It was also clear that most interaction took place between learners and the instructor and not learners among themselves. This was identified as one of the pedagogical shortcomings in the development of the learning activities. This interaction is a necessity for EFL learning, as was underscored by the discussion on the Communicative Approach in the literature review.

Lastly, the inadequate data bandwidth network of the school gave rise to major technical problems during the sessions. Sufficient bandwidth is imperative to sustain meaningful video interaction. This once again highlighted the challenge of Internet access and broadband/bandwidth quality often experienced by learners in South Africa. According to the content delivery network, Akamai, who serve up to 30% of all web traffic, only 10.9% of South African households have access to the Internet at home. This was evidenced by learners'

dependence on the school's Wifi network. Furthermore South Africa has an average Internet connection speed of 3.4 Mbps, which puts South Africa at the bottom of the EMEA (Europe, Africa and Middle East) countries (Akamai, Report on the state of the Internet, 2015). Some learners experienced difficulty downloading the Youtube videos and this was probably also the reason for the audio delays that were often experienced during the sessions. Although the source of this problem was identified early by the researcher and the learners, the dependence on the school's Wifi access meant that this source of Transactional Distance could not be eliminated.

A consolidated summary of practical actions to be executed to minimise transactional distance obtained through analyses of the opinionnaire, screen casts of the virtual classroom sessions and the focus group discussion are presented next.

- Familiarise yourself with the interface before the session
- Make use of the Google+ hangout's self-mute function
- Enlarge the frame of the speaker
- Mention own name before addressing the participants
- Be aware of screen appearance
- Make sure that all participants' faces are centred
- Request learners to indicate completion of activity
- Consider the level, background and culture of the learners
- Give instructions and ask questions orally and visually
- Avoid relying on oral interaction only
- Enhance verbal communication with visual elements
- Take advantage of close-up facial expressions
- Address learners by name
- Give learners the opportunity to paraphrase and summarise
- Choose a quiet location/venue
- Avoid public spaces

- Optimise access to the Internet
- Incorporate reading, writing, listening and speaking skills in design of activities
- Include a diversity of activities
- Encourage participation and interaction
- Encourage oral interaction
- Make use of earphones during sessions
- Avoid close proximity of learners to one another
- Give learners the opportunity to clarify their understanding of learning content
- Provide direction and technical support during initial sessions
- Brainstorm personal use of interface with learners
- Promote, facilitate and encourage interaction
- Make a conscious decision to include oral (face-to-face) interaction
- Make learning material and additional material available during and after sessions
- Organise a technical practice session
- Facilitate more learner-learner interaction
- Access sessions on adequate data bandwidth networks

As minimising transactional distance is an inextricable component of optimising communication, the focus of the second research question was specifically on learners' perceptions of the communication during the sessions. Perceptions that are subjective may vary from learner to learner, therefore data obtained directly from the participants were used to analyse their perceptions. Both the focus group interview, as well as the additional comments on the opinionnaire, provided direct subjective data about their perceptions of the communication (interaction) during the sessions. A consolidated summary of any direct references made by learners during the focus group interview relating to their experiences, as well as the additional comments of the opinionnaire, is presented next.

- Felt uncomfortable at the beginning, but subsided as they got used to the platform

- Lacked confidence, but confidence grew as they got used to the platform
- Underwent a “mind shift” as they engaged in virtual face-to-face communication
- Preferred chat room interaction to face-to-face interaction. Learners mentioned how they were more used to chat room (written) interaction because of social media interaction
- Described their experience as similar to that in a traditional face-to-face class
- Commented on how technical challenges (Wifi Internet bandwidth) inhibited communication
- Expressed excitement about their experience of Google+ and suggested how the interface could be used for personal communication in other contexts
- Could clarify their understanding of learning content with the instructor
- Opined that interaction with instructor was useful
- Made a reference to physical distance (“it was as if we were close”)
- Expressed their experience as positive using phrases such as “was very great. i [I] liked it so much” and “...interaction was good’

From the analyses of learners’ perceptions of communication it emerged that many of the negative perceptions that had surfaced disappeared as learners got used to the platform while further negative perceptions could be ascribed to the inadequate Internet access. Therefore, similar to the findings of the thematic analysis of the screen casts, based on learners’ perceptions, technical difficulties were identified as the main source of transactional distance.

The focus of the third research question was on learners’ perceptions of knowledge development, rather than on knowledge development itself. As the general purpose of learners in an EFL environment is to learn the language and to become proficient in English, the purpose of this research question was to gain insight into learners’ perceptions of actual learning of English that took place during the sessions. Similar to the previous research question, data obtained directly from the participants were used to analyse their perceptions. This information was obtained from both the focus group interview as well as the additional comments on the opinionnaire.

A consolidated summary of any direct references made by learners during the focus group interview, as well as in the additional comments on the opinionnaire relating to their perceptions of knowledge development, is presented next.

- Enjoyed the diversity of activities with specific reference to oral interaction, the Youtube videos, written chat room interaction and the editing of one another's sentences
- Stated that they found the sessions useful and learned a lot
- Enjoyed the diversity of activities
- Made specific reference to Youtube videos
- Noted how the instructor was helpful in pointing out incorrect grammar
- Commented on how the interaction gave them the opportunity to get to know one another
- Commented that learning content was “appropriate” and “easy to understand”
- Commented positively on vocabulary development (“Truly I have learn [learned] new words for my vocabulary”)
- Referred specifically to usefulness of Youtube videos in mastering prepositions and tenses, as well as identifying communication barriers

Statements obtained during the focus group interview relating to their experience of knowledge development were mainly general and vague, yet they were supported by anecdotal references to learning grammar and tenses, as well as identifying communication barriers under the additional comments on the opinionnaire. During both the focus group interview, as well as the opinionnaire, no negative responses were recorded of learners' perceptions of knowledge development.

5.3 Implications

In this study learners' experiences of the virtual classroom sessions were explored and analysed with the purpose of identifying any factors or elements that could contribute to transactional distance in the synchronous virtual classroom environment used in this study. Learners' experiences of the synchronous teaching environment were explored in terms of

learner-instructor, learner-learner, learner-content and learner-interface interaction (Chen, 2001; Moore, 1993).

On the basis of the findings obtained through the analysis of the opinionnaire, as well as the thematic analyses of the focus group interaction and the screen casts, it was possible to identify negative factors that could increase transactional distance, but also positive factors that could contribute to minimising transactional distance. These factors could then be converted into a practical list of actions that instructors and learners could apply in the Google+ EFL virtual classroom environment. As mentioned in section 5.2 all the findings from this study can not necessarily be transferred or generalised to all virtual classroom contexts, since this study is based on the subjective experience of a small group of EFL learners using a particular application (Google+), yet many of these actions relate to technical arrangements to increase normalisation of the platform, which could be useful considerations in any virtual classroom environment. Although normalisation was perhaps not fully achieved in three sessions, this study showed that learners could, in a relatively short period of time, get used to a platform. There were some moments - especially towards the end of the sessions - where learners seemed so absorbed in the interaction, that technology, as Bax (2003, p. 23) puts it, seemed to have become “invisible and truly integrated”.

Falloon (2011, p. 187) asserts that earlier synchronous online courses were “largely limited to audio-only or text-based chat, and did not utilise relatively complex technologies, such as the virtual classroom”. Some studies were conducted using specialised commercially developed platforms such as *Adobe Connect Pro*, *Elluminate Live* and *Visu* (Falloon, 2012; Guichon, 2010; McBrien et al. 2009) that offer synchronous functionality such as real-time audio, visual and text communication as well as desktop sharing. This study has proved that *Google+* offers most of the synchronous functionality of those commercial applications that are conducive to EFL learning. Because *Google+* is a relatively new social network platform, limited research has been done on it as a tool for CALL. Furthermore this study showed that *Google+* could be particularly useful for EFL learners who are often isolated from their target language by making it possible to communicate in the target language. According to Abanomey (2013) the Internet is a suitable tool for foreign language learners through which they can access authentic target language content. In this study *Google+* and in particular Youtube were used to expose learners to authentic English language during the *Google+* virtual classroom sessions.

The use of synchronous virtual classroom platforms such as *Google+* could have significant

implications for EFL teaching and learning. It opens up a whole new world for EFL educators and instructors who could potentially have access to learners from all over the world. EFL learners on the other hand who are often isolated from the target language could access teachers and other learners from all over the world to learn English through authentic communication while being exposed to authentic English scenarios through a plethora of Internet sources and Youtube videos. In South Africa in particular, where rural learners are often isolated from authentic English language until secondary or even tertiary education, virtual classroom environments could have a significant impact on English learning. It has the potential to revolutionise how, where and whom we teach in the future. The biggest obstacle in South Africa remains access to technology and adequate Internet infrastructure.

5.4 Recommendations

The analyses of the screen casts, focus group interview and opinionnaire provided insight into the subjective experiences of the participants in terms of learner-learner, learner-instructor, learner-interface and learner-content interaction. These analyses provided insight into their experiences which made it possible to formulate guidelines for relatively simple, but practical actions and arrangements relating to the interface which could have a significant effect on minimising transactional distance. The list also provided useful guidelines to EFL teachers on a pedagogical level. A number of actions that were identified in the analyses are not always within the control sphere of the instructor or participants such as Internet access in quiet locations.

It is therefore recommended that educators and instructors of EFL should consider adopting virtual classrooms as part of their teaching environments. These could be an adjunct to traditional face-to-face teaching or tutoring. It could open doors to teaching and learning of a more ubiquitous nature. It could also present commercial value to educators who can potentially have an EFL learning audience from all over the world.

Educators and instructors in virtual classroom environments should be made aware of the concept of transactional distance which could manifest itself in virtual classroom environments in terms of *learner-instructor*, *learner-learner*, *learner-content* and *learner-interface* interaction in various degrees. Educators, instructors and even learners in virtual classroom environments should then intentionally try to minimise transactional distance on all four levels of interaction. This study provides practical guidelines and actions that could help

participants to achieve this.

Furthermore, educators and instructors who embark on a EFL virtual classroom journey should carefully consider and apply the practical guidelines summarised in the conclusions of this study. These guidelines and proposed actions are discussed in detail in the analyses of the findings in Chapter 4. Although the findings from this study cannot automatically be transferred or generalised to all virtual classroom contexts, an awareness of transactional distance, together with careful consideration of these guidelines and the application of the suggested actions for instructors, could significantly minimise the experience of transactional distance by participants.

5.5 Limitations of the study

The main limitation of this study is the lack of generalisability. This is due to the subjective nature of the study and, in particular, the small sample size of the study. Case studies generally lack generalisability (Burns, 1997), but the objective of this study was not generalisation, but rather to explore the experiences of learners in depth, which present more challenges to larger sample groups. Triangulation of findings from multiple methods of data gathering strategies in this study does however act as a strategy to enhance validity (Leech & Onwuegbuzie, 2007). Although a quantitative analysis of the opinionnaire data was attempted, limited statistical analyses were possible because of the small sample size. Perhaps a replication of the study involving numerous groups could produce more significant statistical analyses.

In the main, this study's findings are dependent on the thematic analyses of the additional comments of the opinionnaire, the focus group data and the screen casts. An advantage of this type of case study approach is that it gives the researcher context and insight into the events and the learners' subjective experiences, to an extent that would not be possible in a solely quantitative approach. But a combination of quantitative and qualitative approaches would have enhanced the validity and reliability of the study.

A further shortcoming of this study is the validity and reliability testing of the opinionnaire. Even though the instruments that formed the basis of the opinionnaire for this study had undergone rigorous reliability and validity testing, the adapted instrument in this study in itself was not tested. The "additional comments" section under each of the four sections of the opinionnaire did act as a form of internal validity though, because it minimised the possibility of researcher's bias in the development of the instrument. The "additional comments" option

under all four sections of the opinionnaire gave respondents the opportunity to elaborate on items, and allowed them to identify other topics or issues relating to their interaction which were not covered in the items.

Another aspect of the study which can objectively be considered as a limitation is the fact that the focus of this study was on the experience of the learners and not really on the pedagogical design and English content of the activities which were developed by the researcher in collaboration with the instructor. As a result limited attention was paid to the pedagogical design and development of learning activities used in this study. Yet it should be mentioned that both the researcher and the instructor who had had many years of English teaching experience made a conscious effort to make the learning activities, topics and interaction as diverse as possible. This idea of diversity in the activities is supported by comments of appreciation in both the focus group discussion and the additional comments on the opinionnaire.

A final shortcoming which surfaced during the data analysis phase of the study of the learning activities is that all the activities during the virtual classroom sessions included limited face-to-face learner-learner interaction. They did however include chat room interaction among learners. This limited the responses of the learners' experiences relating to face-to-face learner-learner interaction. A concerted effort by instructors to incorporate oral face-to-face interaction emerged as one of the guidelines for EFL virtual classroom environments.

5.6 Suggestions for further study

The focus of this study was on how the learners experienced the virtual classroom environment with the purpose of identifying elements of transactional distance. It was neither on the pedagogical design of the sessions nor on the English content only. The Google+ platform does however seem to be conducive to authentic language learning. Although the study did touch on this under learner-content interaction, a detailed analysis of the pedagogical possibilities and of the activities that were effective in terms of actual learning, falls outside the scope of this study. Perhaps a shift in focus towards specifically how to optimise the Google+ platform in terms of developing practical English reading, writing, speaking and listening skills could be the topic for further study.

Another useful future development of this study could perhaps be to measure the knowledge

development (learning of English) during synchronous EFL virtual classroom sessions compared to that in traditional face-to-face sessions, thereby incorporating more quantitative measures in analysing the efficacy of the Google+ virtual classroom environment.

Lastly, the instruments developed by Bischoff (1996), Chen (2001), Huang (2002) and Starr-Glass (2012) formed the basis of the opinionnaire. Some of the items from these instruments were relevant to distance education only, therefore some items had to be adapted for the specific purpose of giving insight into the learners' subjective experiences of the synchronous virtual classroom environment and relating to the four elements of transactional distance dealt with in this study. Some of the items were originally presented as questions and then adapted as statements for the purpose of this study. The opinionnaire instrument developed for this study was adapted specifically for identifying elements of transactional distance in a virtual classroom environment. Perhaps the further development of the instrument and rigorous validity and reliability testing, which could then be used to identify transactional distance, could be the subject of future studies.

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APPENDICES

APPENDIX A: Letter of consent for research participants



LETTER OF CONSENT FOR RESEARCH PARTICIPANTS

University of Pretoria
Faculty of Education
Department of Science, Mathematics and Technology Education

Dear Sir/Madam

I am currently engaged in a MEd research project at the University of Pretoria. Therefore I am looking for seven English as a Foreign Language learners to participate in my research which is explained below.

Background of research

The Virtual Classroom:

Exploring the Experiences of English as a Foreign Language (EFL) learners Using Google+ as a Synchronous Online Teaching Environment

In this research study Google+ will be used as a platform to teach English as a Foreign Language (EFL) to expose a small group of EFL learners to authentic English material on YouTube to create a context for online discourse and English language learning. The study will explore the experiences of seven EFL learners in three virtual EFL learning sessions

by using a qualitative focus group discussion, an opinionnaire and observation of the video recordings of these sessions. This study will explore the experiences of the EFL learners to establish whether this learning environment might narrow the psychological distance that is often associated with online learning environments. The study will also aim to highlight possible problems or barriers experienced in such a virtual classroom environment and to make some suggestions for future virtual classroom learning environments.

Voluntary participation

Your participation in this research is entirely voluntary. It is your choice whether to participate or not. If you choose not to participate all the services you receive at this centre will continue and nothing will change. Participants also reserve the right to withdraw from the study at any time without any penalty in any form.

Anonymity

All participants will remain anonymous in the study. A pseudonym will be used for all participants in the final publication of the thesis.

Participation in this study will include the following:

- Three online sessions of approximately 45 minutes each (one week between each session).*
- A group discussion of after the third session to discuss your experience of the virtual classroom. The session will take about 1 hour.*
- The completion of an online questionnaire that will take approximately 10 to 15 minutes.*

Financial implications

All participants should have computer and Internet access (including web-cam and

microphone functionality) and should be willing to participate on their own broadband costs.

Member checking

A summary of the research findings as well as the final thesis will be made available to all participants for comment as part of the data analysis. If you are uncomfortable with any of the data, you reserve the right to request the exclusion of such data from the study.

Potential benefits for participants

You will participate in three language classes offered by an English language specialist with years of experience in English language teaching. You will also have the opportunity to verbalise your experience of learning English in a virtual classroom environment.

Thank you. Your participation will be highly appreciated. To participate in this research, please sign below.

<i>Name of participant:</i>	
<i>Email:</i>	
<i>Cellular number:</i>	
<i>Signature:</i>	

Andrew Harvey

PRIMARY RESEARCHER

Prof. J.G. Knoetze

SUPERVISOR

APPENDIX B: Opinionnaire participation request



Faculty of Education

Opinionnaire participation request

Dear (Name of participant)

Thank you for volunteering to participate in my Master's degree research. The purpose of the study is to explore learners' experiences of the virtual classroom environment. The online opinionnaire published on <http://kwiksurveys.com/s.asp?sid=6pg81lv0sbrc14274368> will provide me with valuable information about your personal experience of the online classes in which you will participate.

Therefore I kindly request that you complete the online opinionnaire regarding your experience of the virtual classroom. It should take approximately 10 to 15 minutes to complete. Although your response is of the utmost importance to me, your participation in this survey is entirely voluntary.

Please do not enter your name or contact details on the opinionnaire. You will remain anonymous. Information provided by you remains confidential and will be reported in summary format only.

Kindly complete the opinionnaire on or before 21 July 2013.

A summary of the results of this study will be emailed to you after the completion of my dissertation.

Should you have any queries or comments regarding this survey, you are welcome to contact me on 082 338 4581 or e-mail me at andrew@mionline.co.za.

Yours sincerely

Andrew Harvey

M.Ed. student

Faculty of Education

University of Pretoria

APPENDIX C: Opinionnaire

(published online: <http://kwiksurveys.com/s.asp?sid=6pg81lv0sbrc14274368>)

OPINIONNAIRE

The purpose of the research is to explore the learners' experiences of the virtual classroom environment. Participation in this survey is voluntary and participants will remain anonymous. Kindly complete the opinionnaire on or before **21 July 2013**.

Section 1 – LEARNER-INSTRUCTOR INTERACTION					
1.1	<i>I feel that I had enough one-on-one interaction with my instructor during the sessions.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1.2	<i>I got to know my instructor as a person during the sessions.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1.3	<i>I could ask the instructor questions during the sessions.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1.4	<i>The instructor gave me personal support during the sessions.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1.5	<i>I understood the instructor during the sessions.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1.6	<i>The facial expressions of the instructor were clear during the sessions.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1.7	<i>The instructor gave me special attention when it was necessary during the sessions.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1.8	<i>I got to know the personality of my instructor during the online sessions.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1.9	<i>I could communicate with the instructor when I needed an explanation or clarification of something I did not understand.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree

Section 1 – LEARNER-INSTRUCTOR INTERACTION					
1.10	<i>The instructor asked me questions during the sessions.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1.11	<i>The explanations of the instructor during the sessions were clear and understandable.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1.12	<i>I could read the body language of the instructor during the sessions.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree

Additional comments regarding the interaction between you and the instructor: _____

Section 2 – LEARNER-LEARNER INTERACTION					
2.1	<i>Learners communicated with one another during the sessions.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
2.2	<i>I got to know the other learners during the sessions.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
2.3	<i>I could ask the other learners questions during the sessions.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
2.4	<i>I felt confident in communicating with other learners during the sessions.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
2.5	<i>I enjoyed the interaction with other learners during the sessions.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
2.6	<i>The facial expressions of the other learners were clear during the sessions.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
2.7	<i>I interacted with other learners during the sessions.</i>				

Section 2 – LEARNER-LEARNER INTERACTION					
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
2.8	<i>I got to know the personalities of the other learners during the sessions.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
2.9	<i>I could communicate with another learner when I needed an explanation or clarification of something I did not understand.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
2.10	<i>I felt isolated from other learners during the sessions.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
2.11	<i>Learners enjoyed helping one another master the learning topics during the sessions.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
2.12	<i>I could read the body language of the other learners during the sessions.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree

Additional comments regarding your interaction with other learners during the sessions: _____

Section 3 - LEARNER-CONTENT INTERACTION					
3.1	<i>The learning material was easy to understand.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
3.2	<i>The learning topics were interesting.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
3.3	<i>I learned new English vocabulary during the sessions.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree

Section 3 - LEARNER-CONTENT INTERACTION					
3.4	<i>The video material was appropriate for learning English.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
3.5	<i>We were provided enough English material during the sessions.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
3.6	<i>I found the learning material used in the sessions interesting</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
3.7	<i>The learning material was appropriate for our sessions.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
3.8	<i>I enjoyed the learning topics selected for the sessions.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
3.9	<i>I learned useful theoretical English concepts during the sessions.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
3.10	<i>The video material created a useful platform for the learning activities.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
3.11	<i>The English material used during the sessions met my expectations.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
3.12	<i>I found the learning material used in the sessions useful.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree

Additional comments regarding the interaction between you as a learner and the content that was studied: _____

Section 4 - LEARNER-INTERFACE INTERACTION					
4.1	<i>I found the Google+ platform easy to manage.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
4.2*	<i>I experienced technical problems during the sessions.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
4.3	<i>I could hear the other learners and the lecturer clearly during the sessions.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
4.4*	<i>The technology used during the sessions limited my ability to learn.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
4.5*	<i>I had problems with the Internet connectivity during the sessions.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
4.6	<i>I found the learning material used in the sessions intellectually stimulating.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
4.7	<i>The Google+ platform is user-friendly.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
4.8*	<i>It could manage the technology during the sessions.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
4.9*	<i>I experienced difficulty with sound during the sessions.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
4.10	<i>Using a computer during the sessions made it difficult to learn.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
4.11	<i>The English material used during the sessions met my expectations.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
4.12	<i>I found the You Tube videos used in the sessions useful.</i>				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree

Section 4 - LEARNER-INTERFACE INTERACTION

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Additional comments regarding your interaction with the technology used during the sessions:

APPENDIX D: Likert scale response frequencies of the opinionnaire

Likert scale response frequencies of the opinionnaire

		Strongly disagree	Disagre	Neutral	Agree	Strongly Agree
		1	2	3	4	5
Learner-Instructor Interaction						
SECTION 1						
	1.1				1	4
	1.2				3	2
	1.3				4	1
	1.4				2	3
	1.5				2	3
	1.6				3	2
	1.7				2	3
	1.8				5	
	1.9				2	3
	1.10				1	4
	1.11				2	3
	1.12			2	3	
Learner-Learner Interaction						
SECTION 2						
	2.1			3	1	1
	2.2				4	1
	2.3				2	3
	2.4			1	3	1
	2.5				3	2
	2.6				3	2
	2.7				2	3
	2.8					5
	2.9			2	3	
	2.10				4	1
	2.11				2	3
	2.12				2	3

		Strongly disagree	Disagre	Neutral	Agree	Strongly Agree
		1	2	3	4	5
Learner-Content Interaction						
SECTION 3						
	3.1				3	2
	3.2				2	3
	3.3				1	4
	3.4					5
	3.5		1		3	1
	3.6				3	2
	3.7				3	2
	3.8				2	3
	3.9				3	2
	3.10				2	3
	3.11			1	3	1
	3.12				4	1
Learner-Interface Interaction						
SECTION 4						
	4.1				3	2
	4.2	1	4			
	4.3			1	2	2
	4.4	1			3	1
	4.5		1	1	2	1
	4.6				4	1
	4.7				3	2
	4.8			1	1	3
	4.9		2	1	2	
	4.10				3	2
	4.11			2	2	1
	4.12			2	2	1

APPENDIX E: Focus group interviews

FOCUS GROUP INTERVIEWS

Researchers' Notes (01 Oct 2013)

1. *How did you experience the interaction between yourself and the tutor?*

(learner-instructor interaction).

- All learners agreed that it was similar to being in class.
- One learner mentioned that they misunderstood the instruction during the first session. They later got used to the platform and it became easier to clarify any misunderstanding.
- Felt like being together in one classroom.
- One learner mentioned that his experience was similar to his face-to-face class earlier that day.
- They mentioned that they could ask the tutor for clarification of instructions or to explain it in more detail at any time.
- One learner said the video interaction was awkward during the first session, but that she quickly got used to it.
- The instructor mentioned that he had to undergo a mind shift. Initially he wanted to clarify some of the terminology (communication barriers) with the learners after the virtual session during the face-to-face focus group meeting. He explained that face-to-face teaching was what he was comfortable with. He initially felt restricted in expressing himself during the sessions. He mentioned that it did become easier as he got used to the platform.

2. *How did you experience the interaction between yourself and the other learners?*

(learner-learner interaction).

- Learners mentioned it was similar to face-to-face classroom interaction.
- One learner mentioned that he enjoyed reading the chat room texts of other learners.

- Learners all agreed that they found the chat sharing and editing very useful.
- One learner said he preferred the chat room interaction rather than the video talk and he found it interesting to read the other learner's responses and in particular the editing.
- One learner mentioned that it was helpful that another learner helped her with the technology (this was only possible because they were on the same premises).
- Learners agreed that they learned from each other's mistakes in the chat room during the editing and editing discussions.

3. *How did you experience the Google+ hangout as a platform for learning English? (learner-interface interaction).*

- Some learners experienced technical problems initially, especially in terms of connecting to Wi-Fi. Some learners had to move around on the premises to find a good Wi-Fi connection.
- One learner struggled to connect to the Wi-Fi and instead connected to the internet with his personal pay-as-you-go internet. When asking him about the data usage, the amount of data used during the session was large (between 1-2 gig). A session in other words cost the learner between R100 and R200.
- Learners who ended up too close to one another and the speakers of the different computers affected each other which resulted in distortions or sound echos (After the first session it was decided that everybody should use earphones to try and solve this problem).
- Some learners mentioned that they didn't know about the 'mute' button in a Hangout. They mentioned that once they started muting themselves if they were not speaking also improved the initial sound problems.
- All learners agreed that sound was not a problem anymore since they started using earphones.
- All learners used Google+ and in particular Google+ Hangouts for the first time.
- Learners mentioned that the practice session was good to get used to the platform and that it was actually easy to navigate in Google+ once they got used to it.

- Learners expressed their excitement about Google+. Some mentioned that they started using it as a social network.
- One learner who is interested IT mentioned how he would use it as a platform for IT support for his clients.

4. *How did you experience the learning activities? (learner-content interaction).*

- Learners agreed that they learned a lot and one learner mentioned in particular that the prepositions and editing activities were useful.
- One learner mentioned that the writing exercises in the chat room were very useful. After asking them whether the exercises were only useful in terms of writing, learners were adamant that the activities were useful in terms of reading, speaking and listening as well.
- One learner mentioned that the editing was an eye-opener to her.
- Learner particularly mentioned enjoying the chat room interaction.

APPENDIX F: Opinionnaire - verbatim additional comments by learners

OPINIONNAIRE - VERBATIM ADDITIONAL COMMENTS BY LEARNERS

Learner-Instructor Interaction
“The interaction between me and my instructor was very great.he is very friendly.he taught me the way when i make a grammatical mistake”
“I am very happy to study with my instructor.he chose me the right way when i make a mistake.he is very friendly”
“The interaction between the instructor and me was good, it was like we were close, I could ask all things which I didn’t understand very well”
“I could understand the instructor, his instruction was clear and I could ask questions during the lesson.”

Learner-Learner Interaction
“The interaction was good”
“The interaction with other during the lesson was very great.i liked it so much”
“The interaction with other learners during the sessions was clear but it was limited because the main focus was the topics and the explanation of the instructor”
“We had the opportunity to know each other.”
“the first time was difficult because of the internet.. but in the second last lesson was good our interaction was clearly and easily.”

Learner-Content Interaction
“The content studied was appropriate”
“Truly I have learn new words for my vocabulary. The content was easy to understand and I could interact easily.”
“the video was fine as well because showed the things which we were learning, as preposition, past tense, interraption in communication”

Learner-Interface Interaction
“I was very proud because i have never used google+.but now i know”
“The technology used during the very was good.it allowed us to learn more.”
“It was my first time that I used this platform and I think the interaction with the technology used was interesting and excellent choose”
“Technology is useful for studies. What I have to say is that my experience with this technology was great. I use computer and internet but I have never used this platform before, so I am going to use it in the future for my studies as well.”
“the plataform was the thing which expected me my attention. was something wich i have never seen in my life. i learn a lot i wich to do again.”